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# Issue Brief

No. 301

January 2007

## Behavioral Finance and Retirement Plan Contributions: How Participants Behave, and Prescriptive Solutions

by Jodi DiCenzo, Behavioral Research Associates

- **Behavioral research:** This *Issue Brief* discusses behavioral finance research, underlying causes for both passive and active saving and investing choices, and prescriptions offered by contemporary behaviorists to overcome the effects of less-than-ideal savings and investing choices.
- **Congress implicitly endorsed behavioral finance in PPA:** Enactment of the Pension Protection Act of 2006 (PPA), notably its automatic enrollment, automatic default contribution, and automatic deferral increase provisions, illustrates that Congress implicitly endorsed the value of behavioral economics as applied to retirement policy.
- **The “path of least resistance”:** Behavioral research has repeatedly demonstrated many workers’ tendency to follow whatever retirement planning path provides the least resistance. Benefit plan architects and administrators effectively direct and pave that path when they design retirement plans, especially when establishing plan default provisions, the “rules” governing what happens when workers fail to make active decisions.
- **Has retirement plan decision making really shifted?** The decline of defined benefit (pension) plans, coupled with the growth of defined contribution (401(k)) plans is often cited as evidence of a significant shift in retirement-funding risk and decision making away from corporate plan sponsors and toward workers. However, behavioral research raises the question of whether decision making has really shifted: In fact, many participants seem to simply accept plan defaults set by corporate plan sponsors. The path of least resistance is paved by the plan sponsor.
- **Passive choices:** Behaviorists have highlighted predictable behavioral tendencies (and their underlying causes) that help explain passive “choices.” These include procrastination, status-quo bias, hyperbolic discounting, bounded rationality and complexity, and choice overload.
- **Active savings decisions also succumb to behavioral pitfalls:** Many of the same tendencies that affect the willingness to passively accept a default contribution rate also contribute to actively selecting a less-than-ideal savings rate—or to not selecting a savings rate at all.
- **Behaviorists offer prescriptive insights:** Workers can benefit from a simplified enrollment process, “required” active decisions may increase participation and contribution deferral rates, and other plan features (such as automatic deferral escalation) are effective in increasing participant savings rates.

Jodi DiCenzo, CFA, is the founder of Behavioral Research Associates, of Evanston, Illinois. Behavioral Research Associates focuses on applied behavioral research and consulting. DiCenzo wrote this *Issue Brief* with assistance from the Institute’s research and editorial staffs. Any views expressed in this report are those of the author and should not be ascribed to the officers, trustees, or other sponsors of EBRI, EBRI-ERF, or their staffs. Neither EBRI nor EBRI-ERF lobbies or takes positions on specific policy proposals. EBRI invites comment on this *Issue Brief*.

## Table of Contents

Introduction .....	3
The “Path of Least Resistance,” Paved by Benefit Plan Sponsors .....	3
Automatic Enrollment Plans Change the Direction of the Path of Least Resistance, But to What Degree? .....	3
Default Rules Require Careful Consideration.....	4
Behavioral Explanations for Passive “Choices” .....	7
Active Savings Decisions Also Succumb to Behavioral Pitfalls .....	10
Individuals Are Loss-Averse .....	10
“Anchors” Weigh on Participant Savings Rates .....	12
Peers May Influence Workers’ Decisions to Save for Retirement.....	12
Behaviorists on Active Investment Decision Making .....	12
Initial Investment Selection: Empirical Evidence of Active Choices .....	12
Behaviorally Based Explanations for Suboptimal Active Investment Selection .....	13
Ongoing Investment Account Management: Empirical Evidence and Other Anomalies .....	13
Participant Education May Not Overcome Behavioral Tendencies .....	14
Behaviorists Offer Prescriptive Insights .....	14
Workers Benefit From a Simplified Enrollment Process.....	14
“Required” Active Decisions May Increase Participation and Deferral Rate.....	15
Other Plan Features, Such as Automatic-Deferral Escalation, Are Effective in Increasing Participant Savings Rates.....	15
Summary.....	15
References .....	16
Endnotes .....	18

## Figures

Figure 1, The Effects of Automatic Enrollment on 401(k) Participation.....	4
Figure 2, The Distribution of 401(k) Contribution Rates: Company B .....	5
Figure 3, The Distribution of 401(k) Contribution Rates: Company C .....	5
Figure 4, The Distribution of 401(k) Contribution Rates for Employees Age 40+ at Hire: Company D .....	6
Figure 5, The Distribution of 401(k) Contribution Rates: Company H .....	6
Figure 6, Percentage of 401(k) Participants With Balances in the Automatic Enrollment Default Fund(s).....	8
Figure 7, Percentage of Participants Hired During Automatic Enrollment at the Automatic- Enrollment Defaults.....	8
Figure 8, Percentage of Plans With Automatic Enrollment, by Plan Size, 2001–2005 .....	9
Figure 9, Median Replacement Rates From 401(k) Accumulations for All Eligible Workers Turning 65 Between 2030 and 2039, by Income Quartile at Age 65 .....	9
Figure 10, Number of Funds Offered and Predicted Participation Rates.....	11
Figure 11, Financial Education and Actual vs. Planned Savings Changes .....	11

## Introduction

While the field of behavioral economics (or behavioral finance)<sup>1</sup> pre-dates participant-directed defined contribution (DC) plans, these plans have offered behaviorists a near-perfect laboratory to uncover new findings on how people *actually* make decisions (as opposed to how they *should* make decisions) about retirement planning. From there, behaviorists have been able to test alternative behavioral “prescriptions” in their attempt to optimize participants’ retirement saving and investing outcomes. The importance and relevance of this work is obvious, as participant-directed DC plans (401(k)-type plans)—which firmly place retirement-funding risk and related decision making with workers—have largely replaced defined benefit (DB) pension plans typically managed by relatively sophisticated employers and consultants.

Perhaps it is no coincidence that growth in behavioral finance research has paralleled the growth in DC plans. About the same time that the Employee Retirement Income Security Act of 1974 (ERISA) was signed, Amos Tversky and Daniel Kahneman (1974) offered theories on the way people actually make decisions under uncertainty, providing evidence of some of the systematic biases that influence decision making. While behavioral economics is still in its infancy relative to traditional economics, behaviorists already have made significant contributions leading to radical change in the way retirement plans are designed, managed, and communicated. Enactment of the Pension Protection Act of 2006 (PPA), notably its automatic enrollment, default contribution, and automatic deferral increase provisions, illustrates that Congress implicitly endorsed the value of behavioral economics as applied to retirement policy.<sup>2</sup> Many of these contributions are explored in this *Issue Brief*.<sup>3</sup>

## The “Path of Least Resistance,” Paved by Benefit Plan Sponsors

Contemporary behaviorists have repeatedly demonstrated workers’ tendency to follow whatever retirement planning path provides the least resistance. Importantly, benefit plan architects and administrators effectively direct and pave that path when they design retirement plans. This is especially true when it comes to establishing plan default provisions, the “rules” governing what happens when workers fail to make active decisions about their retirement plan. Although the decline of DB plans, coupled with the growth of DC plans, is often cited as evidence of a significant shift in retirement-funding risk and decision making away from corporate plan sponsors and toward workers, behaviorists compel consideration of whether decision making has effectively shifted: In fact, many participants seem to simply accept plan defaults set by corporate plan sponsors.

### Automatic Enrollment Plans Change the Direction of the Path of Least Resistance, But to What Degree?

Madrian and Shea (2001) report both the success and drawbacks of automatic enrollment plans. While automatically enrolling DC participants increases plan participation (particularly in certain demographic segments, as shown in Figure 1),<sup>4</sup> enrollees exhibit what is called *default behavior*, specifically the tendency to retain the plan’s default contribution rate and investment. In the plan they studied, automatic enrollment increased participation among new enrollees from 37 percent to nearly 86 percent,<sup>5</sup> but more than 70 percent of automatically enrolled participants retained the automatic 3 percent contribution rate invested in a money market fund (the investment default).<sup>6</sup> Even after one year, more than half the participants remained at the default contribution rate, and after two years, 40 percent still continued to save 3 percent, despite a 50 percent employer match on contributions up to 6 percent of salary after one year of employment.<sup>7</sup>

Additional evidence of default behavior has been offered by Choi et al. (2006). This team of researchers was able to extend the work by Madrian and Shea (2001) by analyzing the impact of automatic enrollment at three additional companies and continuing to analyze results experienced by the company initially studied by Madrian and Shea. Again, participation rates dramatically improved when plans added an automatic enrollment feature, with increases between 20 and 34 percentage points after three years of employment.

