

## Heuristics and Biases in Retirement Savings Behavior

Shlomo Benartzi and Richard H. Thaler

**A**ll around the world, in both the public and private sectors, retirement plans are shifting away from “defined benefit” plans toward “defined contribution” plans.<sup>1</sup> Poterba, Venti, and Wise (2006), for example, followed the cohort of Americans who were 45 years old in 1984 and report a decrease in defined benefit plan coverage from about 40 percent to 20 percent and a corresponding increase in defined contribution plan coverage from about 5 percent to more than 30 percent. Defined contribution plans have many attractive features for participants, such as portability and flexibility, but these attractions come with an increased responsibility to choose wisely. The plans also provide economists with an attractive domain in which to study saving behavior.

The standard economic theories of saving (like the life-cycle or permanent income models) contain three embedded rationality assumptions, one explicit and two implicit. The explicit assumption is that savers accumulate and then decumulate assets to maximize some lifetime utility function (possibly including bequests). The first implicit assumption is that households have the cognitive ability to solve the necessary optimization problem. The second implicit assumption is that the households also have sufficient willpower to execute this optimal plan.

<sup>1</sup> A defined benefit plan promises a benefit determined by a formula that typically includes a salary history and length of employment. A defined contribution plan specifies how much goes into a worker's retirement account, but then transfers much of the decision-making authority about whether to participate, how much to save, and how to invest from the employer or government to the employee.

■ *Shlomo Benartzi is Professor and Co-Chair of the Behavioral Decision-Making Group, Anderson School of Management, University of California, Los Angeles, California. Richard H. Thaler is Ralph and Dorothy Keller Distinguished Service Professor of Behavioral Science and Economics, and Director of the Center for Decision Research, Graduate School of Business, University of Chicago, Chicago, Illinois. Their e-mail addresses are <benartzi@ucla.edu> and <thaler@gsb.uchicago.edu>.*

Both of the implicit assumptions are suspect. Even among economists, few spend much time calculating a personal optimal savings rate, given the uncertainties about future rates of return, income flows, retirement plans, health, and so forth. Instead, most people cope by adopting simple heuristics, or rules of thumb. However, psychology teaches that such heuristics, though often useful and accurate, can lead to systematic biases (Gilovich, Griffen, and Kahneman, 2002). In this paper, we investigate both the heuristics and the biases that emerge in the area of retirement savings. We do not discuss how to determine whether people are saving enough for retirement; that topic is covered in a companion paper by Jonathan Skinner in this issue. Instead, we examine the decisions employees make about whether to join a savings plan, how much to contribute, and how to invest. We then discuss the possible role of interventions aiming to improve retirement decision making, such as education and plan design.

## **Enrollment Decisions: To Join or Not to Join**

Defined contribution retirement plans are attractive vehicles for saving. Contributions are tax deductible, and accumulations are tax deferred. In addition, many employers offer to match employees' contributions. For example, a common plan is to match 50 percent of employees' contributions up to some threshold, such as 6 percent of salary. Taking advantage of this match should be a no-brainer for all but the most impatient and/or liquidity-constrained household. Nevertheless, enrollment rates in such plans are far from 100 percent.

One extreme example of reluctance to join an attractive retirement plan comes from the United Kingdom, where some defined benefit plans do not require any employee contributions and are fully paid for by the employer. They do require employees to take action to join the plan. Data on 25 such plans reveals that only half of the eligible employees (51 percent) signed up.<sup>2</sup>

Another extreme example involves those workers for whom joining a retirement plan amounts to an arbitrage opportunity. Choi, Laibson, and Madrian (2005) identify one group of workers with this arbitrage opportunity, namely employees who are 1) older than 59½ years old, so they face no tax penalty when they withdraw funds from their retirement account; 2) have an employer match; and 3) are allowed by their employer to withdraw funds from their retirement account while still working. For this group of employees, joining the plan is a sure profit opportunity because they can immediately withdraw their contributions without any penalty, yet they get to keep the employer match. Nonetheless, Choi et al. find that 40 percent of these individuals either do not join the plan or do not save enough to get the full match.<sup>3</sup>

One method to encourage worker participation in retirement plans is to

<sup>2</sup> We thank David Blake and the U.K. Department of Work and Pensions for providing us with the data.

<sup>3</sup> Dufo, Gale, Liebman, Orzag, and Saez (2005) find a similar unexploited arbitrage opportunity in the context of tax filers eligible for the savers tax credit.

change the default so that instead of workers being outside the retirement plan unless they choose to opt in, they would be enrolled in the plan unless they choose to opt out. This strategy, called automatic enrollment (or negative election), has been proven to increase enrollment in U.S. defined contribution plans (Madrian and Shea, 2001a; Choi, Laibson, Madrian, and Metrick, 2004, 2002). Under automatic enrollment, workers are notified at the time of eligibility that they will be enrolled in the plan (at a specified savings rate and asset allocation) unless they actively elect not to participate or they change the default selections. In one plan Madrian and Shea studied, participation rates under the opt-in approach were barely 20 percent after three months of employment, gradually increasing to 65 percent after 36 months of employment. When automatic enrollment was adopted, enrollment of new employees jumped to 90 percent immediately and increased to more than 98 percent within 36 months. Automatic enrollment thus has two effects: participants join sooner, and more participants join eventually.

Does automatic enrollment merely overcome the inertia to help workers make the choice they would actually prefer? Or does automatic enrollment somehow seduce workers into saving when they would prefer to be spending? Under automatic enrollment, very few employees drop out of the plan once enrolled. For example, in the four companies adopting automatic enrollment studied by Choi, Laibson, Madrian, and Metrick (forthcoming), the fraction of 401(k) participants who dropped out of the plan in the first year was only 0.3 to 0.6 percentage points higher than it had been before automatic enrollment was introduced. This finding suggests that workers are not suddenly discovering, to their dismay, that they are saving more than they had wanted.

Closely related to automatic enrollment is the idea to require that workers make an active decision whether to join the plan (Choi, Laibson, Madrian, and Metrick, 2005), such as requiring employees to check a “yes” or a “no” box for participation. With active decision making in place, employees have to state their preferences and there is no default choice. One company switched from an opt-in regime to active decisions and found that participation rates increased by about 25 percentage points.

Another related idea is to simplify the enrollment process. Choi, Laibson, Madrian, and Metrick (2005) tested this idea by analyzing a simplified enrollment form. New employees were handed enrollment cards during orientation with a “yes” box for joining the plan at a 2 percent saving rate with a preselected asset allocation. Employees did not have to spend time choosing a saving rate and asset allocation but could just check the “yes” box for participation. Choi et al. report an increase in participation rates during the first four months of employment from 9 percent to 34 percent.

However, both automatic enrollment programs and active decision plans are typically set with a relatively low default saving rate of 2 or 3 percent and a very conservative investment choice, such as a money market account. Madrian and Shea (2001a) found that many employees continue saving at the default rate of 2 percent, a rate far too low to provide sufficient funding for retirement, and also that many employees remain in the default investment fund. We will later discuss

policies that might keep the high participation rates of automatic enrollment plans and also promote higher contribution rates and more broadly diversified portfolios.

While automatic enrollment or “quick” enrollment makes the process of joining a retirement plan less daunting, expanding the choices of funds available to participants can have the opposite effect. Iyengar, Huberman, and Jiang (2004) find a negative correlation between the number of investment options offered in the plan and participation rates. They estimate that the addition of ten funds to the menu of investment options reduces the likelihood of employee participation by two percentage points.

