

# THE ROLE OF BEHAVIORAL ECONOMICS AND BEHAVIORAL DECISION MAKING IN AMERICANS' RETIREMENT SAVINGS DECISIONS

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*Traditional economic theory posits that people make decisions by maximizing a utility function in which all of the relevant constraints and preferences are included and weighed appropriately. Behavioral economists and decision-making researchers, however, are interested in how people make decisions in the face of incomplete information, limited cognitive resources, and decision biases. Empirical findings in the areas of behavioral economics and judgment and decision making (JDM) demonstrate departures from the notion that man is economically rational, illustrating instead that people often act in ways that are economically suboptimal. This article outlines findings from the JDM and behavioral-economics literatures that highlight the many behavioral impediments to saving that individuals may encounter on their way to financial security. I discuss how behavioral and psychological issues, such as self-control, emotions, and choice architecture can help policymakers understand what factors, aside from purely economic ones, may affect individuals' savings behavior.*

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## **Introduction**

Traditional economic theory posits that people make decisions by maximizing a utility function in which all of the relevant constraints and preferences are included and weighed appropriately (Simon 1959). Traditional theory assumes that individuals have full information and are able to process this information, that individuals are rational decision makers, and that individuals' preferences are well-defined and constant over time (Becker 1962; Thaler 1990). Behavioral economists and decision-making researchers question these assumptions, however, and are interested in how people make decisions in the face of incomplete information, limited cognitive resources, and the decision biases to which individuals often fall prey (for example, Thaler 1990, 1999; Tversky and Kahneman 1974). Empirical findings in the areas of judgment and decision making (JDM) and behavioral economics depart from the notion of man as economically rational, illustrating instead that people often act in ways that are economically suboptimal. This article outlines findings from the JDM and behavioral-economics

literatures that focus on elements of the retirement savings decision.

The reality facing today's workers—that Social Security will not, nor was it intended to, constitute the entirety of U.S. workers' retirement income (DeWitt 1996)—has highlighted the importance of personal financial responsibility. The growing number of employers offering defined contribution retirement plans such as 401(k)s in addition to, or in lieu of, traditional defined benefit or pension plans (EBRI 2007) further underscores the role of the individual in planning for his or her future financial well-being. Unfortunately, workers face a multitude of problems

### **Selected Abbreviations**

EBRI	Employee Benefits Research Institute
IRA	individual retirement account
JDM	judgment and decision making
RSP	Retirement Security Project
SSA	Social Security Administration

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when making all kinds of decisions, both simple and complex.

Research in JDM and behavioral economics<sup>1</sup> offers insights into how individuals may behave when deciding if, how, and when to save for retirement. This article highlights key JDM and behavioral-economics findings whose implications can help policymakers understand which factors, aside from purely economic ones, may affect individuals' savings behavior. The concepts reviewed below fall loosely into four categories: informational issues, heuristics and biases, intertemporal choice, and the decision context (Exhibit 1). Each of these categories represents a class of potential impediments to future financial well-being.

**Exhibit 1.  
Selected factors affecting individuals' savings behavior**

Category	Examples
Informational issues	<i>Ambiguity aversion</i> <i>Anecdotal evidence</i>
Heuristics and biases	<i>Rules of thumb</i> <i>Status quo bias</i> <i>Default effects</i>
Intertemporal choice	<i>Self-control</i> <i>Procrastination</i> <i>Hyperbolic discounting</i> <i>Emotions</i>
Decision context	<i>Reference dependence</i> <i>Choice bracketing</i> <i>Framing effects</i> <i>Choice architecture</i>

The first category deals with informational issues, such as *ambiguity aversion* (the tendency to avoid making decisions when some of the relevant information is unknown or unclear) and an overreliance on *anecdotal evidence*. Even if decision makers had complete and accurate information, however, empirical findings suggest that they would still make sub-optimal savings decisions as a result of issues related to the second category, heuristics and biases. The tendency for individuals to disproportionately endorse the status quo alternative (*status quo bias*) and the systematic influence of the default option on choice (*default effects*) are anomalies or biases unaccounted

for by traditional economic models. Additionally, individuals make use of heuristics, or *rules of thumb*, which are generally beneficial but can lead decision makers astray. The third category, intertemporal choice, involves issues of *self-control*, *procrastination*, *hyperbolic discounting* (that is, a change in preference as a future event draws closer), and *emotions* that can affect savings behavior. Finally, JDM and behavioral-economics research demonstrates the impact of the decision context on choice; this research highlights how *reference dependence* and simple changes in the way options are presented, considered, or arranged (*choice bracketing*, *framing effects*, and *choice architecture*) can have profound effects on the choices individuals ultimately make.

Awareness of these and other behavioral concepts can help policymakers anticipate and plan for potential behavioral responses not accounted for in traditional economic models. This literature review consists of three main sections. The first describes why JDM and behavioral-economics research is important for our understanding of savings behavior, particularly in the current economic climate. The second outlines findings from JDM and behavioral economics that fall into the four categories delineated above, citing relevant research and its implications for the savings decision. The third offers some directions for future research in the application of JDM and behavioral economics to the study of retirement saving.

***The Relevance of Behavioral Economics and JDM in the Current Savings Climate***

Even as Americans are being called upon to take charge of their financial well-being for retirement, studies have shown that people do not always act in their own best interest. A wealth of JDM and behavioral-economics research demonstrates a disconnect between intentions and behavior (for example, Loewenstein 1996; Mitchell and Utkus 2003; Thaler and Shefrin 1981), and between doing what we *ought* to do and what we *want* to do (for example, O'Connor and others 2002). Survey research on retirement savings suggests a similar disconnect. For example, in 2001, 82 percent of respondents to a Consumer Federation of America and Bank of America survey reported that they would like to save money and “build personal wealth,” yet 60 percent felt that the statement “I don’t think I’m saving enough for the future” described them well or very well (CFA/BOA 2001). Americans appear to want to make sound financial decisions: They want to spend less and save more. However,

Americans' actual savings represent less than 5 percent of their disposable income.<sup>2</sup> Furthermore, about 75 percent of 1996 Health and Retirement Survey respondents felt that they had not saved enough for retirement and would save more if they could start over again (NIA 2007). Research in behavioral economics and behavioral decision making seeks to explain why individuals often make suboptimal decisions, even when they have good intentions.

The recent economic downturn has caused many investors to worry about their retirement savings (EBRI 2009). Individuals heavily invested in equities have been most hard-hit, and a significant percentage of older investors is among this group. A February 2009 report from the Employee Benefit Research Institute (EBRI) indicated that almost a quarter (22 percent) of those aged 56–65 included in the EBRI/Investment Company Institute 401(k) database had 90 percent or more of their assets invested in equities. An additional 21 percent of participants in this age group had between 70 percent and 90 percent of their investments in equities (VanDerhei 2009). Investors are often encouraged to redistribute some of their retirement investments toward less-risky prospects as they age;<sup>3</sup> the recommended allocation shift helps ensure that a potential stock market decline will not drastically reduce their retirement funds. With such recommendations in place, why did older investors with more than \$200,000 in retirement savings<sup>4</sup> at year-end 2007 lose more than 25 percent of these funds in 2008 (VanDerhei 2009)?

An obvious answer is that these investors did not know about the recommendation, or lacked confidence to act if they did. Given the complexities involved in determining the optimal allocation of retirement investments, average investors should not be expected to formulate the “shift in equity” rule of thumb on their own. However, with the trend toward defined contribution plans, and the resulting increase in personal responsibility for retirement planning, the issue of financial literacy has received more attention in recent years. Moreover, 401(k)s and stock assets are not the only areas in which consumers must navigate through increasingly complicated financial systems, often to their own detriment. Previous research has shown, for example, that individuals make “financial mistakes” when dealing with credit card fees and interest payments, car loans, mortgages, and home equity lines of credit, to name a few (Agarwal and others 2006). Many institutions, both public and private, have stepped up their efforts to educate people

of all ages on various aspects of their financial well-being.<sup>5</sup> Although enhancing financial literacy is an important step, improved knowledge may not guarantee sound financial decisions. Research suggests that even experts with vast knowledge in a particular domain are not immune to making erroneous judgments and decisions in that domain (Hutton and Klein 1999; Shanteau 1988; Shanteau and Stewart 1992). As explained below, numerous impediments to sound decision making can arise despite complete and accurate information.

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### ***Behavioral Economics, JDM, and the Savings Decision***

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This section discusses findings from the JDM and behavioral-economics literatures that can help explain factors affecting Americans' retirement savings decisions. The four categories highlighted below encompass potential obstacles to optimal retirement savings and aspects of the decision-making process that are unaccounted for by traditional economic theory.