Figure 1  
**The Effects of Automatic Enrollment  
on 401(k) Participation**

	Automatic Enrollment	
	Participation rate before automatic enrollment	Participation rate after automatic enrollment
Overall	37.4%	85.9%
Gender		
Male	42.3	85.7
Female	35.9	86.0
Age		
<20	—	73.6
20–29	25.3	82.7
30–39	37.2	86.3
40–49	47.3	90.1
50–59	51.8	90.0
60–64	60.0	86.0
Compensation		
<\$20,000	12.5	79.5
\$20,000–\$29,000	24.5	82.8
\$30,000–\$39,000	42.2	88.9
\$40,000–\$49,000	51.0	91.8
\$50,000–\$59,000	61.6	92.8
\$60,000–\$69,000	59.7	94.7
\$70,000–\$79,000	57.9	91.5
\$80,000+	68.3	94.2
Sample Size	n=4,249	n=5,801

Source: Brigitte C. Madrian and Dennis F. Shea, "The Power of Suggestion: Inertia in 401(k) Participation and Savings Behaviour," *The Quarterly Journal of Economics*, Vol. 116, No. 4 (2001): 1149–1187, © 2001 by the President and Fellows of Harvard College and the Massachusetts Institute of Technology.  
Note: The sample is 401(k) eligible active employees belonging to the cohort and employed before or after automatic enrollment began. The sample is restricted to employees under age 65 as of the date the data were compiled.

At the same time, automatically enrolled workers again appeared to anchor<sup>8</sup> to the default contribution rates (Figures 2–5) and default investments (Figure 6). As Figure 7 indicates, default behavior does appear to decline over time. After six months, between 48 percent and 73 percent of participants are wholly investing in default investments at the default rate. After two years, the rate of default behavior falls to between 37 percent and 50 percent. And after three years, between 29 percent and 48 percent of automatically enrolled participants continue to exhibit default behavior.<sup>9</sup>

### Default Rules Require Careful Consideration

Automatic enrollment plans are on the rise. In the *Annual 401(k) Benchmarking Survey, 2005/2006 Edition* (Deloitte Consulting LLP, International Foundation, and International Society of Certified Employee Benefit Specialists, 2006), 23 percent of plan sponsor respondents reported having an automatic enrollment feature, with 29 percent reporting that they are considering it. This is up from 14 percent in the prior year (2004), representing more than a 50 percent increase. Initially a feature adopted primarily by large plans, automatic enrollment appears to be catching on in plans of all sizes (Figure 8).

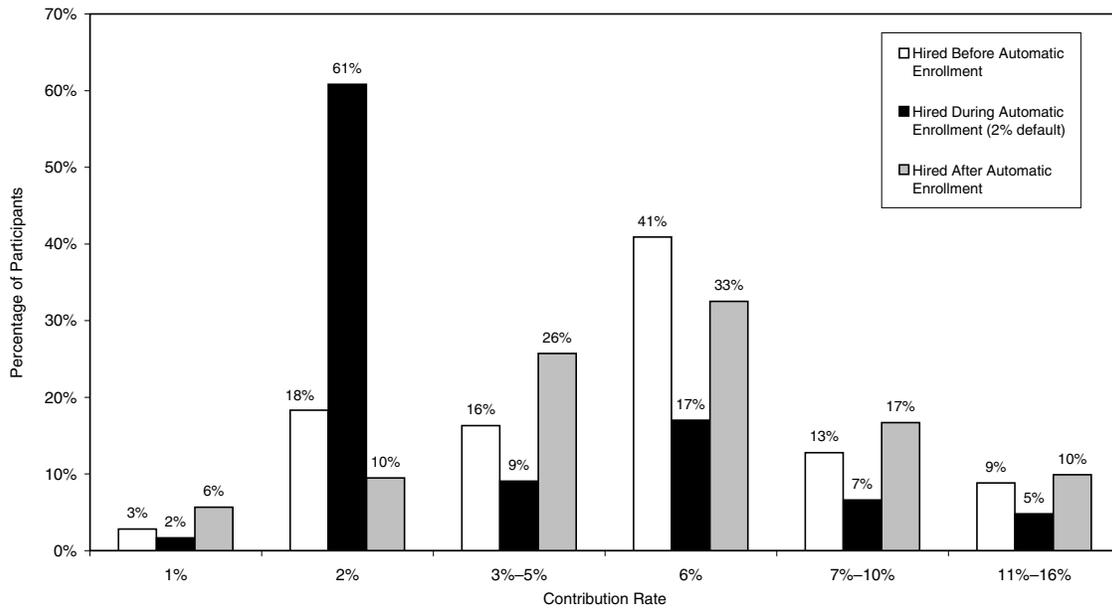
A significant percentage of these plans has implemented automatic enrollment using relatively low default contribution rates and relatively conservative default investments. According to the *Annual 401(k) Benchmarking Survey, 2005/2006 Edition*, 79 percent of automatic enrollment plans have implemented an automatic contribution rate of 3 percent or less, and plan sponsors report 76 percent of automatically enrolled participants continue to use the same deferral percentage. In addition, 41 percent of plan sponsor respondents report using a principal preservation fund as the default investment for automatically enrolled participants.

Behaviorists have cautioned that these default contribution rates may be too low and default investments too conservative, calling them “inconsistent with the retirement-savings goals of most employees” (Choi et al., 2006). And, Madrian and Shea (2001) note that in an earlier version of their published paper, simulations showed that default behavior existent in automatic enrollment plans may lead to lower total savings in these plans after only a few years, as compared with other plans in which workers must take action to participate in the plan. If retirement plans that do not automatically enroll employees are considered as, effectively, having default contribution rates of zero, the situation could appear even worse.

It should be noted that the risk of plan sponsors’ potential legal liability for participants’ investment losses has been a major obstacle to the greater use of automatic enrollment in DC retirement plans such as 401(k)s: Employers were confronted with prohibitive state laws, fiduciary liability for default investment elections, and administrative difficulties. The provisions of PPA were designed to overcome these obstacles, by giving retirement plan sponsors the specific authority (and supposedly clear regulatory guidance) to encourage automatic enrollment of new workers the plan. By adopting the auto-enrollment and default contribution provisions in PPA, Congress explicitly placed a priority on helping employers use “the path of least resistance” to get more workers to participate in 401(k)-type retirement plans, where one is offered.

Given the persistence of default behavior, it is obvious that plan sponsors, to at least some extent, drive participant choices—without question, their passive “choices.” This is to say that plan sponsors greatly affect participants’ retirement security. Setting benefit plan default “rules” therefore, requires careful consideration, if the goal is to help workers achieve retirement security without having to make “active” choices.