## Contribution Rates

In a typical opt-in retirement savings plan, employees are first asked whether they wish to participate, and then asked how much they want to contribute. In this paper, we do not attempt to answer the difficult question of whether the average employee is contributing “enough.”<sup>4</sup> We do want to make two general points, however. First, for workers who do not have other significant sources of retirement income, the savings rates typically observed in 401(k) plans are unlikely to provide anything close to complete income replacement in retirement. Second, many employees believe that they should be saving more. Choi, Laibson, Madrian, and Metrick (2002) report that 68 percent of 401(k) participants feel their saving rate is “too low,” 31 percent feel their saving rate is “about right,” and only 1 percent believe their saving rate is “too high.”<sup>5</sup>

How do participants choose their contribution rate? Many people spend very little time on this important financial decision. In a survey of faculty and staff at the University of Southern California, we found that 58 percent spent less than one hour determining their contribution rate and investment elections (Benartzi and Thaler, 1999).

Apparently, many people are using shortcuts or “saving heuristics.” For example, in many plans, participants are asked to state a desired saving rate as a percentage of pay. Hewitt Associates (2002b) finds that the distribution of contribution rates spikes at multiples of 5 percent, even though this analysis excludes plans that offer an employer match with a threshold of either 5 or 10

<sup>4</sup> While saving rates are very low and often negative in the United States, United Kingdom, Canada, and Australia, saving rates are much higher in Asia. It is beyond the scope of this paper to address any cultural differences that could explain the cross-sectional variation in saving rates.

<sup>5</sup> Economists sometimes belittle such statements of intention, and partly for good reason, given that few of the participants who say they should be saving more make any changes in their behavior. Yet such statements are not meaningless or random. Many people announce an intention to eat less and exercise more next year, but very few say they hope to smoke more next year or watch more sitcom reruns. We interpret the statement “I should be saving (exercising) more” to imply that people making such a statement would be open to strategies that would help them achieve these goals. We discuss one such plan below.

percent, thus ruling out the possibility that employees simply maximize the amount contributed by their employer on their behalf (a strategy we discuss below).

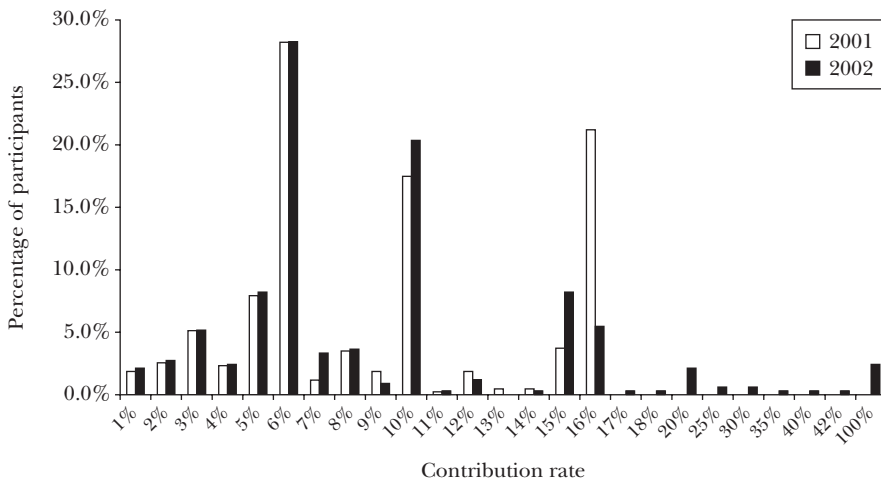
Another saving heuristic we explored in a joint research project with Hewitt Associates is picking the maximum contribution rate allowed by the plan (Hewitt, 2002a). This strategy can be a sensible one. However, changes in the tax code enabled us to explore whether the rule of “saving the max” is the result of careful thinking or just a convenient rule of thumb. The Economic Growth and Tax Relief Reconciliation Act of 2001 (EGTRRA) retained dollar caps on contributions to retirement accounts but eliminated the restrictions on the percentage of salary that could be contributed. As a result, people with a low salary (for example, a part-time worker) below the dollar cap could choose to save 100 percent of their pay. This strategy could be attractive in certain cases: for example, a couple that wants to save all or most of the second earner’s pay. Traditional economic analysis predicts that EGTRRA would likely result in increased contributions to retirement accounts. But if some employees used the maximum contribution percentage prior to EGTRRA as a saving heuristic, and those employees now need to choose their own percentage (because saving the maximum 100 percent of wages is not feasible for most people), then raising the maximum share of income that can be contributed could result in *lower* contributions to retirement accounts.

To study this possibility, we compared the distribution of contribution rates for those joining one plan at the fourth quarter of 2001, when the maximum was 16 percent, with those joining the plan at the first quarter of 2002, just after the limit was raised to 100 percent. Figure 1 shows the results. Prior to EGTRRA, 21 percent of new hires deferred 16 percent of their income. After EGTRRA, 5 percent deferred 16 percent and 7 percent deferred more than 16 percent. Thus, the share of employees saving at least 16 percent decreased from 21 to 12 percent. We believe that some employees who would have been attracted to the “maximum contribution heuristic” prior to EGTRRA found the 100 percent maximum rate too high and switched to the “multiple-of-five heuristic,” which explains the increased popularity of contribution rates of 10 and 15 percent.

Another common rule of thumb is to contribute to a retirement account the minimum necessary to get the full employer match. For example, if the employer matches employees’ contributions up to 6 percent of pay, then many employees contribute 6 percent. The employer in Figure 1 matched up to 6 percent, and 28 percent of the participants contributed at that level. If participants are behaving this way, then firms desiring to encourage employee savings might alter their matching formula to achieve this goal. For example, we suspect that changing the match formula from 50 percent on the first 6 percent of pay to 30 percent on the first 10 percent of pay would result in higher contribution rates. Those who use the match threshold as a rule of thumb would save more with a higher matching threshold. Also, picking a round number as the threshold would also capture those who use the “round number heuristic” discussed above.

Figure 1

**Distribution of Contribution Rates for New Plan Participants before and after the Maximum Rate was Increased from 16 to 100 Percent of Pay**



*Note:* The above chart displays the distribution of contribution rates at a large defined contribution plan administered by Hewitt Associates. In 2002, the maximum contribution rate allowed under the plan was increased from 16 percent to 100 percent of pay in accordance with the Economic Growth and Tax Relief Reconciliation Act of 2001. The chart displays the distribution of contribution rates for participants who joined the plan in 2001 versus those who joined in 2002 after the maximum rate was increased. For more details, see Hewitt Associates (2000a).

## Asset Allocation

### Naïve Diversification Strategies

Having decided to join the plan, and having picked an amount to save, participants must then decide how to invest their contributions. When asked about how he allocated his retirement investments in his TIAA-CREF account, Nobel laureate Harry Markowitz, one of the founders of modern portfolio theory, confessed: “I should have computed the historic covariances of the asset classes and drawn an efficient frontier. Instead, . . . I split my contributions fifty–fifty between bonds and equities” (Zweig, 1998). Markowitz was not alone. During the period when TIAA-CREF had only two options—TIAA invests in fixed income securities and CREF invests in equities—more than half the participants had selected a fifty–fifty split.

Markowitz’s strategy can be viewed as naïve diversification: when faced with “ $n$ ” options, divide assets evenly across the options. We have dubbed this heuristic the “ $1/n$  rule.” Consider the following experiment Read and Loewenstein (1995) conducted on Halloween night. The “subjects” were trick-or-treaters. In one condition, the children approached two adjacent houses and were offered a choice between two candy bars (Three Musketeers and Milky Way) at each house. In the other condition, they approached a single house where they were asked to “choose

whichever two candy bars you like.” Large piles of both candies were displayed to ensure that the children would not think it was rude to take two of the same. The results showed a strong diversification bias in the simultaneous choice condition: every child selected one of each candy (see also earlier work by Simonson, 1990). In contrast, only 48 percent of the children in the sequential choice condition picked different candies.