#### ***The Impact of Incomplete and Erroneous Information on Savings Behavior***

Research in JDM and behavioral economics suggests that the amount, source, and nature of the information individuals receive about saving are likely to influence savings decisions. Although the recent push toward improved financial literacy for all Americans is a positive step toward better financial decision making, research suggests that greater knowledge does not necessarily result in more optimal decision making (for example, Shanteau and Stewart 1992). Furthermore, financial literacy is far from universal in the United States; at present, many individuals do not understand even the most basic financial concepts. For example, using a module inserted into the 2004 Health and Retirement Survey, Lusardi and Mitchell (2005) found that only about half of a nationally representative sample of respondents aged 50 or older were able to answer simple questions about compounding interest and inflation. Consistent with the notion that a lack of financial knowledge can result in poor retirement savings decisions (Olsen and Whitman 2007), Lusardi and Mitchell observed that respondents who were more knowledgeable about financial information were also more likely to have engaged in financial planning.

**Ambiguity aversion and competence.** Lusardi and Mitchell's (2005) finding that greater financial knowledge and participation in financial planning were positively related underscores the connection

between information, intentions, and behavior. Included in Lusardi and Mitchell's questionnaire were questions about participants' financial preparations for retirement: whether or not the participants had ever calculated how much they would need to save for retirement, whether they had ever developed a retirement savings plan, and what tools (such as online calculators or worksheets) they had used to plan for retirement. The questionnaire also included a financial literacy measure to assess respondents' awareness of fundamental concepts needed to plan for future financial well-being. The financial literacy assessment suggested that many individuals do not have adequate knowledge to engage in sound planning. Could this lack of knowledge prevent people from even *attempting* to plan for retirement?

Research on decision making under ignorance has demonstrated that the type and amount of information individuals receive can, in fact, paralyze the decision-making process. For example, research has shown that people prefer options for which the risks are known to options for which the risks are unknown or unspecified, a tendency labeled ambiguity aversion.<sup>6</sup> One stream of research emerging from the ambiguity aversion literature investigates the *competence hypothesis*; that is, how competence or knowledge in a relevant domain affects individuals' preferences. For example, Heath and Tversky (1991) found, contrary to the ambiguity aversion hypothesis, that participants did not prefer an option with known risks to an option with ambiguous risks when the options occurred within a familiar domain. In one of their experiments, participants who were knowledgeable about football (or politics) preferred to bet on their beliefs about the outcome of a football game (or a presidential election) to betting on a chance event with an equal probability. However, participants who knew little about football (or politics) preferred to bet on a chance event rather than on the outcome of the game (or election). Fox and Tversky (1995) and Fox and Weber (2002) suggest that this pattern of findings is based on *comparative ignorance*.

The comparative ignorance hypothesis posits that when individuals confront a choice, they compare their level of knowledge in the relevant domain to their knowledge in other domains or to others' knowledge in the relevant domain. This comparison, in turn, produces feelings of competence or ignorance; when a feeling of ignorance results, people judge the situation as ambiguous and seek to avoid it. Specifically, Fox and Tversky (1995, 587) argue that "people's confidence is undermined when they contrast their

limited knowledge about an event with their superior knowledge about another event, or when they compare themselves with more knowledgeable individuals."

The competence and comparative ignorance hypotheses suggest that ambiguity aversion arises from feelings of inadequacy in a particular domain. Thus, uncertainty about economic issues may lead individuals to avoid making financial decisions altogether. Lusardi and Mitchell (2005, 2007) conducted research on individuals' propensity to engage in financial planning that independently supports these hypotheses. In addition to finding that financial *knowledge* impacted respondents' involvement in financial planning, the authors found that individuals' *confidence* with retirement planning affected their likelihood of participating in financial planning activities. Specifically, Lusardi and Mitchell (2005) found that participants who answered "don't know" to the financial literacy questions were much less likely to engage in retirement planning than those who simply gave incorrect answers. Thus, although the authors did not set out to test the competence and comparative ignorance hypotheses, their findings support the hypotheses' predictions that individuals who lack confidence in the relevant domain (in this case, financial planning) tend to avoid making decisions.

The competence and comparative ignorance hypotheses address the role of subjective judgments, such as feelings of confidence, in decision making. Lusardi and Mitchell (2007) explored the validity of subjective feelings of financial competence by asking respondents from the RAND American Life Panel to assess their *own* financial knowledge. For comparison, respondents also answered questions designed to gauge their financial literacy and preparedness objectively. The authors found that self-assessed financial literacy was positively related to objective financial literacy.<sup>7</sup> Thus, financial literacy, whether subjectively or objectively determined, appears to be a key factor in financial planning.

The link between confidence and ambiguity aversion has important implications for the types of communications financial institutions use to reach their clients. Heath and Tversky (1991) argue that one's feeling of competence within a domain is determined by the relationship between what one knows and what one *could* know, and that feelings of incompetence are exacerbated when relevant information that one does not possess or understand is made salient. One way to draw attention to an individual's lack of knowledge is to ask questions to which one does not know the

answers. For example, users of online retirement calculators may be asked to enter inflation estimates and wage growth assumptions.<sup>8</sup> However, many people do not possess this type of knowledge (Lusardi and Mitchell 2005, 2007). Therefore, an individual who attempts to plan for retirement may walk away from the episode feeling more confused than before. Indeed, Agnew and Szykman (2005) found that “financial aptitude” interacted with certain aspects of retirement plan design; for example, lower-knowledge individuals were more likely to remain with the default option than were individuals with higher knowledge. The realization that there is a great deal of information that one does not understand, or of which one is unaware, can paralyze the decision-making process. This poses a potential problem for policymakers: Ensuring that all of the relevant information is available to those who want it and can use it, without driving away or confusing those who are less financially savvy, may be a difficult balance to strike.

**Anecdotal evidence.** As an alternative to avoiding the savings decision, ill-informed individuals may turn to others whom they consider more knowledgeable. The extremely long and complex tax code, for example, causes people to flock to professional tax preparers each April. There is little doubt that attempting to file one’s own taxes makes salient the wealth of information one could know but does not know, which may lead individuals to want to avoid the situation altogether. Similar feelings of incompetence likely arise when people attempt to choose retirement accounts and asset allocations; but whereas taxes must be filed annually, people can continually defer making savings decisions. Nevertheless, when one does decide to save for retirement, apprehension resulting from a lack of knowledge could arise. Measures put in place by some employers, such as automatic enrollment in individual retirement accounts (IRAs), allow individuals to begin investing without having to confront their lack of knowledge (for example, Thaler and Benartzi 2004). However, if investors are motivated to invest their funds more optimally than the default allocation, feelings of incompetence can surface upon attempting to learn about one’s finances.

To remedy this sense of inadequacy, investors often turn to professional advisors for help. However, professional advice often comes at a cost, leaving many lower-income individuals to rely on other sources for their information. Using the 2004 Survey of Consumer Finances, Olsen and Whitman (2007) found that individuals who save and whose household income

exceeds \$70,000 are the most likely to use formal financial advice, such as that from lawyers, bankers, or financial planners, while those making less than \$20,000 rely most heavily on informal advice, such as that from a friend or relative. Additionally, van Rooij, Lusardi, and Alessie (2007) demonstrated that individuals with low levels of financial literacy are more likely than the financially literate to rely on advice from friends and family when making financial decisions. Finally, Olsen and Whitman (2007) observed that between 45 and 50 percent of *all* reported savers in the Survey of Consumer Finances indicated using public sources, including television, radio, and the Internet, for investment advice.

With the prevalent availability and use of investment-related anecdotal evidence, it is important to address the potential effects of such information on the savings decision. Particularly in the current economic climate, individuals are often bombarded with abundant, but potentially superficial, financial information. The information disseminated on television—for example, on “The Suze Orman Show”—is not necessarily intended to be a one-size-fits-all recommendation; advice intended for those nearing retirement age may be significantly different from recommendations for young workers in their first job. Nevertheless, Orman’s “Can I Afford It?” show segment, in which the host gives tailored financial advice to callers hoping to be given the “go ahead” to purchase specific items, is wildly popular. As of May 2009, Orman’s viewership had increased over 22 percent since the same time the previous year (Dominus 2009), an indication that more people are interested in financial advice, and they are looking to public sources to find it.

The success of Orman’s show and, in particular, the popularity of the “Can I Afford It?” segment, is a testament to research showing that people are much more receptive to anecdotes and personal testimonials than they are to statistics (for example, Fagerlin, Wang, and Ubel 2005). Much of the research revealing a reliance on anecdotal information has focused on medical decisions (for example, Ubel, Jepson, and Baron 2001), but this reliance likely cuts across all domains. Medical decision-making researchers often find that patients’ treatment preferences are influenced by stories of people who have undergone similar treatments. Additionally, everyday examples of people’s tendency to place more weight on anecdotal evidence than on statistical evidence are not hard to find. For example, a driver whose friend died in a car accident because his fastened seat belt malfunctioned is less likely to

wear a seat belt than a driver who knows no such person—even though seat belts save thousands of lives each year. One reason commonly cited for the power of anecdotal evidence is that people can more easily identify with a specific real person than with an abstract “average” person (Jenni and Loewenstein 1997), whom people overwhelmingly believe themselves to be different from in many ways (for example, Alicke and others 1995). Additionally, individuals may find anecdotal evidence to be more convincing than relevant statistics, because people often do not understand how to accurately interpret statistical information (for example, Lipkus, Samsa, and Rimer 2001). Finally, anecdotes invoke strong emotions, which may alter individuals’ perceptions of risk (Loewenstein and others 2001).