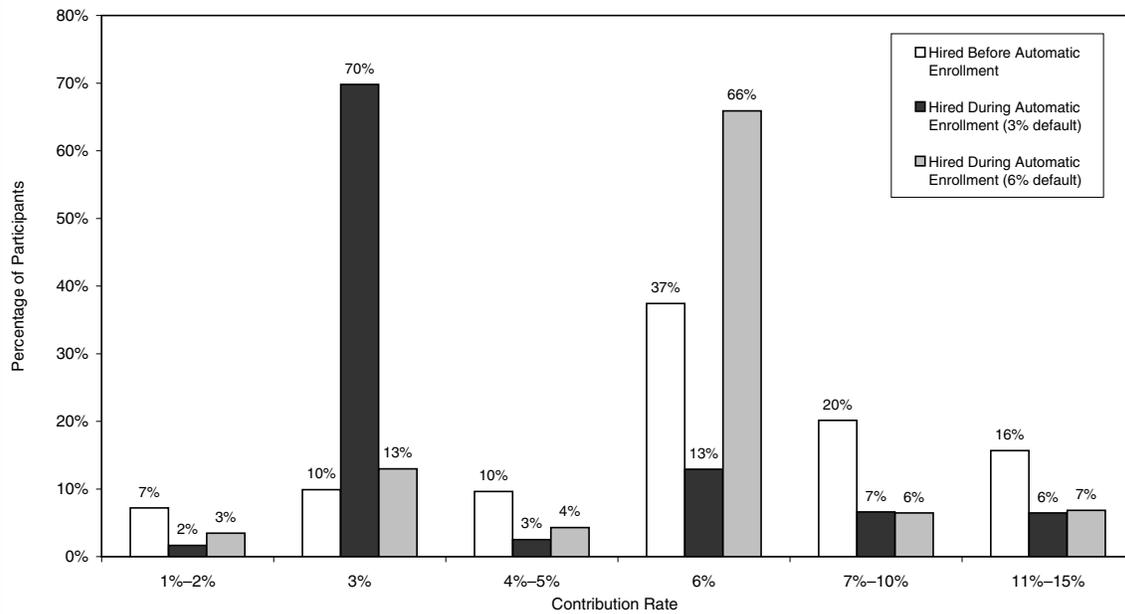
Figure 2  
The Distribution of 401(k)  
Contribution Rates: Company B



Source: James J. Choi, David Laibson, Brigitte C. Madrian, and Andrew Metrick, "Saving for Retirement on the Path of Least Resistance," in Ed McCaffrey and Joel Slemrod, eds., *Behavioral Public Finance: Toward a New Agenda* (New York, NY: Russell Sage Foundation, 2006: 304-351), © 2006 Russell Sage Foundation, 112 East 64th Street, New York, NY 10021. Reprinted with permission.

Note: Company B is the identification given to one of the companies studied by the researchers.

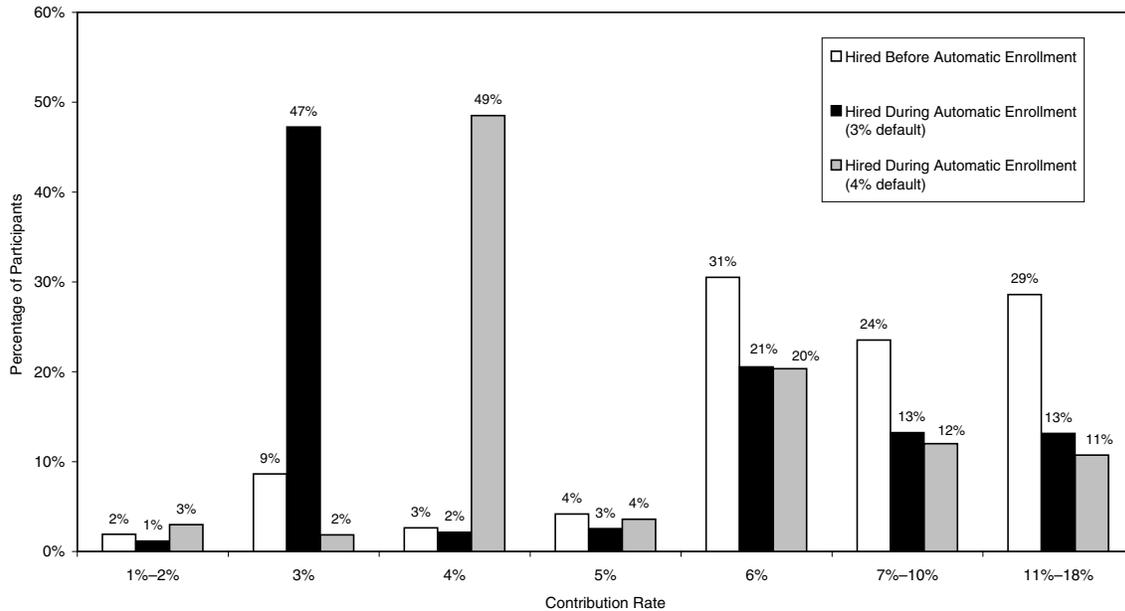
Figure 3  
The Distribution of 401(k)  
Contribution Rates: Company C



Source: James J. Choi, David Laibson, Brigitte C. Madrian, and Andrew Metrick, "Saving for Retirement on the Path of Least Resistance," in Ed McCaffrey and Joel Slemrod, eds., *Behavioral Public Finance: Toward a New Agenda* (New York, NY: Russell Sage Foundation, 2006: 304-351), © 2006 Russell Sage Foundation, 112 East 64th Street, New York, NY 10021. Reprinted with permission.

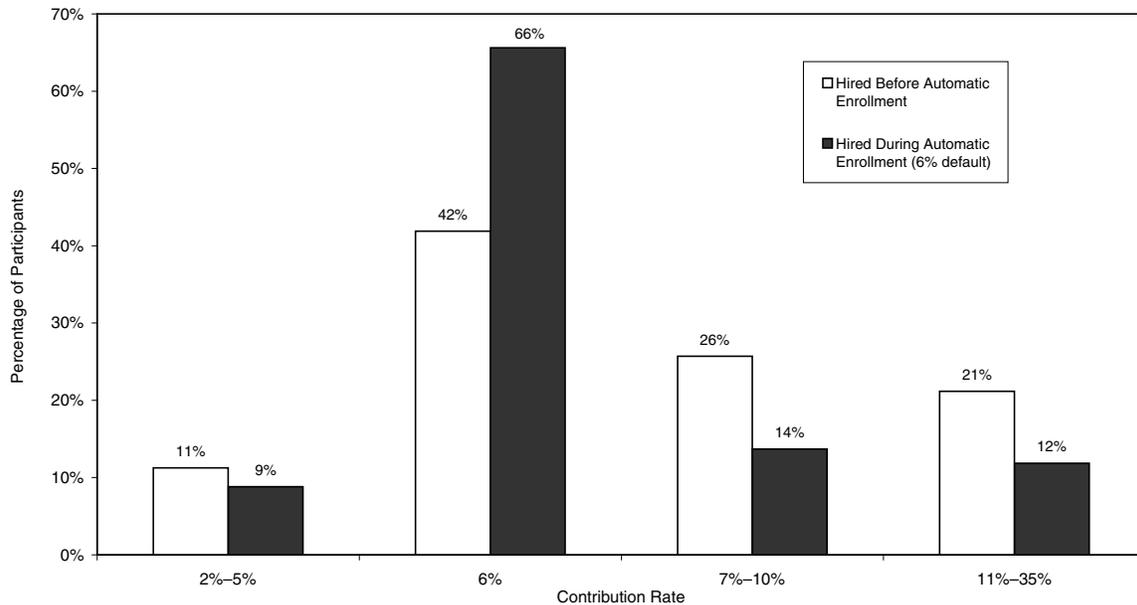
Note: Company C is the identification given to one of the companies studied by the researchers.

Figure 4  
**The Distribution of 401(k) Contribution Rates  
 for Employees Age 40+ at Hire: Company D**



Source: James J. Choi, David Laibson, Brigitte C. Madrian, and Andrew Metrick, "Saving for Retirement on the Path of Least Resistance," in Ed McCaffrey and Joel Slemrod, eds., *Behavioral Public Finance: Toward a New Agenda* (New York, NY: Russell Sage Foundation, 2006: 304-351), © 2006 Russell Sage Foundation, 112 East 64th Street, New York, NY 10021. Reprinted with permission.  
 Note: Company D is the identification given to one of the companies studied by the researchers.

Figure 5  
**The Distribution of 401(k)  
 Contribution Rates: Company H**



Source: James J. Choi, David Laibson, Brigitte C. Madrian, and Andrew Metrick, "Saving for Retirement on the Path of Least Resistance," in Ed McCaffrey and Joel Slemrod, eds., *Behavioral Public Finance: Toward a New Agenda* (New York, NY: Russell Sage Foundation, 2006: 304-351), © 2006 Russell Sage Foundation, 112 East 64th Street, New York, NY 10021. Reprinted with permission.  
 Note: Company H is the identification given to one of the companies studied by the researchers.

Plan sponsors may be concerned that an automatic contribution rate much more than 3 percent may result in a higher percentage of workers dropping out of the plan. However, in one plan studied by researchers, even when automatic contribution rates were raised from 3 percent to 6 percent for workers who had remained at the initial 3 percent default rate for a year, participation remained high. Further, the company studied with the highest initial default rate (6 percent) had the highest participation rate (Choi et al., 2006).

