**How Behavioral Economics Differs from Traditional Economics**

All of economics is meant to be about people’s behavior. So, what is behavioral economics, and how does it differ from the rest of economics?

Economics traditionally conceptualizes a world populated by calculating, unemotional maximizers that have been dubbed*Homo economicus.* The standard economic framework ignores or rules out virtually all the behavior studied by cognitive and social psychologists. This “unbehavioral” economic agent was once defended on numerous grounds: some claimed that the model was “right”; most others simply argued that the standard model was easier to formalize and practically more relevant. Behavioral economics blossomed from the realization that neither point of view was correct.

The standard economic model of human behavior includes three unrealistic traits—unbounded rationality, unbounded willpower, and unbounded selfishness—all of which behavioral economics modifies.

Nobel Memorial Prize recipient [**Herbert Simon**](http://www.econlib.org/library/Enc/bios/Simon.html) (1955) was an early critic of the idea that people have unlimited[**information**](http://www.econlib.org/library/Enc/Information.html)-processing capabilities. He suggested the term “bounded rationality” to describe a more realistic conception of human problem-solving ability. The failure to incorporate bounded rationality into economic models is just bad economics—the equivalent to presuming the existence of a free lunch. Since we have only so much brainpower and only so much time, we cannot be expected to solve difficult problems optimally. It is eminently rational for people to adopt rules of thumb as a way to economize on cognitive faculties. Yet the standard model ignores these bounds.

Departures from rationality emerge both in judgments (beliefs) and in choices. The ways in which judgment diverges from rationality are extensive (see **[Kahneman](http://www.econlib.org/library/Enc/bios/Kahneman.html)** et al. 1982). Some illustrative examples include overconfidence, optimism, and extrapolation.

An example of suboptimal behavior involving two important behavioral concepts, loss aversion and mental accounting, is a mid-1990s study of New York City taxicab drivers (Camerer et al. 1997). These drivers pay a fixed fee to rent their cabs for twelve hours and then keep all their revenues. They must decide how long to drive each day. The profit-maximizing strategy is to work longer hours on good days—rainy days or days with a big convention in town—and to quit early on bad days. Suppose, however, that cabbies set a target earnings level for each day and treat shortfalls relative to that target as a loss. Then they will end up quitting early on good days and working longer on bad days. The authors of the study found that this is precisely what they do.

Consider the second vulnerable tenet of standard economics, the assumption of complete self-control. Humans, even when we know what is best, sometimes lack self-control. Most of us, at some point, have eaten, drunk, or spent too much, and exercised, saved, or worked too little. Though people have these self-control problems, they are at least somewhat aware of them: they join diet plans and buy cigarettes by the pack (because having an entire carton around is too tempting). They also pay more withholding taxes than they need to in order to assure themselves a refund; in 1997, nearly ninety million tax returns paid an average refund of around $1,300.

Finally, people are boundedly selfish. Although economic theory does not rule out altruism, as a practical matter economists stress self-interest as people’s primary motive. For example, the free-rider problems widely discussed in economics are predicted to occur because individuals cannot be expected to contribute to the public good unless their private welfare is thus improved. But people do, in fact, often act selflessly. In 1998, for example, 70.1 percent of all households gave some money to [**charity**](http://www.econlib.org/library/Enc/Charity.html), the average dollar amount being 2.1 percent of household income.[1](http://www.econlib.org/library/Enc/BehavioralEconomics.html#lfHendersonCEE2-012_footnote_nt014) Likewise, 55.5 percent of the population age eighteen or more did volunteer work in 1998, with 3.5 hours per week being the average hours volunteered.[2](http://www.econlib.org/library/Enc/BehavioralEconomics.html#lfHendersonCEE2-012_footnote_nt015) Similar selfless behavior has been observed in controlled laboratory experiments. People often cooperate in [**prisoners’ dilemma**](http://www.econlib.org/library/Enc/PrisonersDilemma.html) games and turn down unfair offers in “ultimatum” games. (In an ultimatum game, the experimenter gives one player, the proposer, some money, say ten dollars. The proposer then makes an offer of*x,* equal or less than ten dollars, to the other player, the responder. If the responder accepts the offer, he gets *x* and the proposer gets 10 − *x.* If the responder rejects the offer, then both players get nothing. Standard economic theory predicts that proposers will offer a token amount (say twenty-five cents) and responders will accept, because twenty-five cents is better than nothing. But experiments have found that responders typically reject offers of less than 20 percent (two dollars in this example).