All of these explanations for the influence of anecdotal evidence apply well to the financial domain. For example, when deciding how to allocate funds in their own retirement portfolios, people may ask friends how they allocated theirs. Even though the average person tends to make more money investing in stocks than in bonds in the long run, an investor whose friend has lost a lot of money in stocks may decide to invest in less risky options, so as not to follow in the friend’s unfortunate footsteps. People who do not understand the difference in risk that accompanies investing in one group of stocks over another are likely to find their friends’ and families’ advice and stories more convincing than the relevant statistics. Most applicable in the current financial climate are stories and anecdotes from depressed investors who have lost significant portions of their retirement funds. Such stories can evoke strong emotions in individuals trying to determine what to do with their own money. The strong, negative feelings prompted by anecdotal evidence may lead potential investors to infer greater investment risk than is warranted (for example, Lerner and Keltner 2000; Loewenstein and others 2001; Raghunathan and Pham 1999). Informal advice from friends, family members, and public media outlets can shape investors’ financial decisions, leading them to make potentially suboptimal choices.

### **Heuristics and Biases Influence Savings Behavior**

Informational concerns collectively comprise only one piece of the retirement puzzle; they most certainly cannot account for all of the suboptimal decisions investors make in their quest for retirement security. Recall the EBRI report discussed earlier showing that about a quarter of 56- to 65-year-olds surveyed had more than

90 percent of their investments in equities, contrary to the “shift in equity” rule of thumb. If these individuals had been better educated about the importance of reducing asset risk as they moved closer to retirement, would they have been better off? JDM research in the heuristics-and-biases tradition suggests that, for a variety of reasons, people tend to distort information in meaningful and systematic ways. Furthermore, individuals often rely on *heuristics*, or rules of thumb, when making decisions;<sup>9</sup> and although heuristics lead individuals down the right path most of the time (Gigerenzer 2008), their use also produces systematic and predictable judgment errors (Tversky and Kahneman 1974). As a result, the use of heuristics and the biases that result can lead to decision errors even in the presence of accurate and complete information.<sup>10</sup>

**Rules of thumb and System 1 processing.** Even if individuals do not expressly seek financial advice, they likely will acquire economic information incidentally. Any news program, radio talk show, newspaper, or magazine is almost certain to mention topics related to personal finances, and many dinner conversations with friends or family are bound to include some reference to the economy. JDM research has demonstrated that the ease or difficulty with which information can be brought to mind, as well as the frequency with which a piece of information has been encountered, affects people’s judgments. It is quite possible, then, that even incidental contact with financial information can influence people’s financial decisions. The *availability heuristic* (Tversky and Kahneman 1973, 1974) is the tendency for people to use the ease with which instances of a particular event or situation come to mind as an indication of the likelihood of the event occurring. As such, the amount of news coverage a certain event receives can help to shape people’s judgments regarding the likelihood of the same event or outcome happening to them. For example, early research showed people tend to wrongly estimate the incidence of homicide to be greater than that of suicide (Lichtenstein and others 1978), and such incorrect probability judgments have been tied directly to the number of words dedicated to relevant events in newspapers. This finding suggests that investors who hear many news reports (or one particularly vivid one) about future retirees losing large portions of their retirement savings may come to think that they are destined to meet the same fate. As a result, nervous investors may pull their money out of their retirement funds or shift their funds to less risky prospects. News programs rarely report on the scores of people whose

savings were not as hard-hit, and this biased reporting can lead viewers to believe that the probability of a negative outcome is far greater than it actually is (Combs and Slovic 1979). Similarly, the vividness of an entire news segment dedicated to “one man’s quest for survival in retirement,” for example, can help skew viewers’ estimates of the likelihood that the same outcome will befall them if they do not move all of their investments to no-risk savings accounts.<sup>11</sup>

The *validity effect*—the finding that repeated statements are judged to be more valid (for example, Hasher, Goldstein, and Toppino 1977)—may also be relevant to the impact of news reports and family discussions on an individual’s financial behavior. Newscasts tend to report on hot topics such as “what to do with your 401(k),” and they tend to give the same solutions to the issues each time. This means that a viewer is likely to hear the same advice repeatedly. The validity effect describes how an individual might take as truth opinions expressed in a newscast that may or may not be true. Simply by repeating the same messages, news reports can influence the financial decisions an investor makes.

It may seem hard to believe that competent decision makers could be so easily influenced by the vividness of a story or the number of times they heard a news item, but psychological research suggests that people are prone to such heuristic “thinking” (Tversky and Kahneman 1974). People tend to reason intuitively—“going with their gut”—which results from *System 1 processing* (Stanovich and West 2000). System 1 processing is automatic, intuitive, quick, and emotional, while System 2 processing is more effortful, slow, and controlled. People typically rely on System 1 when they do not have the time or cognitive capacity to carefully process all of the available information. Because the time required for careful processing is typically scarce in a fast-paced and complex world, many researchers argue that people operate in System 1 most of the time (for example, Gilbert 2002), although System 2 can override System 1 in certain circumstances (Kahneman 2003).<sup>12</sup> System 1 and System 2 processing are further discussed later, but for now it is important to note that the tendency to process information quickly and intuitively can lead decision makers to be influenced by extraneous and emotion-laden factors.

**Status quo bias.** Recall the asset reallocation problem in which some investors do not follow the shift-in-equity rule of thumb. Research in behavioral economics and behavioral decision making suggests that, even

with full knowledge of recommended allocation strategies, investors will likely fail to reallocate their funds throughout their lives. Traditional economic theory cannot account for such suboptimal behavior, but a classic finding from the JDM literature does: Individuals exhibit the *status quo bias*. Simply put, when the opportunity exists either to do something or to do nothing, people tend to do nothing (Samuelson and Zeckhauser 1988). The average investor probably does not solve the asset allocation problem as an economist would, and may remain invested in too many equities too close to retirement. JDM and behavioral-economics research enables policymakers to anticipate this situation and formulate plans to combat it. For example, many retirement plans now offer life-cycle funds, mutual funds in which the time horizon of one’s savings goal determines the asset allocation; these funds allow allocations to shift over time, with little to no effort on the part of the investor (Schooley and Worden 1999). In essence, life-cycle funds allow investors to make more optimal allocations by simply doing nothing.<sup>13</sup>

In an early demonstration of the status quo bias, Samuelson and Zeckhauser (1988) found that, over their lifetimes, more than half of TIAA-CREF plan participants in 1987 had never changed their initial chosen asset allocation of 50 percent stocks and 50 percent bonds. Although these individuals likely had more stocks in their portfolio at retirement than is recommended, asset allocation is not the only example of the impact of the status quo bias on financial well-being. Automatic-enrollment plans, such as Thaler and Benartzi’s “Save More Tomorrow” (SMarT) plan, exploit individuals’ tendency to stick with the status quo. With automatic enrollment, employees enter into a savings plan by default and must take action to withdraw from the plan; few individuals exercise their right to opt out. In addition to automatic enrollment, the SMarT program also includes automatic increases in contribution rates following pay increases, as the status quo bias suggests that investors will fail to actively increase their contributions over time. These aspects of the SMarT program, along with some other key components, led to substantial increases in the savings rates of employees in three major companies (Thaler and Benartzi 2004). In another real-world example of the influence of automatic enrollment on subsequent participation in a 401(k) plan, Madrian and Shea (2001) found that 86 percent of employees in a large U.S. corporation participated in the company’s 401(k) plan when enrollment was automatic, as

compared to the 49 percent of employees who participated when they had to enroll actively.

In addition to observing the effects of the status quo bias on 401(k) participation, Madrian and Shea (2001) found differences in 401(k) contributions between those who were automatically enrolled and those who had to expressly elect enrollment. Specifically, those who participated in the 401(k) plan as a result of automatic enrollment contributed about 3 percent to the plan, while those who elected to participate before automatic enrollment was introduced contributed over 7 percent of their pay to the plan. Why should there be a difference in contribution rates between those who were automatically enrolled and those who had to actively enroll in the 401(k) plan? Not surprisingly, 3 percent was the default contribution rate under the automatic enrollment plan. The results from the naturalistic experiment reported by Madrian and Shea therefore highlight a different, but related, finding from research in behavioral decision making: defaults matter.

**Default effects.** Defaults have proven to have profound effects on individuals' behavior in a variety of contexts. For example, Johnson and Goldstein (2003) demonstrated the effects of defaults on participants' willingness to be organ donors and reported on the donation rates of countries adopting opt-in versus opt-out organ-donation policies. In all cases, countries whose residents have to opt in to organ donation show dramatically lower donation rates than those that assume residents want to donate while reserving the right to opt out. Researchers have observed similar default effects in the domain of automobile insurance. Johnson and others (1993) found that New Jersey and Pennsylvania motorists tended to stay with their respective states' insurance policy defaults regarding the right to sue. The authors observed that, as a result, 80 percent of New Jerseyans did not have the right to sue, while 75 percent of Pennsylvanians did.