Implementing automatic enrollment with higher default rates and more aggressive default investments can have a meaningful impact on participants' replacement rates (Holden and VanDerhei, 2005). Based on simulations using the EBRI/ICI 401(k) Accumulation Projection Model, Holden and VanDerhei show that automatic enrollment at a 3 percent contribution rate invested in a money market fund actually results in lower projected replacement ratios for the highest income quartile. For the lowest income quartile, the median replacement rate increases from 37 percent for automatic enrollment at 3 percent in a money market fund to 52 percent for automatic enrollment at 6 percent in a life-cycle fund (Figure 9).

### ***Default Rules May Be Viewed by Workers as Implicit Advice***

Behaviorists have posited that one reason participants exhibit default behavior is because they may interpret a plan's default rules as implicit advice.<sup>10</sup> This is an important consideration, especially since, as noted above, many automatic-enrollment plans enroll participants at 3 percent or less—savings rates that are unlikely to provide adequate retirement funding.

Other researchers have begun to study the extent to which defaults are considered advice from the individuals responsible for establishing the defaults (McKenzie, Liersch, and Finkelstein, 2006). In one experiment, they found that when subjects were told they would be automatically enrolled in the company retirement plan, subjects were more likely (than those who weren't automatically enrolled) to say that the human resources staff probably think that workers should enroll (89 percent compared with 6 percent), and that workers want to enroll (80 percent versus 11 percent). This automatically enrolled group was also more likely to believe that the human resources staff were enrolled themselves (57 percent compared with 29 percent). Based on the human resources staff's choice regarding the plan default (enroll or not enroll), subjects drew different conclusions about the staff's beliefs and behaviors.

## **Behavioral Explanations for Passive “Choices”**

### ***Procrastination, Status-Quo Bias, Self Control, and Hyperbolic Discounting***

Procrastination may result from a bias toward the status quo. A preference for the status quo may be rational (when the cost of change is high), but it may also be irrational. Another reason people procrastinate is due to self-control problems. Individuals repeatedly report that they would like to save more, but they seem to lack the follow-through necessary to actually modify their behavior.<sup>11</sup> This often results because individual preferences are time inconsistent, and short-term decisions can conflict with long-run desires and goals. Another related behavioral bias is called *hyperbolic discounting*, which is the human tendency, when faced with uncertainty, to sharply reduce the importance of the future in the decision-making process: Consequences which occur at a later time, good or bad, tend to have a lot less bearing on choices the further off they are in the future.

### ***Bounded Rationality and Complexity***

Bounded rationality explains some decision-making shortcomings. It seems obvious that the human ability to make perfectly rational financial decisions is limited, but traditional economic theories assume humans will always act logically. Behaviorists recognize our limits. Perfectly rational decision making can be constrained by many factors: a lack of important information; time and cost to obtain information; and intelligence, to name a few.

Optimal retirement saving and investing are complex tasks that may easily exceed boundaries of rational capability. This may explain why only 42 percent of workers have calculated how much they need to save for their retirement (Helman, Copeland, and VanDerhei, 2006). Determining an optimal savings rate alone can be a very difficult task requiring assumptions about future employment and earnings, longevity, health care, retirement age, inflation, and capital markets, to name just a few. For many people, this process understandably lies outside the bounds of their rational ability. And it is precisely there (outside these bounds) that behavioral tendencies become potentially more powerful in our decision-making processes.

Figure 6

**Percentage of 401(k) Participants With Balances in the Automatic Enrollment Default Fund(s)**

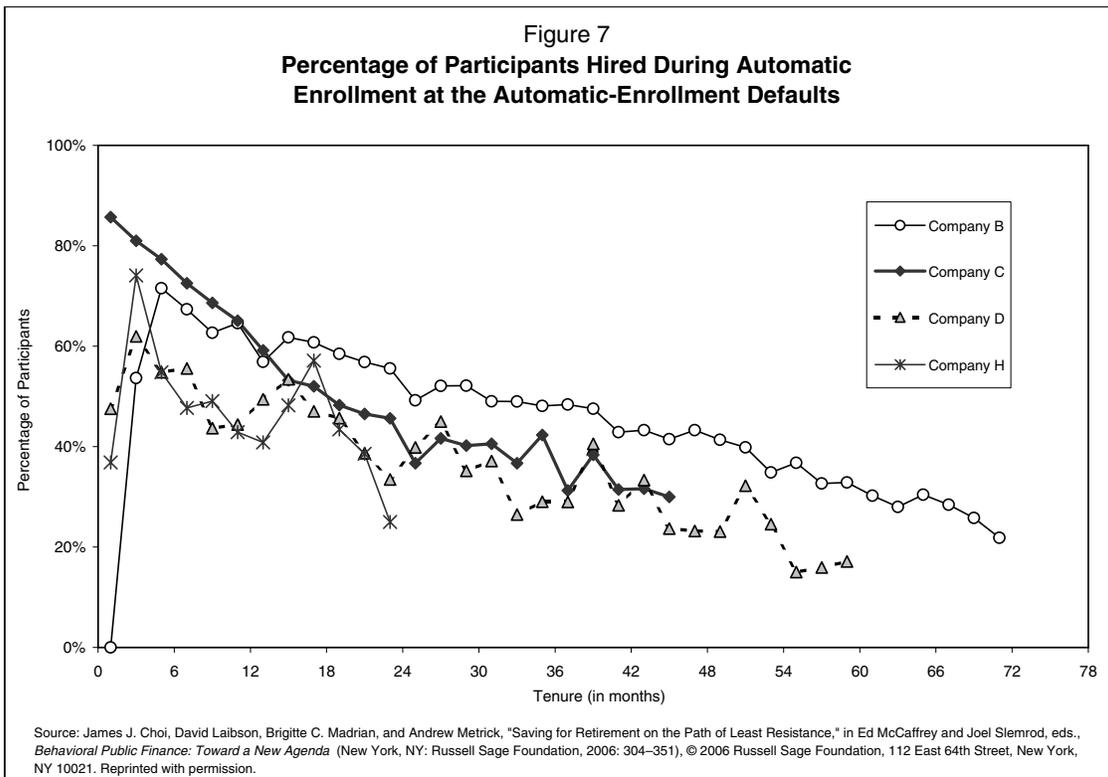
	Percentage of Participants With Any Balances in the Automatic-Enrollment Default Fund(s)	Percentage of Participants With All Balances in the Automatic-Enrollment Default Fund(s)
<b>Company B</b>		
Hired before automatic enrollment	43.9%	12.7%
Hired during automatic enrollment	71.6	59.6
Hired after automatic enrollment	27.7	6.8
<b>Company C (partitioned on the basis of differences in the default contribution rate under automatic enrollment)</b>		
Hired before automatic enrollment	17.7	5.2
Hired during automatic enrollment (3% default)	88.5	73.5
Hired during automatic enrollment (3% initial default, 6% at 1 year)	89.4	73.5
<b>Company C (partitioned on the basis of differences in the default investment fund under automatic enrollment)</b>		
Hired before automatic enrollment	17.7	5.2
Hired during automatic enrollment (money market fund default)	88.7	73.7
Hired during automatic enrollment (life cycle fund default)	96.5	90.1
<b>Company D</b>		
Hired before automatic enrollment	36.4	14.2
Hired during automatic enrollment (3% default)	65.9	53.8
Hired during automatic enrollment (4% default)	70.1	61.5
<b>Company H</b>		
Hired before automatic enrollment	3.7	2.5
Hired during automatic enrollment	50.8	45.8

Source: James J. Choi, David Laibson, Brigitte C. Madrian, and Andrew Metrick, "Saving for Retirement on the Path of Least Resistance," in Ed McCaffrey and Joel Slemrod, eds., *Behavioral Public Finance: Toward a New Agenda* (New York, NY: Russell Sage Foundation, 2006: 304–351), © 2006 Russell Sage Foundation, 112 East 64th Street, New York, NY 10021. Reprinted with permission.