**Behavioral Finance**

If economists had been asked in the mid-1980s to name a discipline within economics to which bounded rationality was least likely to apply, finance would probably have been the one most often named. One leading economist called the efficient markets hypothesis (see definition below), which follows from traditional economic thinking, the best-established fact in economics. Yet finance is perhaps the branch of economics where behavioral economics has made the greatest contributions. How has this happened?

Two factors contributed to the surprising success of behavioral finance. First, financial economics in general, and the efficient market hypothesis (see [**efficient capital markets**](http://www.econlib.org/library/Enc/EfficientCapitalMarkets.html)) in particular, generated sharp, testable predictions about observable phenomena. Second, high-quality data are readily available to test these sharp predictions.

The rational efficient markets hypothesis states that stock prices are “correct” in the sense that asset prices reflect the true or rational value of the security. In many cases, this tenet of the efficient market hypothesis is untestable because intrinsic values are not observable. In some special cases, however, the hypothesis can be tested by comparing two assets whose relative intrinsic values are known.

Consider closed-end mutual funds (Lee et al. 1991). These funds are much like typical (open-end) mutual funds, except that to cash out of the fund, investors must sell their shares on the open market. This means that the market prices of closed-end funds are determined by [**supply**](http://www.econlib.org/library/Enc/Supply.html) and [**demand**](http://www.econlib.org/library/Enc/Demand.html) rather than set equal to the value of their assets by the fund managers, as in open-end funds. Because closed-end funds’ holdings are public, market [**efficiency**](http://www.econlib.org/library/Enc/Efficiency.html) would mean that the price of the fund should match the price of the underlying securities they hold (the net asset value, or NAV). Instead, closed-end funds typically trade at substantial discounts relative to their NAV, and occasionally at substantial premia. Most interesting from a behavioral perspective is that closed-end fund discounts are correlated with one another and appear to reflect individual investor sentiment. (Individual investors rather than institutions are the primary owners of closed-end funds.) Lee and his colleagues found that discounts shrank in months when shares of small companies (also owned primarily by individuals) did well and in months when there was a lot of initial public offering (IPO) activity, indicating a “hot” market. Since these findings were predicted by behavioral finance theory, they move the research beyond the demonstration of an embarrassing fact (price not equal to NAV) toward a constructive understanding of how markets work.

The second principle of the efficient market hypothesis is unpredictability. In an efficient market, it is not possible to predict future stock price movements based on publicly available information. Many early violations of this principle had no explicit link to behavior. Thus it was reported that small firms and “value firms” (firms with low price-to-earnings ratios) earned higher returns than other stocks with the same risk. Also, stocks in general, but especially stocks of small companies, have done well in January and on Fridays (but poorly on Mondays).

An early study by Werner De Bondt and Richard Thaler (1985) was explicitly motivated by the psychological finding that individuals tend to overreact to new information. For example, experimental evidence suggested that people tended to underweight base rate data (or prior information) in incorporating new data. De Bondt and Thaler hypothesized that if investors behave this way, then stocks that perform quite well over a period of years will eventually have prices that are too high because people overreacting to the good news will drive up their prices. Similarly, poor performers will eventually have prices that are too low. This yields a prediction about future returns: past “winners” ought to underperform, while past “losers” ought to outperform the market. Using data for stocks traded on the New York Stock Exchange, De Bondt and Thaler found that the thirty-five stocks that had performed the worst over the past five years (the losers) outperformed the market over the next five years, while the thirty-five biggest winners over the past five years subsequently underperformed. Follow-up studies showed that these early results cannot be attributed to risk; by some measures the portfolio of losers was actually less risky than the portfolio of winners.

