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# **Behavioral industrial organization, firm strategy, and consumer economics**

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## **Abstract**

The field of behavioral economics is one of the fastest-growing fields in economics in recent years. Not long ago this was a small field, but over the last decade or so, the field gained more recognition, and today it seems clear that psychological motivations and biases affect economic behavior in many important ways. Insights from psychology were incorporated in several areas of economics. This paper offers a short review of the application of behavioral economics to industrial organization, which can be denoted “behavioral industrial organization,” and on the relationship between behavioral industrial organization, firm strategy, and consumer economics.

Keywords: industrial organization; behavioral economics; strategy; firm strategy; business strategy; economic psychology; behavioral industrial organization; consumer behavior; consumer economics

JEL codes: L10, D10, D40, M30, M20, A12

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The field of behavioral economics is one of the fastest-growing fields in economics in recent years. Not long ago this was a very small field, and many economists did not consider adding insights from psychology to economic analysis an important endeavor. Over the last decade or so, however, the field gained more recognition, and today it seems clear that psychological motivations and biases affect economic behavior in many important ways. Matthew Rabin winning the John Bates Clark Medal in 2001 and Daniel Kahneman winning the Nobel Prize in economics in 2002 (together with Vernon Smith) provide additional evidence that behavioral economics is now recognized as an important area in economics.

Incorporating insights from psychology in economics spans several main fields within economics. One such field is public finance. Various experiments, for example, reveal in what conditions psychological motivations to behave altruistically tend to be stronger and help to reduce the free-rider problem associated with contributions to public goods. Ideas from behavioral economics were also applied in various papers in the areas of labor economics and finance.

In the rest of this paper, I want to focus on the application of behavioral economics to industrial organization, which we can call in short “behavioral industrial organization,” and on the relationship between behavioral industrial organization, firm strategy, and consumer economics. I believe that behavioral industrial organization is a field that should receive more attention, and indeed recently it has started to receive increased attention. One indication for the importance of this field is that in the 2005 Econometric Society World Congress (which is one of the most prestigious economics conferences), one of the few plenary sessions was devoted to the topic of “Bounded Rationality in Industrial Organization,” given by Glenn Ellison (for the full paper see Ellison, forthcoming).

Industrial organization encompasses topics such as market structure, price dispersion, and how firms compete by choosing prices, quantities, R&D levels, product quality and other product characteristics.<sup>2</sup> Often also topics such as the internal organization of firms, incentives, and contracts are attributed to industrial organization. Behavioral industrial organization is then the application of insights from psychology and of deviations from the behavior of “Homo Economicus” (a selfish and utility-maximizing, unboundedly-rational agent) to topics that belong to industrial organization.

The deviations from fully-rational decision making that result in this research being classified as "behavioral" can come in principle from any of the economic agents involved in the market. Recent research, however, usually attributes the irrational behavior to consumers and not to firms. The reason is that a firm is more careful in its decision making, several people are often involved in making important decisions, and the firm can hire consultants to help it overcome its irrationality if such irrationality exists. Moreover, irrationality on the side of the firm should reduce its profits, hurt the firm's position both in its product markets and in the capital markets in which it obtains its financing, and eventually is likely to lead to the firm's bankruptcy due to more rational firms driving it out of business. Therefore it is hard to believe that firms can behave significantly in an irrational fashion and still survive the competition for a long time.

It is much more plausible that consumers behave irrationally, since the above considerations do not apply to them. Consumers do not disappear if they make biased decisions; they just do not obtain a utility level as high as they could get with optimal decision making. Because much of the research in behavioral industrial organization

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<sup>2</sup> Industrial organization is particularly interested in markets with a small number of firms and/or product differentiation; in such markets, the results of perfect competition are irrelevant and the decisions made by the firms are more interesting and less trivial.

is based on some sort of biased decision making of consumers, this field is closely related to consumer behavior and the economic analysis of consumer choice. A significant focus in this field, however, is to understand how firms can take advantage of the biases that consumers exhibit. For example, what would be the optimal strategy of firms in terms of pricing or product choice, given that consumers exhibit hyperbolic discounting or other deviations from expected utility maximization? Because much of this research considers how firms can best exploit consumer biases, this field is also closely related to firm strategy. In what follows I will provide a few examples for recent research in this area.

DellaVigna and Malmendier (2004) examine how firms should design the contracts they offer to consumers when consumers are biased and exhibit time-inconsistent preferences. They consider markets for two types of goods: goods with immediate costs and delayed benefits (investment goods) such as health club attendance, and goods with immediate benefits and delayed costs (leisure goods) such as credit card-financed consumption. DellaVigna and Malmendier establish three features of the profit-maximizing contract design with partially naïve time-inconsistent consumers. First, firms price investment goods below marginal cost. Second, firms price leisure goods above marginal cost. Third, for all types of goods firms introduce switching costs and charge back-loaded fees. The contractual design targets consumer misperception of future consumption and underestimation of the renewal probability. The authors also suggest that the predictions of the theory match the empirical contract design in the credit card, gambling, health club, life insurance, mail order, mobile phone, and vacation time-sharing industries. They further show that time inconsistency has adverse effects on consumer welfare only if consumers are naïve.