Returning to the domain of retirement investment decisions, Choi and others (2004) reported that among three different companies, between 65 percent and 87 percent of employees participating in a 401(k) plan because of automatic enrollment tended to stick with the default contribution rate of 3 percent or less. The authors did find, however, that the effect of the default decreased over time. Nevertheless, by contributing the lower default rates to employer-sponsored 401(k) plans, employees often sacrifice substantial matching funds over time (Thaler and Benartzi 2004). From an economic perspective, differences in defaults should

have no bearing on individuals' decisions regarding whether to participate or how much to contribute to retirement saving plans; economically rational human beings should choose the option that maximizes their utility, regardless of the status quo and the default option. However, the research shows that default options and the status quo affect individuals' decisions in a variety of contexts.<sup>14</sup> Policymakers who anticipate these effects have the unique opportunity to construct decision environments and design options that produce welfare-improving outcomes for individuals who choose simply to do nothing.

The implications of the status quo bias and default effects for retirement savings behavior are apparent, and policymakers have already begun to "harness the power of inertia" (Brookings Institution 2010) to encourage Americans to save. Although selecting savings-promoting defaults and automatically enrolling employees into retirement savings accounts are reliable ways to increase savings behavior, approximately 78 million employees (about half of the U.S. workforce) have no access to employer-sponsored retirement plans (Iwry and John 2009). For roughly half of the nation's employees, then, default effects and automatic enrollment are moot points. The Brookings Institution's Retirement Security Project (RSP) is attempting to change that by facilitating retirement savings for U.S. workers whose employers do not offer 401(k) plans (Iwry and John 2009). The RSP proposes creating mandatory automatic IRAs; employers with more than 10 employees would automatically deduct payroll funds and place them in the employee's account. Although enrollment in the IRA would be automatic, employees would have the opportunity to opt out of the plan at any time. Additionally, these IRAs would specify a default investment fund; however, the details of this aspect of the plan remain to be determined.

### ***Intertemporal Choice and Saving***

The automatic IRAs proposed by the RSP plainly make use of the behavioral decision-making research findings on status quo bias and default effects, but they also draw attention to another aspect of decision-making research, namely *self-control* and *procrastination*.

**Self-control and procrastination.** Only 8–10 percent of workers eligible for IRAs participate in such self-initiated plans, while nearly 70 percent of workers whose employers sponsor retirement plans, such as 401(k)s, choose to participate (Iwry and John 2009; Springstead and Wilson 2000). The need to save for



retirement is universal, so why should those with employer-sponsored savings plans save at such significantly higher rates than those who must save on their own? The transaction cost of making a deposit into an IRA likely is one reason for the discrepancy in enrollment rates, but it is not the whole story. Going to the bank is not so onerous that it would preclude millions of otherwise financially savvy individuals from saving for retirement. Likewise, although employers often offer an attractive partial match of employee contributions to the plans they sponsor, this difference between IRAs and 401(k)s cannot entirely account for the difference in participation rates; if it did, the participation rate in employer-sponsored plans with an employer match would be closer to 100 percent (Thaler and Sunstein 2008).<sup>15</sup> Instead, opening one's own IRA may be akin to starting a weight-loss program. Not eating a tempting snack now in the pursuit of future weight loss is similar to reducing one's current income (thereby forfeiting some tempting purchases) in the pursuit of a comfortable retirement. The chronic dieter's promise to "start my diet on Monday" may be repeated countless times before the dieter finally decides to get serious and put down the cookie. Similarly, the chronic spender may tell herself she will enroll in a retirement savings plan when she receives her next paycheck, but repeatedly fails to submit the form or take the trip to the bank.<sup>16</sup>

Thaler and Shefrin (1981) describe this internal struggle as a conflict between a "farsighted *planner*" and a "myopic *doer*." The planner's main concern is utility over the lifetime, while the doer is only concerned with the present. In order to save adequately for retirement or successfully lose weight, the planner must manage the doer by creating incentives to act less myopically or by setting up rules that preclude short-sighted behavior. This underscores one critical benefit of automatic payroll deductions: Before an employee ever receives his or her paycheck, the money designated for retirement has already been deducted and deposited into the retirement account. Self-control has been removed from the equation. Additionally, automatic enrollment in a retirement account removes procrastination from the equation.<sup>17</sup> The automatic IRA that the RSP proposes would likewise allow individuals whose employers do not offer retirement plans a way to circumvent the self-control and procrastination problems. Even without employer-matched contributions, employees enrolled in automatic IRAs can reap the benefits associated with retirement savings via payroll deduction.<sup>18</sup>

**Hyperbolic discounting.** One reason why self-control and procrastination issues impede saving for retirement is *hyperbolic discounting*. Again, people typically intend to forfeit small, immediate gains for larger rewards in the future, but they often fail to make the optimal choice at decision time (Kirby and Herrnstein 1995). For example, in the middle of the week, a dieter can say with confidence that she will start her diet on Monday. This is because the warm chocolate chip cookie that will tempt her on Monday (a smaller, sooner reward) *and* the weight loss that would result from not eating the cookie (a larger, later reward) are both in the future. However, on Monday, when the choice to eat the cookie is in the present and only a slimmer physique is in the future, the dieter is likely to eat the cookie. Such a preference reversal occurs because, contrary to the economic axiom of *stationarity* (Fishburn and Rubenstein 1982), individuals do not discount the future at a constant rate. Instead, people tend to discount the future in a hyperbolic fashion, such that the relative preferences for a larger, later reward and a smaller, sooner reward change with the passage of time. As the decision point for the two options draws nearer to the present, the decision maker values the small, immediate reward more than the larger future reward. Kirby and Herrnstein demonstrated this effect by varying participants' opportunities to receive pairs of real monetary awards or goods at various times in the future. As both options moved farther into the future, the experiment's subjects reversed their previous preference, and chose the larger, later reward over the smaller, earlier reward, illustrating hyperbolic discounting of time.<sup>19</sup>

Interestingly, individuals tend to recognize that they may forsake their long-term goals for instant gratification; as Laibson (1997) notes, people value self-control, though many feel they do not have enough of it. In recognizing this flaw in their own judgment, some individuals employ *precommitment strategies* to help them to accomplish their long-term goals. For example, one might set one's alarm clock an hour early with the intention of going for a morning jog. When staying in bed for an extra hour and a morning run are both in the future, the exercise is more highly valued. However, many individuals know that when the alarm sounds, staying in bed will be much more attractive than the promise of good health later. Some individuals, aware of and acting to overcome their dynamically inconsistent time preferences, will place the alarm clock across the room so that the tired, myopic self will have to get out of bed. Other examples of

precommitment strategies include Christmas clubs<sup>20</sup> and annual gym memberships. Saving for retirement involves a trade-off between more money in one's pay-check now and a more comfortable life in the future, much as weight loss involves a trade-off between sleeping in now and better health later. The nature of retirement savings, then, almost requires individuals to use precommitment devices. Payroll deduction is one such device. In fact, retirement accounts themselves serve as precommitment devices, inasmuch as they discourage impulsive behavior through penalties on early withdrawal. Laibson (1997, 445) describes such accounts as having "golden egg" properties; that is, they provide large long-term advantages at the expense of immediate benefits.

**Emotions.** Evidence of the effects of emotions on decision making is far too abundant to discuss in its entirety here. Emotions can affect which variables enter into one's decisions, the decision outcomes themselves, and postdecision variables, such as satisfaction with and adherence to the decision (for example, Baron 1992; Rick and Loewenstein 2008). Although a discussion of the role of emotions in financial decision making and savings behavior could apply to several sections in this article, I will narrow the discussion to emotions as they relate to intertemporal choice, and more specifically, self-control and hyperbolic discounting.<sup>21</sup>

Loewenstein, for example, argues that "visceral factors" such as drive states, cravings, moods, and physical pain can impact self-control. Loewenstein contends that visceral factors can produce effects similar to those engendered by hyperbolic discounting, albeit in a different way. As described above, hyperbolic discounting leads individuals to choose options that provide immediate gains over options that provide long-term benefits. Similarly, visceral factors can lead individuals to choose the option that offers instant gratification, but only when the item in question is physically proximal to the decision maker (Loewenstein, 1996). Citing Mischel's (1974) work on impulsivity in children, Loewenstein notes that when the children were made to choose between an immediate, smaller reward and a delayed, larger reward, the children found it more difficult to wait for the larger reward when either the immediate or the delayed reward was in the room with them. Loewenstein contends that the physical presence of either the smaller, immediate reward or the later, larger reward triggered the children's visceral response and the immediate desire for that reward, even if it was

smaller. Interestingly, simply showing a picture of the delayed reward did *not* trigger an impulsive choice, leading Loewenstein to conclude that the picture did not stimulate a visceral response.