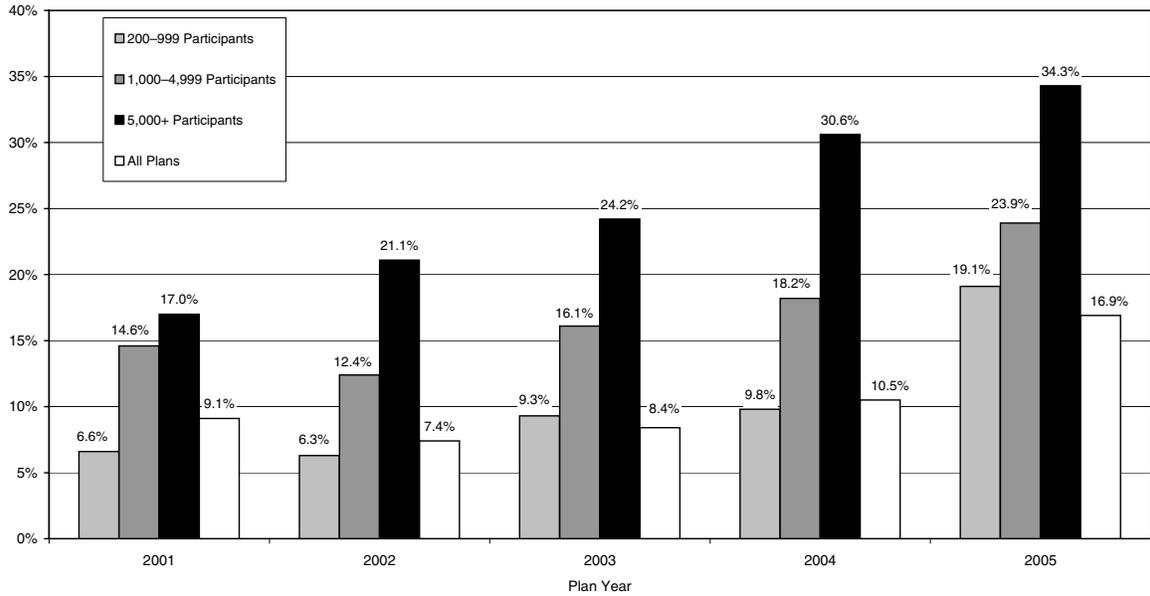
Note: The sample for Companies B, C, and H is 401(k)-eligible employees. The sample for Company D is 401(k)-eligible employees age 40+ at the time of hire. For Company D, the data for those hired before automatic enrollment include only employees not yet subject to automatic enrollment when it was applied to previously hired nonparticipants.

Figure 7

**Percentage of Participants Hired During Automatic Enrollment at the Automatic-Enrollment Defaults**

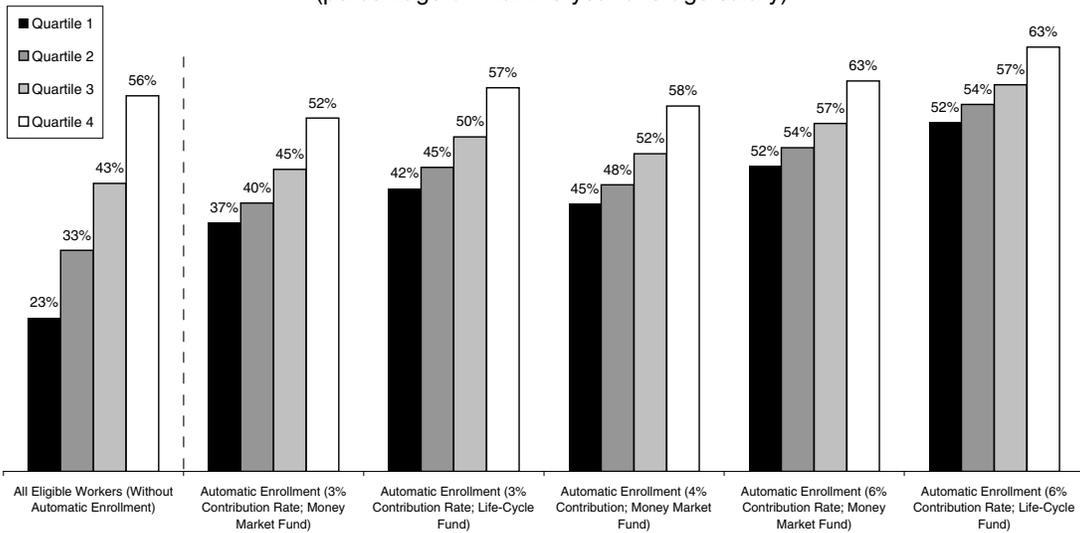


**Figure 8**  
**Percentage of Plans With Automatic Enrollment, by Plan Size, 2001–2005**



Source: Profit Sharing/401(k) Council of America, *Annual Survey of Profit Sharing and 401(k) Plans*, Chicago: Profit Sharing/401(k) Council of America, 2001–2006.

**Figure 9**  
**Median Replacement Rates From 401(k) Accumulations<sup>1</sup> for All Eligible Workers<sup>2</sup> Turning 65 Between 2030 and 2039, by Income Quartile at Age 65**  
 (percentage of final five-year average salary)



Source: EBR/ICI 401(k) Accumulation Projection Model.

<sup>1</sup> The 401(k) accumulation includes 401(k) balances at employer(s) and rollover IRA balances.

<sup>2</sup> All eligible workers includes 401(k) plan participants with account balances at year-end 2000 and eligible nonparticipants.

### ***Choice Overload***

Currently, a majority of retirement plans now offer between 11 and 20 investment options (Profit Sharing/401(k) Council of America, 2006). In a traditional economic sense, more choice is better; however, researchers have shown that more choice can have a negative effect on retirement saving outcomes (Iyengar, Jiang, and Huberman, 2004). In Figure 10, derived from data pertaining to nearly 800,000 people in nearly 650 DC retirement plans, researchers show that plan participation rates decline with additional investment options. Generally, the researchers found that the individual probability of participation drops by approximately 2 percent for every 10 investment options added to a plan, when individual and plan-level attributes are controlled for.

The impact of greater choice has been further explored by other behaviorists who found that greater choice affects people differently, *depending on their investment knowledge* (Agnew and Szykman, 2005). In one experiment, they studied the impact of the number of investment options and how they were presented to subjects on their investment choices. Subjects in two groups were allocated to one of four conditions: 6 investments presented in a book, 60 investments presented in a book, 6 investments presented in a table, or 60 investments presented in a table. Subjects were allocated to either a high-knowledge group or a low-knowledge group, based on their performance on a relatively simple financial literacy quiz. The results revealed that while the different presentations of investment information had no significant affect on participants' self-reported measured overload, the number of options did, with those in the 60-investment condition reporting a greater degree of overload. Although the low-knowledge group reported a higher degree of overload overall, the additional overload contributed by the higher number of investment options (60 versus 6) was not significant. The increased number of options significantly increased the overload only for the high-knowledge group.

Researchers also investigated how the number of options and the way information for those options is presented affects default behavior. Interestingly, they found that while low-knowledge subjects were more likely (overall) than high-knowledge subjects to select the default option, the low-knowledge group was less likely to select it when presented with more choices.