More recent studies have found other violations of unpredictability that have the opposite pattern from that found by De Bondt and Thaler, namely underreaction rather than overreaction. Over short periods—for example, six months to one year—stocks display momentum: the stocks that go up the fastest for the first six months of the year tend to keep going up. Also, after many corporate announcements such as large earnings changes, dividend initiations and omissions, share repurchases, and splits, the price jumps initially on the day of the announcement and then drifts slowly upward for a year or longer (see Shleifer 2000 for a nice introduction to the field).

Behavioral economists have also hypothesized that investors are reluctant to realize capital losses because doing so would mean that they would have to “declare” the loss to themselves. Hersh Shefrin and Meir Statman (1985) dubbed this hypothesis the “disposition effect.” Interestingly, the tax law encourages just the opposite behavior. Yet Terrance Odean (1998) found that in a sample of customers of a discount brokerage firm, investors were more likely to sell a stock that had increased in value than one that had decreased. While around 15 percent of all gains were realized, only 10 percent of all losses were realized. Odean showed, moreover, that the loser stocks that were held underperformed the gainer stocks that were sold.

**Saving**

If finance was held to be the field in which a behavioral approach was least likely, a priori, to succeed, [**saving**](http://www.econlib.org/library/Enc/Saving.html) had to be one of the most promising. Although the standard life-cycle model of savings abstracts from both bounded rationality and bounded willpower, saving for retirement is both a difficult cognitive problem and a difficult self-control problem. It is thus perhaps less surprising that a behavioral approach has been fruitful here. As in finance, progress has been helped by the combination of a refined standard theory with testable predictions and abundant data sources on household saving behavior.

Suppose that Tom is a basketball player and therefore earns most of his income early in his life, while Ray is a manager who earns most of his income late in life. The life-cycle model predicts that Tom would save his early income to increase consumption later in life, while Ray would borrow against future income to increase consumption earlier in life. The data do not support this prediction. Instead, they show that consumption tracks income over individuals’ life cycles much more closely than the standard life-cycle model predicts. Furthermore, the departures from predicted behavior cannot be explained merely by people’s inability to borrow. James Banks, Richard Blundell, and Sarah Tanner (1998) showed, for example, that consumption drops sharply as individuals retire and their incomes drop because they have not saved enough for retirement. Indeed, many low- to middle-income families have essentially no savings. The primary cause of this lack of saving appears to be lack of self-control. One bit of evidence supporting this conclusion is that virtually all of Americans’ saving takes place in forms that are often called “forced savings”—for example, accumulating home equity by paying the mortgage and participating in pension plans. Coming full circle, individuals may impose another type of “forced” savings on themselves—high tax withholding—so that when the refund comes, they can buy something they might not have had the willpower to save up for.

One of the most interesting research areas has been devoted to measuring the effectiveness of tax-advantaged savings programs such as individual retirement accounts (IRAs) and 401(k) plans. Consider the original IRA program of the early 1980s. This program provided tax subsidies for savings up to a threshold, often two thousand dollars per year. Because there was no tax incentive to save more than two thousand dollars per year, those saving more than the threshold should not have increased their total saving, but instead should have merely switched some money from a taxable account to the IRA. Yet, by some accounts, these programs appear to have generated substantial new savings. Some researchers argue that almost every dollar of savings in IRAs appears to represent new savings. In other words, people are not simply shifting their savings into IRAs and leaving their total behavior unchanged. Similar results are found for 401(k) plans. The behavioral explanation for these findings is that IRAs and 401(k) plans help solve self-control problems by setting up special mental accounts that are devoted to retirement savings. Households tend to respect the designated use of these accounts, and the tax penalty that must be paid if funds are removed prematurely bolsters people’s self-control.[3](http://www.econlib.org/library/Enc/BehavioralEconomics.html#lfHendersonCEE2-012_footnote_nt016)