More recently, neuroimaging studies have also demonstrated the role of emotions in hyperbolic discounting. McClure and others (2004) found increased activity in areas of the brain related to emotion when participants confronted the opportunity to receive an immediate reward, but not when they faced intertemporal choices that lacked an immediate option. Furthermore, when participants *did* choose larger, later rewards over smaller, immediate ones, regions of the brain associated with higher cognitive functions were more active than those associated with emotional responses. Through the innovative use of functional magnetic resonance imaging (fMRI), the authors were able to demonstrate that behavior consistent with a hyperbolic treatment of time may be driven by emotional responses to immediate rewards.

As discussed throughout this article, saving for retirement entails making financial decisions that deliver benefits in the future at the expense of immediate gratification. Gauging whether it is worth sacrificing pleasure in the present for future benefits requires decision makers to make predictions about their future happiness; to ask, for example, how will I feel if I have no money to do the things I want to do in retirement? Intertemporal choice, then, necessitates the evaluation of current emotions as well as emotions that will only be experienced in the future, when the consequences of one's earlier choices and decisions are realized. Researchers in JDM and behavioral economics have noted the difference between these "expected" and "immediate" emotions (Loewenstein and Lerner 2003; Loewenstein and others 2001) and have described both their unique and combined effects on the decision process (Rick and Loewenstein 2008). Immediate emotions, such as those brought about by visceral factors, may lead individuals to make decisions that are not in their future best interest; for example, the smell of freshly baked cookies may lead a dieter to forsake her long-term weight-loss goal. At the same time, expected emotions, which can arise when thinking about future outcomes, may help a dieter resist temptation; thinking about how badly she will feel *after* eating the cookie or how excited she will feel if she loses five pounds may help the dieter abstain.<sup>22</sup>

One particularly important finding from the JDM literature relevant to expected emotions is that people often do not make accurate *affective forecasts*,<sup>23</sup> that

is, they do not correctly predict their future emotions. Specifically, individuals tend to imagine that the emotions resulting from a particular event will be more positive or negative than they actually turn out to be (Wilson and Gilbert 2003). Additionally, people believe that their predicted emotions, whether positive or negative, will last longer than they do in reality (Gilbert and others 1998). A related finding, termed *projection bias* (Loewenstein, O'Donoghue, and Rabin 2003), demonstrates that although individuals recognize that their "tastes" will change over time, they fail to appreciate the magnitudes of such changes (Conlin, O'Donoghue, and Vogelsang 2007).<sup>24</sup> As such, projection bias may lead individuals to make choices that are more extreme than they would otherwise prefer; for example, an individual choosing a vacation destination in the middle of a snowstorm may elect to visit an extremely warm location, only to find himself sweltering while actually on the trip (Loewenstein, O'Donoghue, and Rabin 2003). The popular saying "his eyes are bigger than his stomach" likely describes behavior borne from the projection bias. For intertemporal choices (choices over time), mispredictions of future emotions and tastes can lead to decisions that are disadvantageous to one's future self.

### ***Decision Context Affects Savings Behavior***

The way a particular decision is presented or the way individuals think about a particular decision can affect the ultimate choice (for example, Tversky and Kahneman 1981; Thaler and Sunstein 2008). Changing the way information is communicated or *framed* can lead to differing responses (Tversky and Kahneman 1981), and decision makers themselves can interpret information in various ways, also leading to differing choices (for example, Stanovich and West 2000). As described below, there are a number of findings in the JDM and behavioral-economics literatures demonstrating how various aspects of the decision context can significantly influence the savings decision.

**Reference dependence, loss aversion, and perceptions of risk.** As described above, the automatic transfer of funds from one's paycheck into a retirement account can aid in enforcing self-control. Automatic transfer also allows individuals to bypass the effects of *loss aversion*. Individuals do not evaluate their wealth in an absolute sense, but rather in reference to the status quo (Kahneman and Tversky 1979). The status quo establishes a reference point from which changes are evaluated as gains or losses (*reference dependence*). Loss aversion refers to the empirical finding that losses

hurt roughly twice as much as equivalent gains feel good (Tversky and Kahneman 1991).

The application of reference dependence and loss aversion to retirement saving via payroll deduction is summarized by a simple principle: If you don't have it, you can't lose it. An employee's reference point for income likely is net earnings, or take-home pay. If the employee does not have retirement savings automatically deducted, then any retirement account contributions must be actively removed from take-home earnings, resulting in a perceived loss from the status quo. However, if this employee earmarks a fraction of his or her earnings for automatic transfer into a retirement account, he or she likely will not get a sense of "losing" spending money; retirement savings will already be subtracted from gross earnings, just like federal and state taxes and health insurance premiums. With retirement contributions automatically deducted, the slightly lower net pay becomes the new status quo or the reference point.

Loss aversion, therefore, may not be problematic for employees who have access to automatic payroll deductions, but it poses a problem for employees who must save on their own. For individuals considering saving equal dollar amounts, the experience of an employee with no access to automatic deductions is quite different from that of an employee with such access. For the former, saving seems painful, while for the latter, saving is relatively easy, even though the final result is the same. Such is the significance of the reference point.

Reference points determine whether an individual perceives a particular outcome as a gain or a loss, and encoding an outcome as a gain or a loss can have profound behavioral effects. The reference point's role in partitioning the range of possible outcomes into gains or losses also influences an individual's risk preference, which can, in turn, affect behavior. Studies in both traditional and behavioral economics have demonstrated *risk aversion*, which is the preference for a sure thing over a gamble with a higher expected value (Kahneman and Tversky 1984). Economists explain risk aversion in terms of expected utility maximization using a concave utility-of-wealth function (Rabin and Thaler 2001). Behavioral economists, however, view risk aversion as more complex—for example, recognizing that people have different risk preferences for gains and losses. Essentially, the reference point transforms the utility function from a simple concave function defined on total wealth to an S-shaped function defined on gains and losses; this

S-shaped function (the *prospect theory value function*) is concave for gains and convex for losses (Kahneman and Tversky 1979, 1984). Consistent with the traditional economic explanation of risk aversion, JDM and behavioral-economics research has found that individuals are risk-averse in the region of gains, where the function is concave. However, in the loss region, where the S-shaped function is convex, individuals tend to display risk-seeking behavior (Kahneman and Tversky 1984).

Taken together, reference points and differences in risk preference for gains and losses are important for retirement savings because they can influence individuals' investment decisions. For example, the *disposition effect*, which is the tendency for investors to sell winning stocks too soon and hold onto losing stocks too long (Odean 1998; Shefrin and Statman 1985), can be explained by individuals' asymmetric risk aversion on either side of the reference point. In the case of stocks, it is reasonable to assume that an investor's reference point is the purchase price of the stock (Odean 1998); if the value falls below the purchase price, the investor will perceive it as a loss, and if the stock rises above the purchase price, the investor will code it as a gain. As such, investors will tend to exhibit risk-averse behavior if the stock has increased in value and risk-seeking behavior if the value has gone down. Behaviorally, this difference in risk perception leads investors to want to sell winning stocks too soon, thereby realizing the sure gain and avoiding a future loss, and to want to hold onto losing stocks too long, persisting with the risky prospect.

JDM and behavioral-economics researchers have documented many examples of the impact of reference points on risk preferences and behavior, including the "house money effect" (greater risk-seeking after a realized gain) and "break-even effects" (opportunities allowing individuals to break even are more appealing following a realized loss) in gambling (Thaler and Johnson 1990). More recently, researchers have explored the effects of reference point adaptation (for example, Arkes and others 2008), which is a shift in the reference point in the direction of a previous gain or loss, as well as the effects that expectations can have on such reference point shifts (Kőszegi and Rabin 2006; Yogo 2008). With the disposition effect as an example, it is clear how adapting the reference point to realized gains or losses can change the way investors evaluate their holdings. For instance, if a stock share originally purchased for \$20 increases in value to \$30, the investor may consider the new stock

price of \$30 to be the reference point. As such, the \$30 stock price no longer represents a *gain* and is unlikely to induce the investor to choose the risk-averse option to sell the stock. Similarly, if the stock price falls in value to \$10, and this lower value is deemed to be the new reference point, the investor will not consider the \$10 stock to be a *loss*, and will not display the risk-seeking behavior of holding onto it (Arkes and others 2008). The significance of the reference point's ability to transform individuals' perceptions and affect their judgments and decisions cannot be overstated.

**Choice bracketing.** Individuals who live "paycheck to paycheck" or otherwise feel that they have no disposable income may be unlikely to save for retirement. For them, reluctance to save may stem from narrow *choice bracketing*. Choice bracketing refers to the way in which people combine individual choices when selecting a course of action. Considering only one or two choices in a choice set is *narrow* bracketing, and considering many choices is *broad* bracketing (Read, Loewenstein, and Rabin 1999). For example, if a consumer considers the cost of a single specialty coffee ("My coffee costs \$3.95") she is bracketing *narrowly*, but if she considers the coffee's impact on her yearly spending ("My coffee costs me \$1,441.75 a year!"), she is bracketing *broadly*. Choice bracketing can have major implications for the types of decisions people make, as illustrated by the "pennies-a-day" (PAD) phenomenon (Gourville 1998). Marketers use the PAD strategy when they urge consumers to bracket a payment narrowly rather than broadly, enabling one to view a relatively large payment (such as \$365) as a seemingly trivial expense ("just a dollar a day!"). Retailers and charities often use PAD tactics to induce consumers or donors to spend their money, and previous research exploring the PAD strategy has demonstrated the effectiveness of such manipulations in apartment rent valuation (Price 1994), telephone plan pricing, and magazine subscription costs (Gourville 1998).