### ***Active Savings Decisions Also Succumb to Behavioral Pitfalls***

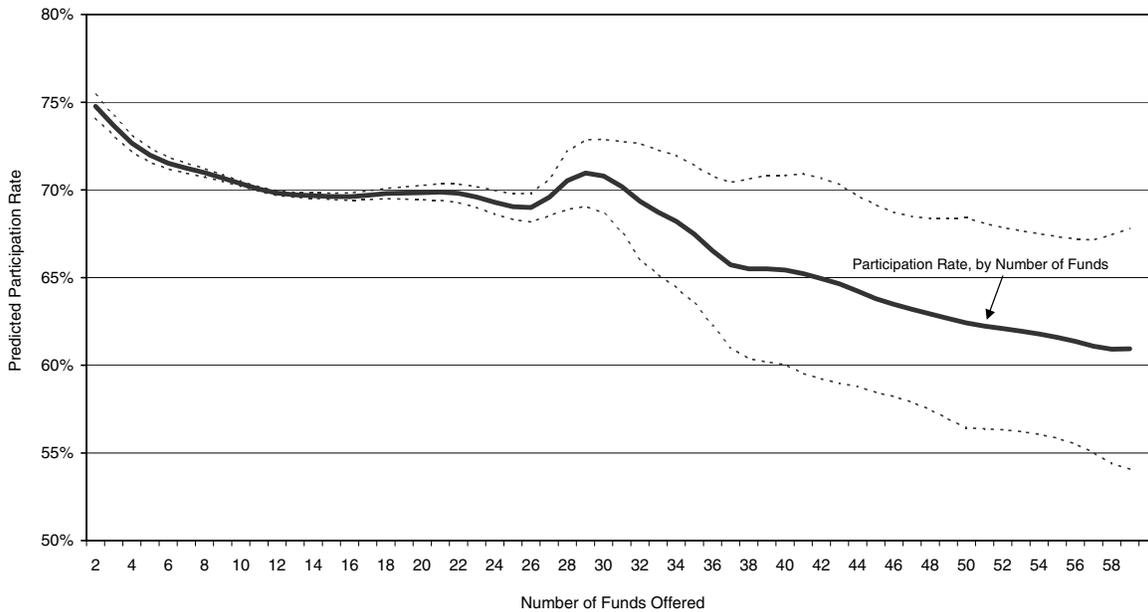
While a high level of passive decision making may be observed in automatic enrollment plans, a majority of 401(k) plans at all sizes do not automatically enroll participants. Therefore, presumably, most of the observed participant savings rates result from participants making active—not passive—decisions about how much to save for their retirement.

Many of the same tendencies that affect the willingness to passively accept a default contribution rate also contribute to actively selecting a less-than-ideal savings rate—or to not selecting a savings rate at all. Procrastination, self-control problems, and hyperbolic discounting can all serve to hinder workers from ever contributing at all to a company-sponsored retirement account. And, as described above, selecting the “right” amount to save may very well be outside the rational abilities of many workers.

### **Individuals Are Loss-Averse**

The famous behavioral model by Kahneman and Tversky (1979), known as Prospect Theory, suggests that people are much more sensitive to losses than they are to gains of the same magnitude. Estimates of this difference in gain and loss perception suggest that losses are felt between two and two and a half times more than gains (Kahneman, Knetsch and Thaler, 1990, and Tversky and Kahneman, 1992). This means that if a 50–50 gamble has one potential outcome of a \$100 loss, the other potential outcome that would be necessary to make typical individuals willing to participate in the gamble is about \$200–\$250. Loss aversion has direct consequences to retirement savings. A decision to contribute to a retirement savings plan requires some reduction or loss in current consumption, and human beings are very reluctant to lose something today, even if it is for a future gain.

Figure 10  
**Number of Funds Offered and Predicted Participation Rates**



Source: S.S.Iyengar, W. Jiang, and Gur Huberman, "How Much Choice is Too Much: Determinants of Individual Contributions to 401(k) Retirement Plans." In Olivia S. Mitchell and Stephen P. Utkus, eds., *Pension Design and Structure: New Lessons from Behavioral Finance*. (Oxford, UK: Oxford University Press, 2004: 83–95).  
 Notes: The graph plots the relation between the plan participation rate and the number of funds offered. Explanatory variables, except the number of funds offered, are set at their respective mean values and the numbers of funds offered using a two-stage parametric estimation method. The dotted lines represent the 95 percent confidence intervals, showing both upper and lower bounds.

Figure 11  
**Financial Education and Actual vs. Planned Savings Changes**

Planned Action	Seminar Attendees		Nonattendees
	Planned change	Actual change	Actual Change
<b>Nonparticipants</b>			
Enroll in 401(k) plan	100%	14%	7%
<b>401(k) Participants</b>			
Increase contribution rate	28	8	5
Change fund selection	47	15	10
Change fund allocation	36	10	6

Source: James J. Choi, David Laibson, Brigitte C. Madrian, and Andrew Metrick, "Saving for Retirement on the Path of Least Resistance," in Ed McCaffrey and Joel Slemrod, eds., *Behavioral Public Finance: Toward a New Agenda* (New York, NY: Russell Sage Foundation, 2006: 304–351), © 2006 Russell Sage Foundation, 112 East 64th Street, New York, NY 10021. Reprinted with permission.  
 Note: The sample is active 401(k)-eligible employees at company locations that offered financial education seminars from January–June 2000. Actual changes in savings behavior are measured over the period from December 31, 1999, through June 30, 2000. Planned changes are those reported by seminar attendees in an evaluation of the financial education seminar at the conclusion of the seminar. The planned changes from survey responses of attendees have been scaled to reflect the 401(k) participation rate of seminar attendees.

## **“Anchors” Weigh on Participant Savings Rates**

Behaviorists suggest that heuristics, or rules of thumb that simplify decision making, can have a powerful impact. One such heuristic is “anchoring.” In this case, anchors serve as a starting point from which decision makers adjust to their final decision. Behaviorists have shown that people make inadequate adjustments from an anchor toward a perfectly rational response (Slovic and Lichtenstein, 1971). With respect to the selection of a savings rate, workers may anchor to any one of a number of rates: the minimum or maximum allowed by the plan; an automatic-contribution rate (in an automatic-enrollment plan); the highest amount matched by employer contributions; or the amount their co-workers contribute, to name a few.<sup>12</sup>

In an analysis of contribution behavior of participants in three large 401(k) plans, Yakoboski and VanDerhei (1996) find that the savings anchors vary with age and income. Older workers and high earners showed a tendency to contribute the maximum allowed, while younger workers and lower earners tended to contribute just enough to receive the full employer matching contribution available to them. This illustrates how different groups have different “anchors”: Older workers are more focused on retirement than younger workers, and higher earners have more money to set aside in savings than low earners.

## **Peers May Influence Workers’ Decisions to Save for Retirement**

Researchers have found some evidence that the decision to participate in workplace-retirement programs may be influenced by one’s peers. In a university setting, one study showed that within-department participation was much more highly correlated than participation between departments.<sup>13</sup>

## ***Behaviorists on Active Investment Decision Making***

In a typical participant-directed 401(k) plan, workers must first decide to participate in the plan, and then must make investment choices and manage their retirement accounts, in addition to selecting a savings rate. Perfectly rational workers would approach these tasks by applying the tenets of modern-portfolio theory (meaning that investors should select portfolios based on the highest probable return for the least acceptable risk), rebalancing as appropriate. However, few do. Again, behaviorists have researched investment selection behavior and offer insight into some of the decision-making pitfalls afflicting this process. The following section begins with a discussion of empirical evidence in the retirement plan domain and continues with a discussion of well-known behavioral biases.

## **Initial Investment Selection: Empirical Evidence of Active Choices**

### ***Greater Investment Choice May Lead to a Decline in Equity Allocation***

As discussed above, empirical findings suggest that greater choice has an impact on overload, plan participation, and default-investment selection. A greater number of investment options can also increase participant allocations to more conservative options such as money market and bond funds (Iyengar and Kamenica, 2006). More precisely, for every additional 10 funds, researchers estimate that money market and bond fund allocations increase by 3.28 percentage points. Similarly, for every additional 10 funds, the probability that a participant allocates all of his or her investments to money market and bond funds increases by 2.87 percentage points, which is particularly interesting because the ratio of equity funds to the total number of funds increases as the total number of funds increases.

### ***Participants Have Poorly Defined Preferences and May Be Influenced by How the Preference Is Elicited***

That people have ill-defined preferences has been widely studied by behaviorists, and Benartzi and Thaler (2002) have illustrated how the concept may apply in the context of retirement-plan investment selection. In one experiment with university workers, subjects had the opportunity to select between two or three investment programs, labeled A through D, with A representing the most conservative and D representing the most aggressive program. In this experiment, the preference for program C over program B depends on which other programs are offered with them. The preference for C over B increases from 29.2 percent when B and C are presented with A to 53.8 percent when they are presented with D. When subjects simply choose between B and C, 39 percent preferred C to B.

## **Behaviorally Based Explanations for Suboptimal Active Investment Selection**

### ***Investors Are Overconfident***

Generally, people are often overconfident when making decisions, and behaviorists have shown that, interestingly, overconfidence increases as knowledge decreases (Pitz, 1974). Agnew and Szykman (2005) empirically confirm this notion, finding the correlation between financial literacy test scores and self-reported knowledge level is low for some demographic segments, and suggesting individuals in these groups “may not have a good understanding of how little they actually know about investments.”