An interesting flip side to IRA and 401(k) programs is that these programs have generated far less than the full participation expected. Many eligible people do not participate, forgoing, in effect, a cash transfer from the government (and in some cases from their employer). TedO’Donoghue and Matthew Rabin (1999) presented an explanation based on procrastination and hyperbolic discounting. Individuals typically show very sharp impatience for short-horizon decisions, but much more patience at long horizons. This behavior is often referred to as hyperbolic discounting, in contrast to the standard assumption of exponential discounting, in which patience is independent of horizon. In exponential models, people are equally patient at long and short horizons. O’Donoghue and Rabin argued that hyperbolic individuals will show exactly the low IRA participation that we observe. Though hyperbolic people will eventually want to participate in IRAs (because they are patient in the long run), something always comes up in the short run (where they are very impatient) that provides greater immediate reward. Consequently, they may indefinitely delay starting an IRA.

If people procrastinate about joining the savings plan, then it should be possible to increase participation rates simply by lowering the psychic costs of joining. One simple way of accomplishing this is to switch the default option for new workers. In most companies, employees who become eligible for the 401(k) plan receive a form inviting them to join; to join, they have to send the form back and make some choices. The default option, therefore, is not to join. Several firms have made the seemingly inconsequential change of switching the default: employees are enrolled into the plan unless they explicitly opt out. This change often produces dramatic increases in savings rates. For example, in one company studied by Brigitte C. Madrian and Dennis F. Shea (2000), the employees who joined after the default option was switched were 50 percent more likely to participate than the workers in the year prior to the change. The authors also found that the default asset allocation—that is, the allocation the firm made among stocks, [**bonds**](http://www.econlib.org/library/Enc/Bonds.html), and so on if the employee made no explicit choice—had a strong effect on workers’ choices. The firm had made the default asset allocation 100 percent in a money market account, and the proportion of workers “selecting” this allocation soared.

It is possible to go further and design institutions that help people make better choices, as defined by the people who choose. One successful effort along these lines is Richard Thaler and Shlomo Benartzi’s (2004) “Save More Tomorrrow” program (SMarT). Under the SMarT plan, employers invite their employees to join a plan in which employees’ contribution rates to their 401(k) plan increase automatically every year (say, by two percentage points). The increases are timed to coincide with annual raises, so the employee never sees a reduction in take-home pay, thus avoiding loss aversion (at least in nominal terms). In the first company that adopted the SMarT plan, the participants who joined the plan increased their savings rates from 3.5 percent to 13.6 percent after four pay raises (Thaler and Benartzi 2004).

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**Further Reading**

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**Footnotes**

[**\***](http://www.econlib.org/library/Enc/BehavioralEconomics.html#c_lfHendersonCEE2-012_footnote_nt013)

This article is a revision of a manuscript originally written as an entry in the *International Encyclopedia of the Social and Behavioral Sciences.*

[**1.**](http://www.econlib.org/library/Enc/BehavioralEconomics.html#c_lfHendersonCEE2-012_footnote_nt014)

Data are from the *Chronicle of Philanthropy* (1999), available online at:**[http://philanthropy.com/free/articles/v12/i01/1201whodonated.htm](http://philanthropy.com/free/articles/v12/i01/1201whodonated.htm%22%20%5Ct%20%22_blank)**.

[**2.**](http://www.econlib.org/library/Enc/BehavioralEconomics.html#c_lfHendersonCEE2-012_footnote_nt015)

Data are from Independent Sector (2004), available online at:[**http://www.independentsector.org/programs/research/volunteer\_time.html**](http://www.independentsector.org/programs/research/volunteer_time.html).

[**3.**](http://www.econlib.org/library/Enc/BehavioralEconomics.html#c_lfHendersonCEE2-012_footnote_nt016)

Some issues remain controversial. See the debate in the fall 1996 issue of the *Journal of Economic Perspectives.*