The principles that make PAD a successful marketing strategy can also help individuals achieve their personal savings goals: just "pennies a day" can add up to significant savings over time.<sup>25</sup> With this in mind, the Social Security Administration has begun to insert an information sheet into the mailings that contain the annual Social Security statements for young workers. The insert illustrates the benefits of the PAD strategy with a bar graph that shows the growth in savings associated with putting away \$25 and \$50 per week for 40 years, assuming a 5 percent annual rate

of return (SSA 2009). This graph helps young workers consider the aggregate effects of even relatively small weekly savings.

Another example of the effects that bracketing can have on individuals' financial decision making is *myopic loss aversion* (Benartzi and Thaler 1995). Myopic loss aversion refers to investors' tendency to be more risk averse when they evaluate their stock portfolios more frequently. This effect is the result of the particularly disadvantageous combination of narrow bracketing and loss aversion. Over the long run, taking risks in the stock market generally produces greater gains than less risky approaches, such as purchasing bonds (Benartzi and Thaler 1995; Mehra and Prescott 1985). When investors evaluate their portfolios too often (or, myopically), they observe the stock market fluctuations that are to be expected in the short run, but do not generally affect long-term returns. Research has suggested that investors will be more sensitive to small negative fluctuations than to small positive ones (that is, loss aversion), resulting in more risk aversion and potentially suboptimal investment decisions (Benartzi and Thaler 1995).

**Framing effects.** System 1 processing often leads to judgment errors, such as those brought about by the availability heuristic. System 1 impulses that System 2 fails to override can also produce self-control failures (Shiv and Fedorikhin 1999). Additionally, System 1 processing leaves decision makers susceptible to *framing effects* (Tversky and Kahneman 1981), whereby manipulating surface features of a decision problem can lead individuals to make different judgments about otherwise equivalent options. Framing effects highlight how “lightly” System 2 actually monitors System 1's outputs (Kahneman 2003), and they also underscore the fundamental role policymakers can have in affecting change in individuals. The default effect mentioned earlier is an example of a framing effect; simply designating a particular option as the default leads to its acceptance by a disproportionate share of decision makers. Whether a decision—organ donation, for example—is framed as an opt-in or an opt-out choice, analytical System 2 recognizes the options are the same (you can donate your organs or not); intuitive System 1 does not get beyond encountering the default option and sticking with it.

Framing effects challenge the notion that man is economically rational, in that they violate the principle of invariance,<sup>26</sup> a basic axiom of rationality (von Neumann and Morgenstern 1944). The principle of invariance asserts that “different representations of the

same choice problem should yield the same results” (Tversky and Kahneman 1986, S253). In other words, the way in which options are presented to the decision maker should have no bearing on his or her ultimate decision. Default effects demonstrate violations of invariance because, for example, individuals' preferences for organ donation are indeed affected by the presentation of options.

One classic example of the impact of framing on choice is the “Asian disease” problem (Tversky and Kahneman 1981), which also highlights the systematic difference in individuals' risk preferences for gains and losses described earlier. In the Asian disease problem, participants are asked to choose which of two risky programs should be adopted to treat an imminent outbreak of a deadly Asian disease. The options are either presented in terms of the number of people who will be saved as a result of the adopted treatment or in terms of the number of people who will die if the treatment plan is adopted. Results show that participants choose the riskier treatment option when the outcomes are presented in terms of losses (that is, the number of people who will die) and the less-risky option when the outcomes are presented in terms of gains (that is, the number of people who will be saved). As explained earlier, individuals' risk preferences, and subsequent judgments and decisions, tend to differ depending on whether they are considering gains or losses from a reference point. The Asian disease problem is an ideal example of how framing can shift individuals' assessments of a scenario, leading them to pursue disparate courses of action.

Using a paradigm analogous to the Asian disease problem, Olsen (1997) surveyed Chartered Financial Analysts and found that their responses depended on whether a particular investment decision was framed as either a gain or a loss. Specifically, the survey posed a scenario in which a client's \$60,000 investment was in jeopardy due to a downturn in the stock market. The analysts were then asked to choose between two risky strategies in which a certain amount of the client's investment would be saved (gain frame) or lost (loss frame). As in the Asian disease problem, these experienced investment managers chose the less-risky option when the options were presented in a gain frame and the riskier option when they were presented in a loss frame. Even though the client's final outcome would be identical in both scenarios, the analysts' choices were influenced by framing.

Epley, Mak, and Idson (2006) explored how framing can affect spending decisions. The authors examined

the likelihood that subjects would spend funds according to whether those funds were labeled a “bonus” or a “rebate.” Consistent with the argument that individuals perceive a “bonus” as a gain from the status quo and a “rebate” as a return to a previous level of wealth, participants were more likely to spend funds described as a bonus and save funds described as a rebate. The authors demonstrated that framing even affected individuals’ recollection of earlier behavior. Participants who were asked to recall their behavior after receiving a government-issued check under President Bush’s Economic Growth and Tax Relief Reconciliation Act of 2001 reported spending more of the money if the check was described as a “bonus” than those to whom it was described as a “rebate.” Because the tax relief was termed a “rebate” at the time, this unintentional framing may have resulted in Americans saving, rather than spending, much of the money that was meant to stimulate the economy. In fact, Shapiro and Slemrod (2003a, 2003b) found that prior to actually receiving their checks, respondents generally thought that their rebate would be unlikely to stimulate their spending behavior; Epley, Mak, and Idson’s (2006) experiment suggests that framing the checks as rebates may have led Americans not to spend these funds. This study highlights how JDM research can be used to inform policy; policymakers must be mindful that framing can affect individuals’ behavior and provide unintended impediments to well-meaning interventions (Epley and Gneezy 2007).

**Choice architecture.** As shown above, simply changing the wording of the options (“lives saved” versus “lives lost” or “bonuses” versus “rebates”) is just one example of how framing can have real implications for decision making. Policymakers play a crucial role in designing and engineering decision environments; as *choice architects*, they can nudge decision makers in one direction or another by tweaking certain aspects of the choice context. To complicate matters, every aspect of the choice environment—from which candidate’s name appears first on a voting ballot to the location of restrooms in an office building—has the potential to affect behavior. Thus, when contemplating the specifications of any choice environment, the choice architect confronts a challenging inevitability: there is no “neutral” design (Thaler and Sunstein 2008). One of the candidates’ names *must* appear first on a ballot, and a building’s restrooms *must* be located somewhere, and research on the importance of choice architecture suggests that such decisions are not inconsequential.

For example, Miller and Krosnick (1998) demonstrated that candidates for elected office in various counties in Ohio enjoyed an advantage over their opponents if their name was listed first on the ballot. In order to test for name-order effects, the authors created “order variables,” which took into account the order in which candidates’ names appeared on the ballots in different precincts in three of Ohio’s counties. The results were striking: Significant name-order effects were seen in just under half of the 118 races. Furthermore, approximately 90 percent of the races in which name-order effects were observed showed a clear primacy effect: When a candidate was listed first on the ballot, he or she received more votes than when he or she was listed last. Ideally, the order in which candidates are listed on a ballot would have no bearing on who is ultimately elected; this detail is unrelated to a candidate’s job qualifications.<sup>27</sup> Miller and Krosnick demonstrated, however, that this seemingly arbitrary aspect of the voting process had a significant, and somewhat troubling, effect on voter behavior. As such, the authors suggest that all states adopt the practice of rotating candidates’ names on ballots, as is required in Ohio, Idaho, and Montana. Miller and Krosnick’s study is a prime example of the effects that presumably insignificant details can have on behavior. As Thaler and Sunstein (2008, 3) note, when it comes to choice architecture, “everything matters.”

Indeed, Benartzi and Thaler (2007) discovered that even the number of lines on an investment sign-up form had an effect on investment choices. The researchers asked subscribers to the Morningstar.com website to indicate on a provided form how they would choose to distribute their retirement funds amongst eight potential options. On the form presented to one group of participants, four lines were visible, and a link was provided to expand the display to eight lines. For the second group of participants, all eight lines were visible. This ostensibly inconsequential difference in the format of the allocation form produced a four-fold difference in the percentage of participants choosing more than four funds: Only 10 percent of those presented with the form containing four visible lines chose more than four funds, while 40 percent of those with eight lines visible chose more than four funds. Similar to the name-order effect in voting described above, the number of lines listed on an investment form should have no bearing on the number of funds in which individuals ultimately invest; the best investment strategy is unrelated to the number of lines listed on a sign-up form. Nevertheless, although

the effort of expanding the option list from four to eight was negligible (that is, simply clicking on a link), the difference between the forms actually affected individuals' proposed investment strategies.