DellaVigna and Malmendier (2006) is a related paper, but with an empirical rather than a theoretical focus. In this article, the authors examine empirically how consumers choose from a menu of contracts. They analyze a dataset from three U.S. health clubs with information on both the contractual choice and the day-to-day attendance decisions of 7,752 members over three years. The observed consumer behavior is difficult to reconcile with standard preferences and beliefs. First, members who choose a contract with a flat monthly fee of over \$70 attend on average 4.3 times per month. They pay a price per expected visit of more than \$17, even though they could pay \$10 per visit using a 10-visit pass. On average, these users forgo savings of \$600 during their membership. Second, consumers who choose a monthly contract are 17% more likely to stay enrolled beyond one year than users committing for a year. This is surprising because monthly members pay higher fees for the option to cancel each month. Cancellation delays and attendance expectations are also documented, among other findings. Leading explanations for the findings are overconfidence about future self-control or about future efficiency. Overconfident agents overestimate attendance as well as the cancellation probability of automatically renewed contracts.

Another source of consumer irrationality and its exploitation by firms is related to the pricing of add-ons (goods or services that are purchased as part of the consumption of other goods and services, such as ink for a printer). Gabaix and Laibson (2006) suggest that Bayesian consumers infer that hidden add-on prices are likely to have high prices. If consumers are Bayesian, firms will not shroud information in equilibrium. However, shrouding may occur in an economy with some myopic (or unaware) consumers. Such shrouding creates an inefficiency, which firms may have an incentive to eliminate by educating their competitors' customers. However, if add-ons have close substitutes, a "curse of de-biasing" arises, and firms

will not be able to profitably de-bias consumers by un-shrouding add-ons. In equilibrium, two kinds of exploitation coexist. Optimizing firms exploit myopic consumers through marketing schemes that shroud high-priced add-ons. In turn, sophisticated consumers exploit these marketing schemes. It is impossible to profitably drive away the business of sophisticates. It is also impossible to profitably lure either myopic customers or sophisticates to non-exploitative firms. Gabaix and Laibson show that informational shrouding flourishes even in highly competitive markets, even in markets with costless advertising, and even when the shrouding generates allocational inefficiencies.

A different source of consumer irrationality comes from the way consumers behave when they try to find a cheaper price for a good they want to purchase. Azar (2005) confronts the empirical evidence and theoretical predictions about the correlation between price dispersion and price. Theoretically, search and location differentiation models suggest that price dispersion is an increasing function of search and transportation costs, but is independent of the good's price or cost. Empirical evidence from various markets, however, suggests otherwise: price dispersion and price are strongly positively correlated. Azar points out this discrepancy between theory and evidence, which he denotes "the price dispersion puzzle." He then explains why the bias of relative thinking (people consider not only absolute price differences but also relative price differences, and consequently they behave as if their search or transportation costs are increasing in the good's price) can solve the puzzle. Several other potential explanations for the correlation between price dispersion and price are discussed, and the paper explains why they do not seem to be a significant reason for this correlation.

How consumers respond to price changes and what firms consequently do to address this behavior is another instance in which consumer biases might play an important role. Levy et al. (2005) analyze scanner price data that cover 27 product categories over an eight-year period from a large Mid-western supermarket chain. They find a surprising regularity in the data - small price increases occur more frequently than small price decreases. This asymmetry holds for price changes of up to about 10 cents, on average. The asymmetry disappears for larger price changes. The asymmetry holds even after excluding from the data the observations during inflationary periods, and after allowing for various lengths of lagged price adjustment. The findings are insensitive also to the measure of price level used to measure inflation (the PPI or the CPI). To explain these findings, the authors extend the implications of the literature on rational inattention to individual price dynamics. Specifically, they argue that processing and reacting to price change information is a costly activity. An important implication of rational inattention is that consumers may rationally choose to ignore and thus not to respond to small price changes, creating a “range of inattention” along the demand curve. This range of consumer inattention gives the retailers incentive for asymmetric price adjustment “in the small.” These incentives, however, disappear for large price changes, because large price changes are processed by consumers and therefore trigger their response. Thus, no asymmetry is observed “in the large.”

The articles discussed above show how incorporating consumer biases in industrial organization models can provide insights about how firm strategy should respond to these biases. Then, empirical evidence can show whether we indeed observe such firm behavior in the relevant markets. The literature in this field, however, is still scant; this offers many opportunities for additional research. I hope



that at least some readers will find interest in this area and add to the growing research in it.

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