While the consequences of picking two different candies are minimal, applying naive diversification heuristics to portfolio selection could have more significant consequences. In one study, UCLA employees were asked to allocate their retirement contributions among five investment funds. One group of employees was presented with four equity funds and one fund investing in fixed-income securities, whereas another group of employees was presented with four fixed-income funds and one equity fund. The menu of funds had a strong effect on portfolio choices. Those offered one equity fund allocated 43 percent to equities, whereas those offered multiple equity funds ended up with 68 percent in equities. This experiment was designed to replicate the actual menu of funds then offered to University of California at Los Angeles (UCLA) employees and pilots at Trans World Airlines (TWA), with TWA having the equity-dominated menu of funds. The study results are in line with the actual equity exposure of the two plans, which are 34 percent for UCLA and 75 percent for TWA (Benartzi and Thaler, 2001).

To complement this experiment, we also examined cross-sectional data on 170 retirement saving plans. We used the number of equity funds relative to the total number of funds offered to categorize retirement saving plans into three equal-sized groups.<sup>6</sup> The relative number of equity funds for the three groups was 0.37, 0.65, and 0.81, respectively. For a plan with ten investment options, for example, a 0.37 figure implies that roughly four of the options are equity funds. We found that the mean allocations to equities for each group were 48 percent, 59 percent, and 64 percent. Consistent with the diversification heuristic, the relative number of equity funds is positively and significantly correlated with the percentage invested in equities.

The heuristics people use depend on the complexity of the situation. At a buffet dinner, if the number of choices is small, then some version of the  $1/n$  strategy works fine (take a bit of each item). But when the number of options gets large, people have to devise other simplifying strategies, such as to take one item from each category. Using this logic in the world of retirement savings plans, it follows that adding options to plans will no longer have an effect once the number of options gets large. Along these lines, Huberman and Jiang (2006) find a positive correlation between the fraction of equity funds offered and the resulting allocation to equities for plans that offer up to ten investment choices, but the correlation is no longer significant in plans with more than ten funds.

Huberman and Jiang (2006) also find additional evidence consistent with

<sup>6</sup> We made some adjustments for the time each investment fund was introduced to the plan, because inertia predicts that newer funds will be slow to attract money, everything else being equal. See Benartzi and Thaler (2001) for more details on the exact calculations.



naive diversification. The vast majority of participants choose a small number of funds, with the median between three and four funds, and then tend to divide assets equally among the funds chosen, what Huberman and Jiang call the “conditional  $1/n$  rule.” The use of the conditional  $1/n$  rule appears related to the ease of applying it. When 100 is divisible by  $n$ , the conditional  $1/n$  rule is quite popular, but when 100 is not divisible by  $n$ , the  $1/n$  rule is rarely used. For example, when participants choose  $n=2$  or  $n=4$ , 37 to 64 percent of them adopt the  $1/n$  rule, but when  $n=3$  the rule is only used by 18 percent of the participants. Instead, when choosing three funds, many people adopt some other arithmetically simple division, such as .50, .25, .25.

The finding that people choose a small number of funds led us to wonder whether participants were limited in the number of funds they could choose. An informal poll of several members of the University of Chicago finance and economics community revealed they incorrectly thought that four funds was the maximum number allowed. A glance at the sign-up form revealed why faculty had this false impression: The form has only four lines for investment elections. To choose more than four funds, a second form is needed.

This finding led us to consider whether small details, such as the number of lines on the sign-up form, might influence the number of funds selected. We conducted an experiment on the Morningstar.com website, which combines mutual fund and other financial information for individual investors. We asked two groups of Morningstar.com subscribers to indicate how they would allocate their retirement funds among a hypothetical list of eight funds. The first group was presented with a form with four lines on it, though the participants could easily select additional funds by clicking on a highlighted link with these instructions: “Based solely on the above, please indicate how you would allocate your retirement contributions. You may choose up to four funds. (If you would like to elect more than four funds, please [click here](#).)” The second group of participants was shown an election form with eight lines on it. Despite the ease of simply clicking on the link, only 10 percent of the subjects with the four-line form selected more than four funds. In contrast, 40 percent of those viewing the eight-line form picked more than four funds.

As the number of funds increases, and the  $1/n$  rule becomes impractical, investors must adopt some other strategy. Iyengar and Kamenica (2006) report that people reduce their exposure to equities as the menu of funds expands and becomes overwhelming. They estimate that the addition of ten funds increases the fraction allocated by participants to money market and bond funds by 3.28 percentage points.

Many plans have attempted to help participants deal with the difficult problem of portfolio construction by offering “lifestyle” funds that blend stocks and bonds in a way designed to meet the needs of different levels of risk tolerance. For example, an employer might offer three lifestyle funds: conservative, moderate, and aggressive. These funds are already diversified, so individuals need only pick the fund that fits their risk preference. Some funds also adjust the asset allocation with the age of the participant.



Table 1

**Allocation of Contributions for a Plan Offering a Mix of Lifestyle Funds and Core Funds**

	<i>Participants in the Conservative Lifestyle Fund</i>	<i>Participants in the Moderate Lifestyle Fund</i>	<i>Participants in the Aggressive Lifestyle Fund</i>	<i>Participants NOT in any lifestyle fund</i>
Core funds	66%	55%	54%	100%
Conservative Lifestyle Fund	31	1	0	N.A.
Moderate Lifestyle Fund	3	42	4	N.A.
Aggressive Lifestyle Fund	0	2	42	N.A.
Total equity exposure (%)	77	80	89	78

*Note:* The table displays investment elections made by employees at a large 401(k) plan offering a choice among pre-mixed model portfolios (Conservative, Moderate, and Aggressive Lifestyle funds) and core funds (for example, an equity index fund). The table describes the average allocations of future contributions among the model portfolios and the core funds. The table also provides the total equity allocations for those investing in the various model portfolios as well as those not investing in any of the model portfolios.

Do participants understand how to use these diversified funds? We studied one plan that offers both lifestyle funds and core funds. The three lifestyle funds are conservative, moderate, and aggressive, and the six core funds include an equity index fund and a growth fund, among others. The results are displayed in Table 1. Those who invest in the conservative lifestyle fund allocate just 31 percent to that fund, with the rest being allocated to the core funds. Because the menu of core funds is dominated by equity funds, the resulting equity exposure of those in the conservative fund is 77 percent. These participants end up with a fairly aggressive portfolio, probably without being aware of it. Participants seem reluctant to stick with one fund, even when that fund already contains several different funds. Vanguard (2004) reports similar findings using a much larger sample of plans. They find that participants who elect a lifestyle fund allocate only 37 percent of their account balance to the lifestyle fund.

Indeed, individuals choosing among lifestyle funds can end up picking the same level of risk as those constructing their own portfolios from the core options. We conducted an experiment in which UCLA employees were assigned to one of two conditions. One group was asked to allocate their funds between a stock fund and a bond fund. The second group was asked to choose one of five lifestyle funds whose equity allocation varied from zero to 100 percent in 25 percent increments. Economic theory predicts that the choices made under these two conditions should be roughly the same. However, dramatic differences arose between the two conditions. Under the mix-it-yourself condition, individuals found the fifty-fifty allocation fairly attractive (32 percent selected it), and only 15 percent chose an all-equity allocation. In contrast, 51 percent of those who chose among the pre-mixed portfolios selected the most aggressive portfolio of 100 percent stocks. We ran this experiment in the late 1990s, and we believe that many people chose the 100 percent

stock allocation because they were attracted to the remarkable stock performance at the time.