It is not difficult to think of examples in which the clever use of choice architecture by retailers can induce consumers to spend more. For example, displaying a product at the end of an aisle, using a yellow price sign, or placing an item in a separate bin will likely signal to a shopper that an item is on sale, even if it is not. Choice architects in the retail industry—as well as lobbyists, politicians, and anyone else—have access to countless tools to design decision environments with their own best interests in mind (Economist 2006). However, policymakers can also use choice architecture to usher in positive changes, such as increasing Americans' savings rates. For example, both the SMarT program described in Thaler and Benartzi (2004) and the automatic IRAs proposed by the RSP employ choice architecture to promote retirement savings. Choice architects are in a unique position to nudge individuals down a particular path, and although this task is often met with controversy (Economist 2006; Thaler and Sunstein 2003, 2008), responsible architects can encourage individuals to take positive steps toward accomplishing their goals.

### ***Future Directions in the Study of Retirement Savings***

When considering how and why individuals decide to save for retirement, there are a number of issues that policymakers must untangle. Some of these matters deal with the amount and type of information decision makers receive, and these concerns often can be met with interventions aimed at improving financial literacy or by presenting relevant information that is more user-friendly. Traditional economic theory suggests that if decision makers are armed with all of the appropriate information and tools, they should make optimal decisions. The research outlined in this article, however, suggests that informational issues may represent only a subset of the impediments individuals can face on their paths to future financial well-being. The concepts and examples presented herein demonstrate that people make an array of unsatisfactory choices and decisions, ranging from self-control failures to suboptimal asset allocation, that cannot be readily explained by economic models nor entirely remedied by making additional information available. Behavioral economists and JDM researchers have studied decision makers' imperfect judgments and have

presented coherent theories to explain many of them. Several novel interventions based on these theories are described below.

### ***Incentivize Saving***

Starting a diet is undoubtedly a difficult undertaking (as evidenced by the rising obesity rate in America), but growing waistlines can help motivate individuals to begin a weight-loss program. Although the results of dieting are delayed, the incentives of weight loss are ever-present. Unfortunately, saving for retirement lacks the same conspicuous benefits as weight loss. A photo of one's future 65-year-old self cannot be taped onto a credit card the way a picture of one's formerly thin self can be taped onto the refrigerator. For many people, the benefits of saving for retirement are so remote and so intangible that a little extra money in one's paycheck now is far more attractive than making oneself comfortable in the very distant future. Nevertheless, the consequences of repeated self-control failures regarding saving can be substantial; recall that SSA's "young worker" insert shows that placing just \$25 per week (roughly equivalent to a specialty coffee per day) in a retirement savings account with a 5 percent annual rate of return can result in savings of more than \$160,000 over 40 years (SSA 2009).

By showing how saving modest amounts now can accumulate substantial amounts over time, the graph in the SSA insert can urge young workers to think about saving in a way that they may not have done on their own. Still, it does not provide an immediate incentive to engage in behavior whose benefits are only realized in the distant future. Potential savers lack the incentive to save that dieters receive each time the number on the scale goes down or their dress size gets smaller.

Incentivizing saving in the present may help individuals adequately prepare for the future. One possible strategy could be for employers to offer their employees "points" for saving, much as they offer points or bonuses for making sales or acquiring new clients. Employers who match their employees' retirement contributions could take a portion of that match and instead put it toward tangible goods, such as big-screen televisions or washing machines.<sup>28</sup> Such a strategy would encourage employees to reach large long-term savings goals (retirement funds) by providing smaller goals in the short term (a new TV). Alternatively, employers could set up a lottery system, wherein employees who actively contribute a certain minimum percentage of their paycheck each month

would be entered into a lottery with a cash prize. Banks around the world have used lottery-linked deposit accounts to encourage customers to save, and have succeeded in increasing their number of customers (Guillén and Tschoegl 2002). In an employer-based version of a lottery, only employees contributing to their retirement accounts during a given period would be entered into the lottery. This plan capitalizes on individuals' desire to minimize regret (Zeelenberg 1999), as those who have not contributed to their retirement account have no chance of winning even though their coworkers do. To make regret even more salient, every employee's name could be entered into the lottery, but only employees contributing to their retirement accounts could actually win. In this arrangement, employees would know if they *would have* won had they contributed that month. This is similar to the common practice on game shows or slot machines in which the prizes associated with the options the players *did not* choose are revealed.<sup>29</sup>

### **Reframe the Problem**

Narrow framing, or bracketing, has been suggested as a tool to facilitate adherence to self-control goals that might otherwise be overwhelming. Read, Loewenstein, and Rabin (1999, 189) introduce the notion of "motivated bracketing" as a way for recovering alcoholics, for example, to reframe their goals in a way that emphasizes daily successes ("one day at a time") rather than month-long, year-long, or life-long undertakings. In a similar vein, the authors also suggest bracketing budgets more narrowly, so as to reduce one's ability to rationalize overspending in the present by planning to use the remainder of a week or month to "make up for it." A weekly food budget of \$70 is easier for a spendthrift to manipulate than a daily food budget of \$10. In this sense, narrow bracketing could lead to more advantageous saving behavior.

Shifting from a broad frame to a narrow frame may also help investors save by allowing them to recognize that saving large sums of money for retirement may not be as daunting as it seems. This notion may be particularly important for individuals who use online calculators to determine how much money they will need to save to replace a given percentage of preretirement earnings. When future retirees obtain projections of how much money they will need for retirement, the number typically is very large—many individuals are undoubtedly shocked at the hefty sum of money they will need for retirement. One might feel that such a huge amount of money is surely unattainable, leading

him or her to assume that any attempts to save would be futile. However, if one were to shift from a broad frame to a narrow one, in which small, incremental savings goals are emphasized, the task of saving for retirement may seem within reach, and therefore, more worthwhile. Indeed, Read, Loewenstein, and Rabin contend that narrow bracketing can make one's goals seem more manageable.

### **Change Reference Points**

As mentioned earlier, employees who must initiate their own retirement savings are more vulnerable to the effects of loss-aversion than those with automatic payroll deductions because of their differing reference points. Those without automatic payroll deductions may alleviate some of the pain of diverting part of their discretionary income toward retirement saving by actively changing their reference points. For instance, these individuals can mentally subtract the amount that would otherwise be deducted automatically, and this adjusted amount can serve as the employee's new reference point. This mental accounting<sup>30</sup> "trick" would allow individuals to establish a reference point that already takes into account the amount earmarked for retirement savings. This method is admittedly more susceptible to lapses in self-control than automatic payroll deductions, but it may be at least partially effective in encouraging self-directed retirement saving.

Although the mental accounting trick described above exploits reference dependence to encourage saving, reference points can also be impediments to saving. Salaries are, in essence, reference points for yearly income; as such, salaries establish a level below which potential savers may be unwilling to fall. The pain associated with seeing a loss from this reference point may preclude retirement savings. This may be especially true for those who feel they have no extra money to save. Once again, however, changes in reference points may encourage saving. Imagine an employee who earns \$55,000 and finds it too difficult to save for retirement because of current financial needs. If asked whether the job offer would have been declined if the salary had instead been \$52,500, the employee would more than likely answer "no." Between a \$55,000 salary and a \$52,500 salary, the difference in weekly earnings is only \$50, which can accumulate to roughly \$325,000 of savings over 40 years, assuming a 5 percent rate of return (SSA 2009). Upon realizing that he or she could have survived with a lower starting salary (that is, reference point), an individual



may decide he or she can actually adapt to a smaller paycheck and save for retirement. Individuals would be unlikely to mentally shift their reference points on their own,<sup>31</sup> but by adjusting expectations, policy-makers can potentially alter the way decision makers evaluate certain problems.

The interventions described above aim to encourage saving across the lifespan so that individuals will be more financially secure in retirement. Incentivizing saving in the short term, reframing the decision context, and shifting reference points are all ways that can help individuals save more and spend less. These approaches are but a few of the possible interventions that researchers and policymakers could offer to aid individuals in their pursuit of future financial well-being.

## **Conclusion**

The purpose of this literature review is to familiarize readers with aspects of the savings decision not accounted for by traditional economic theory. Researchers in JDM and behavioral economics have explored individuals' seemingly irrational savings behavior and have developed coherent theories to explain some of these behaviors. A departure from the notion of man as economically rational can help policymakers to better understand why people make the decisions they do. As a result, policymakers can craft careful interventions aimed at helping individuals make more optimal decisions. Additionally, in the absence of corporate or governmental intervention, decision makers themselves can take steps to remedy their own suboptimal behavior (for example, through precommitment devices). Examples of interventions already in place (such as the SMarT plan) have been identified, and possible avenues for future interventions have been presented. The behavioral economics and JDM concepts summarized herein can serve as powerful tools to encourage savings behavior and lead Americans toward more comfortable retirements.