Certainly, signs of overconfidence appear in *The 2006 Retirement Confidence Survey* (Helman, Copeland, and VanDerhei, 2006). Of the workers who say that they are very confident about their retirement security, 22 percent report they weren’t saving for retirement. Another 39 percent report having less than \$50,000 in savings, and 37 percent haven’t even calculated what they’ll need in retirement.

### ***Workers Overweight Past Performance When Selecting Investments***

Many investors simply chase performance in building their investment portfolios, ignoring the performance disclosures warning prospective investors that past investment performance does not guarantee future results. Funds with recent top performance seem to get more than their fair share of cash flows (Sirri and Tufano, 1998).

Theoretical explanations for this behavior may include investors’ lack of understanding about the probability of continued out-performance. In other words, they may attribute the recent top performance to a manager’s talent or skill, rather than recent luck. In addition, researchers have found that mutual fund advertising plays a role in mutual fund flows (Sirri and Tufano, 1998). To the extent that a recent top-performing fund is heavily advertised in the popular press, it reduces the investor’s search cost, as the information is more easily available.

### ***Familiarity Breeds...Another Decision-Making Bias***

People tend to believe that an investment with which they are familiar is less risky, and, in some cases, that belief may be rational. However, in other cases it is not. For example, this bias may at least partly help explain why workers invest in their employer’s stock.<sup>14</sup> Significantly investing in employer securities violates one of the basic principles of investing: diversification. Not only are future earnings dependent on the employer’s performance, so is a worker’s retirement funding when a large portion of his or her retirement account is invested in employer stock.

Whether the company stock retirement plan investments may be attributed to a familiarity bias can be argued. However, it is clear from workers’ responses to various survey questions about the risk of company stock that they do not understand it. In a 2002 survey, respondents rated the risk of company stock lower than the risk of a diversified, domestic-stock fund (John Hancock Financial Services, 2002).

## **Ongoing Investment Account Management: Empirical Evidence and Other Anomalies<sup>15</sup>**

### ***Status Quo Bias***

Given the previous discussion on status quo bias, it is not surprising that this bias is evident in the way workers manage their retirement accounts. Once they have initially selected (passively or actively) their investments, a majority of retirement-plan participants never make future changes in their allocations, or they make very few changes. Ameriks and Zeldes (2004) find that nearly one-half of participants in their sample of TIAA-CREF participant data made no allocation changes over the 10-year period studied.<sup>16</sup> More specifically, they found that 68 percent and 87 percent of participants made one or fewer changes to their current contribution and balance allocations, respectively.

### ***Individuals Are Loss-Averse***

As noted above, early work by Kahneman and Tversky (1979) offered a value function (known as Prospect Theory) that suggests people tend to be more sensitive to losses than gains. One of the implications of this finding is that investors may seek to prematurely lock in their gains and delay in accepting their losses.

### ***Mental Accounting, Narrow Framing, and Myopic Loss Aversion***

How individuals frame decisions and outcomes importantly determines their behavior. Investors' mental accounting pertains to the way in which they frame decisions across their investments and over time (Thaler et al., 1997). For example, workers who allocate employer contributions differently than they allocate their own 401(k) contributions may do so because they are narrowly framing their investment decisions, causing them to have separate mental accounts, even though both accounts constitute their retirement assets. Mental accounting with a narrow frame can undermine the benefits of diversification, as individuals tend to focus on investments separately, instead of optimizing their total portfolio. Loss aversion, combined with the framing of the investment horizon, also affect individuals' asset allocation. The longer the investment time horizon, the higher the probability that equities will have higher returns than bonds, and the lower the probability that equities will lead to loss with respect to the current wealth. Indeed, Thaler et al. (1997) show that subjects reviewing monthly portfolio results allocated 40.9 percent to equities, while those reviewing annual results allocated nearly 70 percent to equities.

### ***Participant Education May Not Overcome Behavioral Tendencies***

Overall participation and savings rates of plan-eligible American workers<sup>17</sup> suggest that retirement-education programs in general are not as successful as many would hope, despite the significant resources expended. More specifically, research has shown their efficacy in behavior modification is minimal. Madrian and Shea (2001) studied one company's financial education seminars offered at 40 locations collectively employing one-third of the company's workers. The seminars were developed and conducted by an outside firm specializing in these services. The seminars were general in nature, although some time was spent discussing the firm's retirement plans. Seminar presenters also made attendees aware of other resources available to answer additional questions and to provide help.

Overall, approximately 17 percent of eligible workers attended the seminars,<sup>18</sup> and while many of them reported intentions to make changes (begin contributing, increase contribution rates, modify investment allocations), few actually did so (Figure 11).

The notion that education does not solve behavioral problems has been corroborated by Clark et al. (2006), who found through surveys (as opposed to recordkeeping data) that while individuals reported intentions to increase savings, a fairly low percentage of them actually did so. In a survey a few months after educational seminars, attendees were asked whether they had subsequently altered their savings behavior; of the 37 percent to 41 percent of respondents who reported intentions of increasing savings, less than half reported having done so.<sup>19</sup>

### ***Behaviorists Offer Prescriptive Insights***

As behaviorists have sought to better understand decision-making shortcomings, they have also sought ways to optimize outcomes, given these shortcomings. In addition to highlighting the potential impact of automatic enrollment plans in which participant inertia is transformed from not saving to saving, they have offered other "prescriptions" that may improve workers' retirement saving outcomes.

### **Workers Benefit From a Simplified Enrollment Process**

In most 401(k) plans (except those where participants are automatically enrolled), workers must select a savings rate and choose investments. However, some plans have offered participants a simple alternative. Participants can simply accept a pre-selected savings rate and asset allocation.<sup>20</sup> Choi, Laibson, and Madrian (2006) studied three plans that implemented this approach or slight variations thereof. In two of the plans, nonparticipating eligible workers were offered the simplified enrollment process, and, in another plan, the approach was offered to newly eligible workers. They find the simplified approach effective in increasing participation rates from 10 percentage points to 20 percentage points when offered to nonparticipating eligible workers; where it was offered to newly eligible workers, the participation rate tripled.<sup>21</sup> While these improvements are certainly significant, the authors note that the results are not as good as typical automatic enrollment results. Nevertheless, this simplified enrollment method offers another alternative to plan sponsors who are still uncomfortable with automatic enrollment, despite its increasing legislative support.

## **“Required” Active Decisions May Increase Participation and Deferral Rate<sup>22</sup>**

Requiring workers to make active savings and investing decisions may also serve to increase plan-participation and savings rates. Choi et al. (2005) studied one plan that required workers to make active choices, finding that the average three-month participation rate increased by 28 percentage points as a result. The researchers note that this approach reduces procrastination as workers make immediate decisions which would otherwise take three years under standard enrollment, the importance of which is magnified considering the number of job changes the average worker will make.<sup>23</sup>

## **Other Plan Features, Such as Automatic-Deferral Escalation, Are Effective in Increasing Participant Savings Rates**

Behaviorists have demonstrated that automatic-deferral escalation programs (which automatically increase 401(k) contribution rates according to a pre-defined schedule) can be very effective in raising savings rates. Thaler and Benartzi (2004) conceived one of the first programs of this type. Called SMarT, for Save More Tomorrow™, its success aligns with behavioral theory, since the program was developed with keen recognition of the many decision-making shortcomings described above: self-control problems, status quo bias, and loss aversion. Their concept was developed specifically to overcome these factors. They “correct” self-control problems with the commitment feature, whereby workers elect today to begin saving tomorrow. They capitalize on inertia and the status quo bias since savings rate increases are automatic until a specified savings rate is achieved. They overcome loss aversion by synchronizing savings increases with pay raises.

The first known SMarT implementation took place at a smaller manufacturing firm in 1998. This firm’s escalation plan included a 3 percent savings-rate increase synchronized with pay raises. It was offered to workers who declined a suggested savings rate after a conversation with a financial consultant. Nearly 80 percent of workers who were offered the program joined. Of those who joined, 80 percent continued in the program through the fourth pay raise. In less than 3.5 years, the average savings rate of these participants increased from 3.5 percent to 13.6 percent.