The diversification heuristic does not seem to apply when people pick among premixed funds, as the naive investor perceives all the funds to be equally diversified and confuses diversification with the number of funds (see also work by Fox and Langer, 2005). Our experiment was designed to replicate the actual difference between 401(k) plans in the United States, where most people construct their own portfolios, and the Chilean social security system, where individuals pick one of several lifestyle funds. Our findings are troubling because small variations in the framing of the problem result in dramatically different portfolio choices. Thus, the results raise difficult questions for policymakers with respect to the design of social security systems or other retirement saving programs.

### **Company Stock**

One extreme example of poor diversification occurs when employees invest in their employer's stock. Five million Americans have over 60 percent of their retirement savings invested in company stock (Mitchell and Utkus, 2004). This concentration is risky on two counts. First, a single security is much riskier than the portfolios offered by mutual funds. Second, as employees of Enron and WorldCom discovered the hard way, workers risk losing both their jobs and the bulk of their retirement savings all at once.

Many employees still do not think these risks apply to their own employer. First, employees do not seem to understand the risk and return profile of company stock. When the Boston Research Group (2002) surveyed 401(k) participants, it found that despite a high level of awareness of the Enron experience, half of the respondents said that their company stock carries the same or less risk than a money market fund. Similarly, Benartzi, Thaler, Utkus, and Sunstein (forthcoming) find that only 33 percent of the respondents who own company stock realize that it is riskier than a "diversified fund with many different stocks." Even after financial education initiatives by fund providers and plan sponsors, participants in surveys conducted by John Hancock Financial Services during the 1992–2004 period continued to rate company stock as safer than a domestic stock fund.

Second, plan participants tend to extrapolate past performance into the future. Benartzi (2001) sorted firms into quintiles based on their stock performance over the prior 10 years and examined subsequent allocations to company stock. Employees at the worst-performing firms allocated 10 percent of their retirement contributions to company stock, whereas those at the best performing firms allocated 40 percent of their contributions to company stock. Benartzi also examined the subsequent stock performance and found no evidence that employees have any superior information regarding their firm's future prospects. Specifically, there was no correlation between the allocation to company stock and subsequent stock performance.

Third, employees who receive their employer matching contribution in company stock view their employer's decision to match in company stock as implicit advice (Benartzi, 2001). In particular, those who are required to take the employer

match in the form of company stock allocate 29 percent of their *discretionary* contributions (that is, the money they have control over) to company stock, while those who have the option but not the requirement to take the employer match in the form of company stock allocate only 18 percent of their own funds to company stock.

Meulbroek (2002) has estimated the costs of investing in a single security instead of a diversified portfolio (see also calculations by Poterba, 2003; Ramaswamy, 2004). The relative value to the employee of a dollar of company stock, as opposed to a diversified stock portfolio, is inversely related to the proportion of wealth held in company stock, the number of years the stock will be held, and the volatility of the stock. For example, with an assumed investment horizon of ten years and 25 percent of the assets in company stock, a dollar in company stock only provides 58 percent as much risk-adjusted value as a diversified portfolio. Lengthening the investment horizon to 15 years, and increasing the allocation to company stock to 50 percent, would further reduce the value to 33 cents on the dollar. These results probably underestimate the costs of being under-diversified, because they ignore the positive correlation between human capital and the performance of company stock.

Given the substantial costs of being under-diversified, why do some employers require that employees receive the match in company stock? Roughly speaking, employers are spending a dollar to give employees 50 cents of benefits (in risk-adjusted utility terms). How could such an equilibrium persist? Why does Congress even permit the use of company stock in 401(k) plans? No other individual stock is allowed to be offered in a 401(k) plan. Company stock, however, is exempt from the diversification requirements with which all other 401(k) investments must comply.

To understand why some employers provide the match in company stock, we surveyed Vanguard clients (Benartzi, Thaler, Utkus, and Sunstein, forthcoming). Employers believe that the potential increase in motivation and productivity, the advantageous tax treatment of company stock, and placing shares in friendly hands are the most important factors.<sup>7</sup> Some of the alleged benefits employers attribute to company stock are overstated. For example, the evidence on the increase in productivity is at best mixed (Prendergast, 1999). Increases in productivity are uncorrelated with the degree of employee ownership (Kruse and Blasi, 1995). This finding is unsurprising, because in a large firm each employee owns an extremely small fraction of the firm and has an incredibly small effect on the overall performance. The tax advantages of company stock are also exaggerated; we estimate them at somewhat less than 10 percent of the value of the stock. As to the friendly hands argument, if employers are requiring their employees to hold shares in the company to avoid takeovers, their claims to legal protection from the diversification requirement are rather flimsy.

<sup>7</sup> The tax advantages of company stock from the employer's perspective have changed a lot over time. See Benartzi, Thaler, Utkus, and Sunstein (forthcoming) for more details on the specific tax benefits.

### **Market Timing: Buy High, Sell Low**

Throughout the 1990s, participants were increasing their equity allocation, both in terms of the percentage of money contributed each year and the account balances held. At the time we speculated that two reasons could explain this behavior. One remote possibility was that investors had spent the decade pouring over finance and economics journals, had learned that stock returns were substantially higher than bond returns over a long period, and so decided to invest more in stocks. The other possibility was that more investors had come to believe that stocks only go up, or that even if stock prices fall, that is just another buying opportunity since they quickly rise again. The stock market provided an opportunity to test these competing hypotheses during 2000–2002.

Using data from Vanguard, we calculated the mean allocations to equities from 1992 through 2002. Our calculations are based on the allocations of contributions rather than account balances, since balances are heavily influenced by the performance of the funds. We compare the allocations of contributions by new plan participants with those of all plan participants. Because of the strong inertia exhibited by existing participants, the choices of new participants provide more insight into the current thinking of investors. The results are shown in Panel A of Figure 2. The equity allocation of all participants did increase from 52 percent in 1992 to 65 percent in 2000 and did not change much thereafter. However, new participants were already allocating 58 percent of their assets to equities in 1992, but that percentage rose to 74 percent in 2000.<sup>8</sup> In the next two years, however, the allocation to equities fell back to 54 percent. The market timing of new participants in their exposure to equities was exactly wrong. They bought high and sold low.

Similar behavior is observed in the asset allocations within equities, in the plans in which investors can choose funds that specialize in particular industries or sectors. To determine how this option affects investors, we studied data from Hewitt Associates on a plan that offers a technology fund. Panel B of Figure 2 displays the percentage of new participants selecting the technology fund as well the fund's performance. The fraction of new participants selecting that fund increased dramatically from 12 percent to 37 percent over the course of two years, and then it decreased by half, from 37 percent to 18 percent over the course of one year. Again, participants were buying into the technology fund most aggressively at the peak.

### **Mental Accounting and Framing**

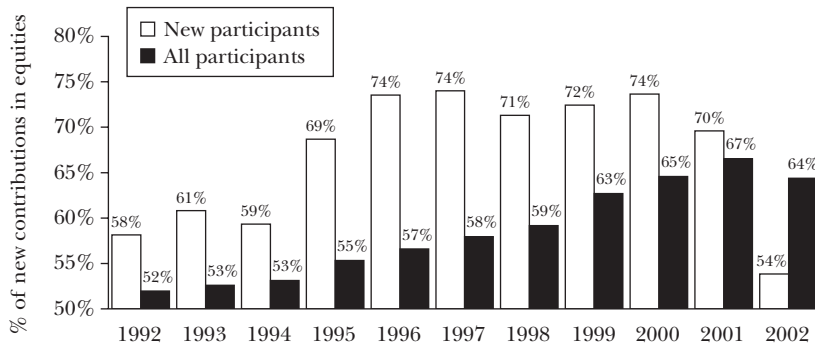
Mental accounting refers to the implicit methods individuals use to code and evaluate transactions, investments, gambles, and other financial outcomes (Kahneman and Tversky, 1984; Thaler, 1985). We believe that participants use separate mental accounts for “old money” (amounts they have already accumulated in the plan), and for “new money” (amounts they have not yet contributed). The propensity

<sup>8</sup> One caveat is that the data we obtained were a snapshot of the plan participants as of midyear 2002. While we knew the enrollment date for each participant, we observed their allocations as of midyear 2002. To the extent that participants may have made changes to their allocations over time, any bias should be fairly minimal for the 2000 to 2002 samples, however, as those data points are relatively close to the data collection date.