## **Notes**

*Acknowledgments:* The author would like to thank Barbara Smith, Kirstin Appelt, Chris Anguelov, Dave Shoffner, Anya Olsen, Kevin Whitman, John Phillips, Hal Arkes, David Weaver, and Jason Fichtner for their thoughtful comments on earlier drafts of this article.

<sup>1</sup> For more information regarding the origins and history of JDM research, see Goldstein and Hogarth (1997), Hogarth (1993), and Kahneman (1991). For expositions on the development and recent increase in popularity of behavioral

economics see Angner and Loewenstein (2007), Loewenstein and Camerer (2004), and Rabin (2002).

<sup>2</sup> According to the Bureau of Economic Analysis, personal savings as a percentage of disposable income was 4.8 percent in December 2009 (<http://www.bea.gov/newsreleases/national/pi/2010/txt/pi1209.txt>). It should be noted that although the personal savings rate has vacillated recently—perhaps as a result of increased debt repayment during the recent economic downturn (Mui 2010)—personal savings in the United States has declined over the past few decades and remains lower than in many modern nations (Jones 2010).

<sup>3</sup> See Viceira (2007) for a recent review.

<sup>4</sup> Of the 21 million participants in the sample, these individuals held above-average account balances.

<sup>5</sup> For example, Mymoney.gov, a website sponsored by the U.S. Financial Literacy and Education Commission, provides information on saving and investing, retirement planning, and paying for education. The JumpStart Coalition for Personal Financial Literacy (<http://www.jumpstartcoalition.org>) targets young Americans and strives to promote curriculum-based financial education for students in grades K–12. The Social Security Administration (SSA) has recently announced a multidisciplinary research and development initiative called the Financial Literacy Research Consortium to educate the public on retirement savings and planning.

<sup>6</sup> See Camerer and Weber (1992) for a review.

<sup>7</sup> The reported overlap between self-assessed and objectively measured financial literacy was between 50 percent and 66 percent. Lusardi and Mitchell (2007, 12) interpret this as a “strong positive correlation” between the two measures.

<sup>8</sup> One particular example is the “Ballpark E\$timate” online calculator, a feature of EBRI’s Choose to Save program (<http://www.choosetosave.org/ballpark/>).

<sup>9</sup> Tversky and Kahneman (1973, 1974) first applied the concept of heuristics to the domain of judgment under uncertainty to describe the way individuals assess probabilities and estimate values. They demonstrated that decision makers attempt to reduce complex estimation problems into simpler terms through the use of various rules of thumb. More recently, decision-making researchers have expanded the notion of heuristics to domains other than probability and value estimation. As such, the concept of the heuristic has come to broadly describe judgments made quickly and with limited knowledge, time, or cognitive capacity (Gigerenzer and Todd 1999). There is much controversy in the JDM literature concerning exactly what constitutes a “heuristic” (for example, Oppenheimer 2003; Newell 2005), but a discussion of that debate is beyond the scope of this article.

<sup>10</sup> Even experts, who, by definition, possess a great deal of knowledge in their respective areas of expertise, fall prey

to judgment errors when relying on heuristics (for example, Northcraft and Neale 1987; Tversky and Kahneman 1971). In fact, errors in experts' decision making are often attributed to overreliance on judgmental heuristics when solving problems in their areas of expertise (Shanteau and Stewart 1992; Slovic, Fischhoff, and Lichtenstein 1985).

<sup>11</sup> For more recent research exploring the impact of the availability heuristic on financial decisions, see Lee, O'Brien, and Sivaramakrishnan (2008), Kilger and Kudryavtsev (2010), and Semenov (2009).

<sup>12</sup> Recently, researchers have begun to explore the relationship between heuristic-based, System 1 processing and cognitive ability (see Stanovich and West (2008) for a thorough review of the findings). Results are mixed as to whether cognitive ability attenuates judgmental biases resulting from the use of heuristics and System 1 processing, but there is evidence suggesting that cognitive ability and "thinking biases" are often uncorrelated. Stanovich and West present a framework for identifying when cognitive ability is and is not likely to attenuate System 1-induced judgmental biases.

<sup>13</sup> Of course, the benefit of life-cycle funds is contingent upon investors using them properly. However, a 2005 report by Vanguard showed that a significant percentage (71 percent) of Vanguard's life-cycle fund participants did not utilize the funds as intended. Rather than using the funds as "one-stop shopping," most life-cycle fund investors incorporated life-cycle funds into their overall portfolios as they would other funds. About half of Vanguard's life-cycle fund investors held a life-cycle fund in combination with at least one other investment option. Another third of the investors held multiple life-cycle funds, rather than a single one (Vanguard 2005). A more recent report showed a similar lack of understanding of target-date funds among 401(k) investors (Park 2009).

<sup>14</sup> Research has mainly observed the status quo bias and default effects in inexperienced participants, that is, individuals who were not necessarily known to have had experience or expertise in the domain in question. It is possible that these effects would be less pronounced for experienced individuals or experts (Kempf and Ruenzi 2006). Only a few studies have addressed the attenuation of default effects in more knowledgeable individuals; results are mixed as to whether or not experience in a particular domain reduces the default effect (for example, Brown and Krishna 2004; Löfgren and others 2009) or does not (for example, Johnson, Bellman, and Lohse 2002).

<sup>15</sup> Some research on the effects of an employer match on 401(k) participation has shown that the presence of a match does increase employee participation in retirement plans (for example, Investment Company Institute 2006), while other research seems to indicate that an employer match only modestly affects employees' savings behavior (Mitchell, Utkus, and Yang 2005). Furthermore, previous research has also shown that many employees fail to take full

advantage of matching opportunities (for example, Thaler and Sunstein 2008), thereby leaving matching contributions "on the table" (Choi, Laibson, and Madrian 2005, 14).

<sup>16</sup> Of course, low participation in IRAs relative to 401(k) plans may have a number of causes. For an overview of such determinants, see Springstead and Wilson (2000).

<sup>17</sup> Automatic IRAs may also succeed in part because of procrastination, in that individuals who intend to opt out of the plan may procrastinate and remain enrolled, all the while accumulating retirement funds.

<sup>18</sup> Critics of certain aspects of automatic IRAs have argued that such IRAs should feature a forced "rollover" provision because many individuals with automatic IRAs would be low-wage earners, work in temporary jobs, or change jobs frequently (Munnell and Quinby 2009; PRC 2007). Without a rollover provision, the small amount of money accumulated in the IRA associated with each job would likely be cashed out (Munnell and Sundén 2006), preventing the significant accumulation of funds and defeating the purpose of the automatic IRA.

<sup>19</sup> See Frederick, Loewenstein, and O'Donoghue (2002) for a thorough review of the literature.

<sup>20</sup> Christmas clubs are illiquid, zero-interest savings accounts into which individuals can deposit funds throughout the year so that they will have money with which to shop during the holiday season.

<sup>21</sup> See Loewenstein and O'Donoghue (2005) for a detailed discussion of how emotions affect financial decisions in other ways, for example, their effects on risk perception and social preferences. See also Rick and Loewenstein (2008) for a description of how emotions can enter the decision process at various times.

<sup>22</sup> Of course, immediate emotions need not result in negative behaviors, nor must expected emotions result in positive ones. For example, feeling full while grocery shopping may lead a dieter to purchase fewer unhealthy items for the upcoming week, and considering how one will feel if she misses a one-day sale may make a shopper spend money unnecessarily.

<sup>23</sup> See Wilson and Gilbert (2003) for a review of the literature.

<sup>24</sup> The authors estimate that people mispredict their future tastes by approximately one-third to one-half of the difference between future and current tastes.

<sup>25</sup> As an example, Wal-Mart recently changed its slogan from "Always Low Prices" to "Save Money. Live Better." Television commercials featuring this new slogan suggest that saving small amounts of money on everyday purchases can add up to significant amounts of money over the course of a year. In a similar vein, Bank of America's "Keep the Change" promotion rounds up debit card transactions to the nearest dollar and transfers the difference into customers' savings accounts. Customers enrolled in the "Keep the

Change” program can track the funds acquired through this system and see how the small amounts of change accumulate over time.

<sup>26</sup> The principle of invariance is described as extentionality in Arrow (1982).

<sup>27</sup> It is important to note that the authors did find some factors that moderated the name-order effect. Specifically, elections in counties whose residents were less educated showed greater effects of name order, as did those in which there were indicators (such as less media coverage of races) that voters knew less about the candidates. This particular set of moderators suggests that making more information available to voters may attenuate the name-order effect.

<sup>28</sup> Of course, taking a portion of the employer match to fund the purchase of tangible goods would necessarily reduce the amount the employer contributes to employees’ savings. However, the idea is that the increased incidence of employee saving that results from the point incentive more than compensates for the reduced employer match. That is, although the employer match would be lower with a points system than without it, the intervention would encourage more employees to contribute a larger percentage of their paychecks to retirement savings.

<sup>29</sup> See also Zeelenberg and Pieters (2004).

<sup>30</sup> For an overview of mental accounting, see Thaler (1999).

<sup>31</sup> However, Heath, Larrick, and Wu (1999) demonstrate how individuals use goals as reference points.

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