Since the initial implementation of automatic-deferral increase programs, other variants of the program have been introduced. For example, in some cases, participants are automatically enrolled in the program. That is, they do not make an active decision to join; they must take action to leave. Also, due to the additional administrative burden of perfectly synchronizing savings increases with pay raises, many programs offer increase dates that may or may not be the same as the effective date of pay increases. Finally, another variant of the program is one in which savings increases to a specified level automatically occur after a specified period of time, as authorized by the safe harbor provisions of PPA.

## **Summary**

Behavioral research has made important, relevant contributions to retirement saving and investing. This work has cast a new light on participant behavior and its underpinnings: By and large, individuals are inert—with good intentions, poor follow-through, and bounded rationality. Loss aversion and decision-making biases often lead to unfortunate outcomes, including a poorly funded retirement.

Further, behavioral economists have demonstrated that education and communication programs alone may not be effective in changing behavior. Instead, with their behavioral insights, they have offered new retirement plan design alternatives and empirically tested their efficacy in overcoming identified suboptimal behavior. These efforts are helping to pave a path of least resistance that should lead to greater retirement security.

The Pension Protection Act of 2006 appears to support these alternatives by providing incentives to plan sponsors that implement automatic features such as automatic enrollment and deferral rate escalation. It also allows plan sponsors to choose more aggressive investment defaults. Perhaps implicit in this support is some advice to sponsors to accept participant behavior and to think more about changing their own by embracing automatic plan features.

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## Endnotes

<sup>1</sup> Throughout this *Issue Brief*, the terms *behavioral economics* and *behavioral finance* are used interchangeably, and a *behaviorist* refers to one specializing in behavioral economics.

<sup>2</sup> The Pension Protection Act (P.L. 109-280), signed into law Aug. 17, 2006, contains a “safe harbor” provision providing legal protections designed to encourage employers to offer automatic enrollment in employer-sponsored defined contribution retirement plans, so as to increase worker participation. Specifically, the law allows sponsors to enroll new employees at a deferral percentage of at least 3 percent of compensation, and existing employees who are not contributing to the plan must be enrolled unless they have declined to participate. Sponsors can automatically increase employees’ deferral percentage by at least 1 percentage point annually until it reaches 6 percent of compensation or the employee stops the increases. The employer may continue the automatic increases up to 10 percent of compensation. The law requires the Department of Labor to issue regulations governing default investments by Feb. 17, 2007, and at this writing the DOL has proposed regulations out for public comment. If a plan complies with the regulations and the default investment choice is prudent, the plan sponsor will avoid fiduciary liability because the participant will be considered to be exercising control over his or her assets. Bill summary and provisions are online at the House Ways and Means Committee Web site at <http://waysandmeans.house.gov/ResourceKits.asp?section=2476>. More detailed retirement plan provisions are available at the Department of Labor’s Employee Benefit Security Administration’s Web site at [www.dol.gov/EBSA/pensionreform.html](http://www.dol.gov/EBSA/pensionreform.html) and a technical explanation of the bill’s provisions is available at the Joint Committee on Taxation’s Web site at [www.house.gov/jct/x-38-06.pdf](http://www.house.gov/jct/x-38-06.pdf). A summary by Watson Wyatt consultants is online at [www.watsonwyatt.com/us/pubs/insider/showarticle.asp?ArticleID=16625](http://www.watsonwyatt.com/us/pubs/insider/showarticle.asp?ArticleID=16625).

<sup>3</sup> This *Issue Brief* does not include a discussion of the decumulation phase (when workers begin withdrawing from their retirement accounts). Empirical research on prevalent behaviors in this phase has been less extensive.

<sup>4</sup> Holden and VanDerhei (2005) also show the benefits of automatic enrollment by income quartile, noting the lowest quartile achieves the highest gain in participation rates with automatic enrollment.

<sup>5</sup> Madrian and Shea (2001) show that prior to automatic enrollment, tenure was a strong determinant of individual participation. For workers with three to five years of tenure, participation was 64 percent, whereas for workers with 10 to 15 years of tenure, it was 80 percent.

<sup>6</sup> When “default” is not conditional on participation, more than 61 percent retain the defaults.

<sup>7</sup> The authors demonstrate that “a substantial fraction of workers who would have participated in the 401(k) plan even in the absence of automatic enrollment” moved to a contribution rate of 3 percent, “although they would have chosen a different contribution rate otherwise.” They go on to show that for many workers, the actively selected contribution rate would have been higher.

<sup>8</sup> See section titled “*Anchors*” *Weigh on Participant Savings Rates* for a further discussion of anchoring as a behavioral bias.

<sup>9</sup> The authors note their prior research shows that highly compensated workers tend to move away from defaults more quickly than lower-compensated workers, and earnings are the strongest determinant of the time until change.

<sup>10</sup> For example, Madrian and Shea (2001) note that while many other behavioral tendencies may help explain why many participants continue contributing at the rate used to automatically enroll them, those explanations do not address why automatically enrolled participants continue to invest in the default fund. One potential explanation offered is that participants view the investment default as implicit advice from the plan sponsor as to what fund they should be investing in. It is also suggested that participants may view the automatic contribution rate as implicit advice as well.

<sup>11</sup> Choi et al. (2006) report that two-thirds of subjects surveyed said their savings rate was too low, and 35 percent of them said they planned to increase their savings rate in the next few months. However, only 14 percent actually did.

<sup>12</sup> For example, in Choi et al. (2006) the authors note that before automatic enrollment, in all four companies studied, the most popular contribution rate was the match threshold. After automatic enrollment, the most frequent rates are the same as the default rates for automatically enrolled participants. In Company H, where the automatic default rate (and the match threshold) is 6 percent, the authors note that the percentage of workers at this contribution rate is 24 percentage points higher for automatically enrolled participants.

<sup>13</sup> Researchers suggest, however, it is possible there are other highly correlated variables that may explain differences between within-department retirement-plan participation rates. The area may benefit from additional research.

<sup>14</sup> The Employee Benefit Research Institute notes in *Issue Brief* no. 296 (“401(k) Plan Asset Allocation, Account Balances, and Loan Activity in 2005,” August 2006) that participant allocation to company stock does appear to be declining (Holden and VanDerhei, 2006).

<sup>15</sup> Investors’ observed difficulties in managing their portfolios in a perfectly rational way suggest the potential value offered by asset allocation funds, including target-date maturity funds through automatic reallocation. These funds and managed account services overcome many of the decision-making shortfalls highlighted in this section.

<sup>16</sup> The authors note that this finding confirms earlier work by Samuelson and Zeckhauser (1988).

<sup>17</sup> EBRI *2006 Retirement Confidence Survey* (Helman, Copeland, and VanDerhei, 2006) reports that 52 percent of workers saving for retirement have investments of less than \$50,000.

<sup>18</sup> Researchers found participation in the 401(k) was a strong positive predictor of seminar attendance.

<sup>19</sup> More specifically, of the 41 percent of respondents who reported they would establish a supplemental savings plan, 25 percent reported in a follow-up survey a few months later that they had actually done so. Of the 37 percent who intended to increase contributions to an existing plan, 42 percent reported in the follow-up survey that they had.

<sup>20</sup> Participants are still able to select other contribution rates and investment options.

<sup>21</sup> The participation rate tripled, when measured three months after hire.

<sup>22</sup> In the plan studied, there was no penalty for not returning a form, but unreturned forms were followed up on. Only about 5 percent of workers failed to turn in a form. As a result, *required* is in quotation marks.

<sup>23</sup> For the plan they studied, the researchers note that the switch from “required” active decision making to standard enrollment was coincidental to the plan’s switch from paper enrollment forms to the use of an automated phone system.

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*EBRI Employee Benefit Research Institute Issue Brief* (ISSN 0887-137X) is published monthly by the Employee Benefit Research Institute, 2121 K Street, NW, Suite 600, Washington, DC 20037-1896, at \$300 per year or is included as part of a membership subscription. Periodicals postage rate paid in Washington, DC, and additional mailing offices. POSTMASTER: Send address changes to: *EBRI Issue Brief*, 2121 K Street, NW, Suite 600, Washington, DC 20037-1896. Copyright 2007 by Employee Benefit Research Institute. All rights reserved, No. 301.

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