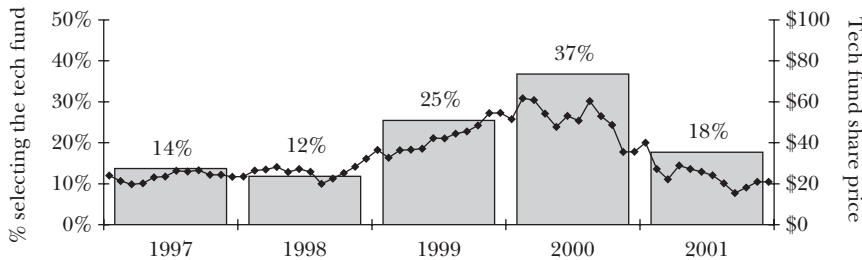
Figure 2

### Choices of Equities by New Plan Participants

Panel A: The Equity Allocation of New versus All Plan Participants



Panel B: Percentage of New Participants Selecting the Technology Fund



Source: Data were provided by Hewitt Associates.

Note: Panel A displays the percentage of new contributions allocated to equities by new versus all plan participants. "New" participants are those entering the plan in a given year. The chart was constructed from data provided by Vanguard. Panel B reports the allocations of new participants at a large plan that offers a technology fund. The left axis displays the percentage of new participants allocating some of their contributions to the technology fund, and the right axis shows the fund's share price.

to adjust the allocation of old money is much lower than that of new money. Perhaps investors fear the potential regret of reallocating old money and observing the new investment choices underperforming the original choices. With regard to new money, however, a reference point has not been set yet, so less potential exists for regretting any changes. Ameriks and Zeldes (2000) report that over the 1987–1996 period, only 27 percent of the TIAA-CREF participants they studied reallocated their accumulated assets, though 53 percent reallocated their future contributions.<sup>9,10</sup>

<sup>9</sup> One caveat is that TIAA-CREF had certain limitations on the reallocation of old money, which could explain the lower frequency of reallocating old money versus new money. However, data from another provider which does not restrict the reallocation of old money reveals a similar pattern (Hewitt Associates, 2005). In particular, 16.7 percent of plan participants reallocated old money in 2004, whereas 21.4 percent reallocated new money.

<sup>10</sup> Additional evidence on the powerful role of inertia and lack of rebalancing activity is provided by Mitchell, Mottola, Utkus, and Yamaguchi (2006).

Mental accounting also affects company stock. In particular, employees seem to view company stock as a unique asset class that is neither stocks nor bonds. In our sample, plans that do not have access to company stock have half in stock funds and half in bond funds, whereas plans with access to company stock have 42 percent in company stock and the remaining 58 percent split evenly between stock funds and bond funds (Benartzi and Thaler, 2001). As a result, those with access to company stock invest 71 percent (42 plus half of 58) in equities. Individuals investing in company stock do not seem to realize that company stock is part of their equity portfolio.

Framing is another important factor in participants' behavior. Providing plan participants with short-term rates of return on the different investment funds induces "myopic loss aversion" (Benartzi and Thaler, 1995). Loss aversion refers to the tendency of individuals to weigh losses about twice as much as gains (Kahneman and Tversky, 1979; Tversky and Kahneman, 1992), whereas the myopic component is the tendency of individuals to evaluate their portfolios too often. As a result, individuals become hypersensitive to short-term losses. We ran an experiment in which we showed individuals one-year returns or long-term simulated returns for a stock fund and a bond fund. We found that those viewing the one-year returns allocated just 41 percent to stocks, whereas those viewing the longer-term returns allocated 82 percent to stocks (Benartzi and Thaler, 1999). These results have significant implications for how often plan sponsors and plan providers should convey information to plan participants.

### **Peer Effects**

Rational but unsophisticated investors may ask a knowledgeable expert for help. But while individuals do ask others for advice, their "advisors" tend to be their spouses and friends, who don't necessarily qualify as experts (Benartzi and Thaler, 1999). One interesting anecdote comes from a chain of supermarkets operating in Texas.<sup>11</sup> The plan provider noticed that participants' behavior in each supermarket was remarkably homogeneous, but the behavior across supermarkets was fairly heterogeneous. It turns out that most of the supermarket employees considered the store butcher to be the investment maven and would turn to him for advice. Thus, depending on the investment philosophy of the butcher at each individual location, employees ended up heavily invested in either stocks or bonds.

Similar strong peer effects are documented by Duflo and Saez (2002a, b) in a study of the retirement plan participation at 11 libraries of a large university. In this system, prospective librarians are interviewed and hired by the central library, so there is no reason to expect a large variation across the libraries in demographics or in the propensity to save. Indeed, the data confirmed that there were no demographic differences across libraries, yet plan participation varied dramatically across libraries, from a low of 14 percent to a high of 73 percent, illustrating strong peer effects.

<sup>11</sup> We thank Ken Robertson from the 401(k) Company for sharing his data and experience with us.

### How Much Is Investor Autonomy Worth?

One advantage of defined contribution retirement plans is that they allow for variation in individual tastes, both for saving and for risk bearing. The trend over time has been to allow more flexibility, both in savings rates and investments. For example, although private 401(k) plans are relatively new, defined contribution plans have existed at universities since 1918 when TIAA was formed. In these original plans, there was only one option (TIAA—a fixed income vehicle) until 1952, when CREF (which invests in equities) was launched. The number of options remained at two until 1988. Furthermore, at many universities, a minimum savings rate is specified by the university. The employee is required to save at least  $x$  percent and the university will contribute  $y$  percent. Often  $x + y$  are between 10 and 15 percent, and these minimums are quite high relative to the average savings rates in private plans.

Do private plans that offer more choice in savings rates have higher contribution rates than the university plans that are more restricted? We know of no thorough analysis of this question, but the low savings rates observed in some private plans certainly raise questions about savings adequacy.

In studying asset allocation, we have investigated whether participants do a good job—as judged by themselves—in picking a portfolio. Using a plan with participants defaulted into a professionally managed account based on their age (Benartzi and Thaler, 2002), we studied the choices of those participants who elected to opt out of the default investment and form their own portfolio. Using software provided by Financial Engines (the financial advice firm founded by William Sharpe), we projected for each employee the distribution of retirement income for three portfolios: 1) the employee's self-constructed portfolio; 2) the average portfolio for all employees who had opted out of the professionally managed accounts; and 3) the professionally managed account the employee turned down. We presented the subjects with the three (unlabeled) distributions of projected retirement income and asked them to rate the three investment programs on a scale of one (very unattractive) to five (very attractive).

Participants' self-constructed portfolios received the lowest average rating, 2.75, the average portfolio received slightly higher mean ratings of 3.03, and the professionally managed portfolios received the significantly higher mean rating of 3.50. Even among the sample of participants who stated a preference to construct their own portfolios, 80 percent found the managed account solution more attractive! These employees were not behaving in a directly inconsistent manner, since when they made their initial decision to reject the default asset allocation and form their own, they were probably not using specialized financial software. Of course, a firm could try to improve individual investment choices by providing similar software, but firms that have made such software available have not found a very high usage rate.

Another more indirect test of the value of active portfolio choices in retirement plans comes from the partial privatization of the Swedish social security system launched in 2000 (Cronqvist and Thaler, 2004). Private accounts were created for each worker, and a portion of the payroll tax was contributed to this



account. Workers could choose from an array of 456 funds, one of which was designated as the default fund. (The number of funds has since grown to over 600.) The default fund was carefully constructed, well diversified, and had very low fees (16 basis points), but participants were urged by the Swedish government to eschew the default fund and select their own portfolio of up to five funds. Two-thirds of participants took this advice and formed their own portfolios. The average portfolio actively selected had higher fees (77 basis points), more risk, and strong “home bias” (French and Poterba, 1991) with a very high concentration of Swedish stocks (48 percent). The active portfolios also underperformed the default fund by 9.7 percent (cumulative) over the first three years of the system.<sup>12</sup> The Swedish system has since stopped encouraging active decision making, and of those workers joining the system for the first time in 2003, only 8.4 percent made an active choice.

One might wonder whether suboptimal portfolio choices are costly. Calvet, Campbell, and Sodini (2006), for example, find that a lot of Swedish households own portfolios that are close to the efficient frontier, so perhaps suboptimal portfolio choices are inconsequential. We tend to disagree for several reasons. While many Swedish households own well-diversified portfolios, Calvet, Campbell, and Sodini also report that 38 percent of Swedish households do not participate in the equity market, estimating the return loss from nonparticipation at 4.3 percent per year. Brennan and Torous (1999) also point out that picking the wrong portfolio along the efficient frontier could be very costly. Using the calculations in Brennan and Torous, we showed in Benartzi and Thaler (2001) that investors using the  $1/n$  heuristic could experience utility loss of more than 25 percent by picking portfolios that are either too conservative or too aggressive for their own preferences.

## **Choosing Between Defined Benefit and Defined Contribution Plans**

The employees of state governments with retirement programs are sometimes given a choice between a defined benefit and a defined contribution retirement plan, which presents another opportunity to study high-stakes decision making in the savings domain. We studied one such large public employer, which offered all employees three options: 1) to remain in the existing defined benefit plan, 2) to choose a new defined contribution plan, or 3) a hybrid option—to keep existing benefits under the defined benefit plan and to accumulate future accruals under the defined contribution plan. Those (vested) employees who switched from the defined benefit to the defined contribution plan would receive an actuarially-fair lump sum contribution to their defined contribution plan.

<sup>12</sup> Similar evidence from the United States is provided by Yamaguchi, Mitchell, Mottola, and Utkus (2006), who find that participants in balanced funds (or lifestyle/lifecycle funds) earn the highest risk-adjusted rates of return.

In this setting, it was usually not possible to determine the “rational” choice for a given participant, since personal preferences were not known, with one important exception. The defined benefit and the defined contribution plan had very different vesting schedules: one year for the defined contribution plan and six years for the defined benefit plan. Thus, an employee whose tenure in the defined benefit plan was less than six years received no benefits. In this setting, employees needed to estimate their expected tenure with the employer to make a good choice. Turnover for young or new employees was particularly high, so these employees were almost certainly better off choosing the defined contribution plan. For example, the plan actuary estimates that a 31-year-old employee with one year of service has approximately a one-in-ten chance of working for the same employer through the plan’s normal retirement age of 62.

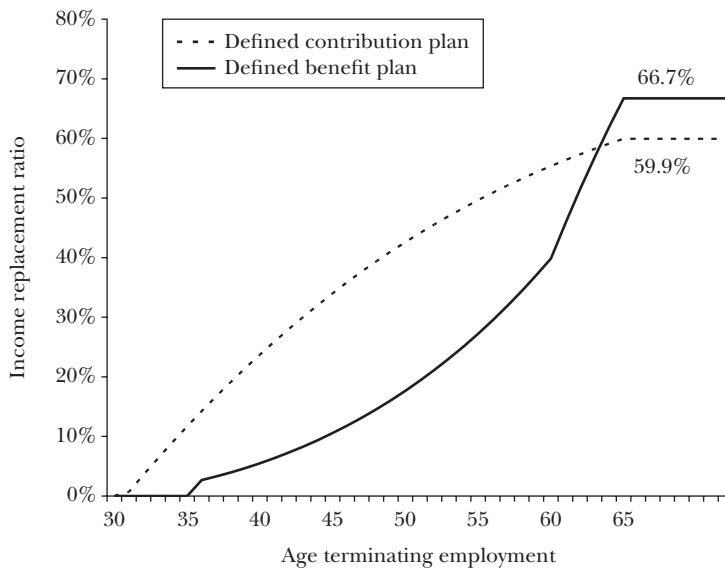
In Figure 3, we illustrate the projected income replacement ratio for a 31-year-old employee under the defined benefit and the defined contribution plans as a function of the age at which the employee terminates employment. Whereas the defined benefit plan could provide an income replacement ratio of 66.7 percent after 32 years of service, slightly higher than the 59.9 percent for the defined contribution plan, under most scenarios the defined benefit plan provides a lower income. The likelihood of breaking even under the defined benefit plan—that is, working long enough for the current employer so that the defined contribution and defined benefit replacement ratios are identical or the defined benefit plan is a better choice—is only 13 percent.

Data on participants’ choices reveal that only 7 percent of those with less than two years of service selected the defined contribution plan (as of February 28, 2003). There are several potential explanations. First, the defined benefit plan was set as the default choice, and 63 percent of the participants ended up in the defined benefit plan by default. Interestingly, when surveyed beforehand, only 10 percent of the participants planned on being defaulted into the defined benefit plan, and many more predicted they would choose the defined contribution plan than actually did. Second, employees vastly overestimate their expected tenure working for the state. For instance, when new employees are asked about the likelihood of remaining with their current employer until retirement age, the gap between participants’ expectations and the plan actuary’s predictions reaches 40 percent. Third, in spite of a serious effort to educate the employees about their options, they had very little understanding of the plan’s features. For example, only 19 percent of the employees realized that there was a one-year vesting requirement under the defined contribution plan. Finally, the choice came in the second half of 2002, in the midst of a bear market. This timing likely discouraged participants from choosing the defined contribution plan.

Other studies on the choice between defined benefit and defined contribution plans also suggest that relatively few workers select the defined contribution option and that the default choice could have a dramatic effect. Papke (2004), for example, reports that only 1.6 percent of the corrections workers covered by the

Figure 3

### Income Replacement Ratios for a Defined Benefit Plan versus a Defined Contribution Plan



*Notes:* The above chart displays income replacement ratios for a large employer offering a choice between a defined benefit plan versus a defined contribution plan. The illustration is based on a 30-year-old individual with one year of service credit, and it shows income replacement ratios for the defined benefit versus the defined contribution plan as a function of the age at which the employee terminates employment. The data were provided by the plan actuary.

state of Michigan Employee Retirement System elected the defined contribution plan.<sup>13</sup>

Additional evidence on suboptimal choices between defined benefit and defined contribution plans comes from Brown and Weisbenner (2007). They investigated elections made by state of Illinois employees who were offered a choice among a traditional defined benefit plan, a portable defined benefit plan, and a defined contribution plan. The authors argue that under most circumstances, the portable defined benefit plan dominates the defined contribution plan because it has a more generous employer match. Yet a nontrivial fraction of new employees

<sup>13</sup> A study by Yang (2005) is an exception, reporting take-up rates for a defined contribution plan of up to 50 percent, though two caveats are worth mentioning: First, the plan choice in Yang's study took place in March 2000, at the peak of the bull market. Second, the information provided to employees in this plan displayed the projected defined contribution benefits with the full employer match. Those selecting either a low contribution rate or not contributing their own money to the plan would not get the full employer match and could expect much lower benefits from the defined contribution plan. Interestingly, Yang finds that those who did not make a choice and were defaulted into the defined benefit plan were more similar to the defined contribution choosers than the defined benefit choosers. For example, the average age of defined benefit defaulters was 38, closer to that of defined contribution choosers at 40 than to that of defined benefit choosers at 53.

(15 percent) elect the defined contribution plan. Furthermore, many more employees elected the defined contribution plan in 1999, right before the market crash. This finding is consistent with our earlier discussion of negative market timing by plan participants.

## **Interventions by Plan Sponsors**

What can employers do so that more plan participants enroll in retirement plans, contribute an amount that will build a reasonable retirement nest-egg, and allocate the funds among assets in an appropriately diversified way? There are two broad classes of interventions: education and plan design.

Many employers have tried to educate their employees to make better decisions or supplied tools to help them improve their choices. The empirical evidence does not suggest that these methods are, in and of themselves, adequate solutions to the problems. The same large employer discussed above that offered its employees the chance to switch from a defined benefit to a defined contribution plan offered its employees a financial education program free of charge. The employer measured the effectiveness of this education by administering a before-and-after test of financial literacy. The quiz used a True/False format, so random answers would receive, on average, a score of 50 percent. Before the education, the average score of the employees was 54; after the education, the average score jumped to 55. As professors know, teaching is hard.

Using education to increase participation and contribution rates has generally led to disappointing results. Employees often leave educational seminars excited about saving more, but then fail to follow through. For example, Choi, Laibson, Madrian, and Metrick (2002) measured the effectiveness of employee seminars. At the seminar everyone expressed an interest in saving more, but only 14 percent actually joined the savings plan, not much better than the 7 percent of comparable employees who did not attend a seminar and joined the savings plan. Similarly, Duflo and Saez (2002a) find that the attendance at a “benefit fair” has only a small effect on participation in a tax-deferred savings account.

The difficulties of explaining the “right” choices to people are nicely illustrated by an experiment conducted by Choi, Laibson, and Madrian (2004), who as discussed earlier tried to investigate why participants fail to join a retirement plan with a company match even when joining the plan is an arbitrage opportunity (because the employees are over 59.5 years old and can immediately withdraw contributions without penalty). Choi et al. conducted an experiment in which some employees received a survey about this free lunch and instructions explaining how to go about eating it. Filling out this survey had a negligible and insignificant effect on behavior.

The most optimistic results for how education can improve saving are found by Bernheim and Garrett (2003) and Bernheim, Garrett, and Maki (2001). They use cross-sectional surveys of individuals from the population, rather than the employees in a specific company. For example, Bernheim and Garrett use a survey that asks people whether financial education is available in their workplace. They find that

workers who report that financial education is available where they work are more likely to save, both retirement saving and other forms. However, this method faces problems that could induce a spurious correlation. For example, workers who are likely to save may also be more likely to be aware of the availability of financial education. Discovering such a correlation does not show that education will affect the behavior of young workers (who are not thinking about retirement and are not in the retirement plan).

The main alternative to education as a method of influencing decisions about retirement savings plans is to choose the features of the retirement savings plan in a way that will promote the desired objectives. The simplest change is automatic enrollment. Although automatic enrollment is very effective at getting new and young workers to enroll sooner than they would have otherwise, participants tend to stick with the default contribution rate, which is typically quite low. To mitigate this problem, we devised a program of automatic escalation of contributions to such plans called Save More Tomorrow.<sup>14</sup>

Save More Tomorrow was constructed with certain psychological principles in mind. First, people find it easier to accept self-control restrictions that take place in the future. For example, many people plan to start their diet the next day and to join a gym next month. Second, potential losses have roughly twice the effect on people's decision-making as gains (Kahneman and Tversky, 1979; Tversky and Kahneman, 1992). Third, losses are evaluated in nominal terms (Kahneman, Knetsch, and Thaler, 1986; Shafir, Diamond, and Tversky, 1997). Fourth, inertia plays a powerful role in participants' behavior.

With the above principles in mind, Save More Tomorrow invites participants to pre-commit to save more every time they get a pay raise. By synchronizing pay raises and savings increases, participants never see their take-home amounts go down, and they don't view their increased retirement contributions as a loss. Once someone joins the program, the saving increases are automatic, using inertia to increase savings rather than prevent savings. When combined with automatic enrollment, this design can achieve both high participation rates and increased saving rates.

Many retirement plan administrators have adopted the idea, including Vanguard, T. Rowe Price, TIAA-CREF, Fidelity, and Hewitt Associates, and it is now available in thousands of employer plans. The first implementation, at a mid-sized manufacturing firm, provides the longest time series of results. Initially, employees were invited to chat with a financial consultant, and about 90 percent accepted that offer. Given the very low savings rates of the plan participants, the advisor almost always told the employees that they needed to save much more than their current rate, but he capped his recommended saving increase at 5 percentage points of pay, fearing that people might find larger increases impossible to implement. Twenty-five percent of the participants took this advice and immediately increased their savings rates by the recommended

<sup>14</sup> Save More Tomorrow is available at no charge to vendors who are willing to share data for research purposes.

5 percentage points. Those who rejected the advisor's advice were offered the Save More Tomorrow program. Specifically, they were told that their saving rates would go up by 3 percentage points every time they got a pay raise. Pay raises were about 3.25 to 3.50 percent. Out of the group who could not increase their savings rate immediately, 78 percent joined the program to increase their contribution every time they get a pay raise. The results were dramatic. Those in the Save More Tomorrow program started with the lowest savings rate, around 3.5 percent. After three-and-a-half years and four pay raises, their savings rate had almost quadrupled to 13.6 percent, considerably higher than the 8.8 percent savings rate for those who accepted the consultant's initial recommendation to raise savings by 5 percentage points. In addition, most people in the program remained in it through the entire period. Most of the few that did leave the program just stopped the increases; they did not set their retirement rate back to where it had been prior to joining the program.

The Save More Tomorrow program could be extremely effective at increasing saving rates if joining the program is made easy, or even an automatic default choice. One plan that automatically enrolled participants into the program reports that less than 5 percent of the participants opted out after the first savings increase.<sup>15</sup> We find this result especially encouraging because, in this case, the savings increases and pay raises were not synchronized, so participants did see their take-home amounts decrease.

Plan design features could also be used to improve participants' portfolio choices. One option is to offer a set of model portfolios that have varying degrees of risk. For example, a plan sponsor could offer conservative, moderate, and aggressive "lifestyle" portfolios. All the participants need to do is select the lifestyle fund that best fits their risk preferences. Another option available to plan sponsors is to offer plan participants "target maturity funds." Target maturity funds typically have a year in their name, like 2010, 2030, or 2040. A participant simply selects the fund that matches his or her expected retirement date. Managers of the target maturity funds select the degree of risk and reduce the allocation to stocks as the target date approaches.

Some vendors and plan sponsors have started to offer automated solutions for portfolio selection. In particular, some plan sponsors automatically assign participants to the target maturity fund based on a standard retirement age. Others are defaulting participants into "managed accounts," which are typically portfolios of stocks and bonds that are based on the age of the participants and possibly other information. In either case, participants can opt out of the default investment and choose their own portfolio. Providing these sensible default investment options<sup>16</sup> is an idea with considerable merit, given that participants find the risk and return profiles of the automated solutions more attractive than their self-constructed

<sup>15</sup> We are grateful to Jodi Dizenzo, who made this field experiment and many others happen.

<sup>16</sup> Kamenica (2006) finds that people with more typical characteristics are more likely to accept the default asset allocation in their 401(k) plans, a helpful finding in thinking about how to structure these plans.

portfolios.<sup>17</sup> As Iyengar, Huberman, and Jiang (2004) noted, simplifying the investment selection process could encourage more employees to join the retirement plan.

## Conclusion

Saving for retirement is a difficult problem, and most employees have little training upon which to draw in making the relevant decisions. Perhaps as a result, investors are relatively passive. They are slow to join advantageous plans; they make infrequent changes; and they adopt naive diversification strategies. In short, they need all the help they can get. Fortunately, many effective ways to help participants are also the least costly interventions: namely, small changes in plan design, sensible default options, and opportunities to increase savings rates and rebalance portfolios automatically. These design features help less sophisticated investors while maintaining flexibility for more sophisticated types.

■ *Benartzi is grateful for financial support from Reish Luftman McDaniel & Reicher and Vanguard. We are also grateful to Jodi Dizenzo, Wayne Gates of John Hancock, Lori Lucas of Hewitt Associates, John Rekenhaller of Morningstar, Jason Scott of Financial Engines, Brian Tarbox, Steve Utkus of Vanguard, and Carol Waddell of T. Rowe Price for all the data they have provided us over the years. We received very helpful comments from Emir Kamenica and all the editors. An earlier version of this paper was presented to the AARP Public Policy Institute.*

<sup>17</sup> One way that firms could address the “company stock” problem is by implementing something called the “Sell More Tomorrow” plan (Benartzi and Thaler, 2003), in which employees are first educated on the risk and return profile of company stock in plain English, and then they are offered a gradual selling program that automatically divests them of a small portion of their holdings every month. To ensure that employees don’t feel like they are “missing the boat,” the program could be set to keep a small portion of their portfolio (say 5 percent) in company stock.

## References

- Ameriks, John, and Stephen P. Zeldes. 2000. “How do Household Portfolio Shares Vary with Age?” Unpublished paper, Columbia University.
- Benartzi, Shlomo. 2001. “Excessive Extrapolation and the Allocation of 401(k) Accounts to Company Stock?” *Journal of Finance*, 56(5): 1747–64.
- Benartzi, Shlomo, and Richard H. Thaler. 1995. “Myopic Loss-Aversion and the Equity Premium Puzzle,” *Quarterly Journal of Economics*, 110(1): 73–92.
- Benartzi, Shlomo, and Richard H. Thaler. 1999. “Risk Aversion or Myopia? Choices in Repeated Gambles and Retirement Investments.” *Management Science*, 45(3): 364–81.
- Benartzi, Shlomo, and Richard H. Thaler. 2001. “Naive Diversification Strategies in Retirement Saving Plans.” *American Economic Review*, 91(1): 79–98.
- Benartzi, Shlomo, and Richard H. Thaler. 2002. “How Much Is Investor Autonomy Worth?” *Journal of Finance*, 57(4): 1593–1616.
- Benartzi, Shlomo, and Richard H. Thaler. 2003. “Using Behavioral Economics to Increase Employee Diversification in 401(k) Plans: Solving the Company Stock Problem.” Unpublished paper, University of California, Los Angeles.
- Benartzi, Shlomo, Richard H. Thaler, Stephen P. Utkus, and Cass R. Sunstein. Forthcoming. “Company Stock, Market Rationality, and Legal Reform.” *Journal of Law and Economics*.
- Bernheim, Douglas B., and Daniel M. Garrett. 2003. “The Effects of Financial Education in the Workplace: Evidence from a Survey of



Households." *Journal of Public Economics*, 87(7–8): 1487–1519.

**Bernheim, Douglas B., Daniel M. Garrett, and Dean M. Maki.** 2001. "Education and Saving: The Long-term Effects of High School Financial Curriculum Mandates," *Journal of Public Economics*, 80(3): 435–65.

**Brennan, Michael J., and Walter N. Torous.** 1999. "Individual Decision Making and Investor Welfare." *Economic Notes*, 28(2): 119–43.

**Boston Research Group.** 2002, "Enron Has Little Effect on 401(k) Participants' View of Company Stock." April 25. Boston: MA.

**Brown, Jeffrey R., and Scott J. Weisbenner.** 2007. "Who Chooses Defined Contribution Plans?" National Bureau of Economic Research Working Paper 12842.

**Calvet, Laurent, E., John Y. Campbell, and Paolo Sodini.** 2006. "Down or Out: Assessing the Welfare Costs of Household Investment Mistakes." National Bureau of Economic Research Working Paper 12030.

**Choi, James J., David Laibson, and Brigitte Madrian.** 2005. "\$100 Bills on the Sidewalk: Violation of No-Arbitrage in 401(k) Accounts." National Bureau of Economic Research Working Paper 11554.

**Choi, James J., David Laibson, Brigitte Madrian, and Andrew Metrick.** 2002. "Defined Contribution Pensions: Plan Rules, Participant Decisions, and the Path of Least Resistance." In *Tax Policy and the Economy*, vol. 16, ed. James Poterba, 67–113. MIT Press.

**Choi, James J., David Laibson, Brigitte Madrian, and Andrew Metrick.** 2004. "For Better or For Worse: Default Effects and 401(k) Savings Behavior." In *Perspectives in the Economics of Aging*, ed. David Wise, 81–121. University of Chicago Press.

**Choi, James J., David Laibson, Brigitte Madrian, and Andrew Metrick.** 2005. "Optimal Defaults and Active Decisions." National Bureau of Economic Research Working Paper 11074.

**Choi, James J., David Laibson, Brigitte Madrian, and Andrew Metrick.** Forthcoming. "Saving For Retirement on the Path of Least Resistance." In *Behavioral Public Finance*, ed. Slemrod and McCaffrey. Russell Sage.

**Cronqvist, Henrik, and Richard H. Thaler.** 2004. "Design Choices in Privatized Social-Security Systems: Learning from the Swedish Experience." *American Economic Review*, 94(2): 425–8.

**Duflo, Esther, William Gale, Jeffrey Liebman, Peter Orszag, and Emmanuel Saez.** 2005. "Saving Incentives for Low- and Middle-Income Families: Evidence from a Field Experiment with H&R Block." National Bureau of Economic Research Working Paper 11680.

**Duflo, Esther, and Emmanuel Saez.** 2002a. "Participation and Investment Decisions in a Retirement Plan: The Influence of Colleagues' Choices." *Journal of Public Economics*, 85(1): 121–48.

**Duflo, Esther, and Emmanuel Saez.** 2002b. "The Role of Information and Social Interactions in Retirement Plan Decisions: Evidence from a Randomized Experiment." National Bureau of Economic Research Working Paper 8885.

**Fox, Craig R., and Thomas Langer.** 2005. "Biases in Allocation under Risk and Uncertainty: Partition Dependence, Unit Dependence, and Procedure Dependence." Unpublished paper. <http://ssrn.com/abstract=757787>.

**French, Kenneth R., and James M. Poterba.** 1991. "Investor Diversification and International Equity Markets," *American Economic Review*, 81(2): 222–6.

**Gilovich, Thomas, Dale Griffin, and Daniel Kahneman, ed.** 2002. "Heuristics and Biases: The Psychology of Intuitive Judgment." Cambridge University Press: New York.

**Hewitt Associates.** 2002a. "How High Should Plan Sponsors Go in Raising the Before-Tax Plan Maximum Under EGTRRA?" Unpublished paper.

**Hewitt Associates.** 2002b. "Investing in Round Numbers." Unpublished paper.

**Hewitt Associates.** 2005. "Hewitt Research Report: How Well are Employees Saving and Investing in 401(k) Plans." <http://www.hewittassociates.com/Intl/NA/en-US/KnowledgeCenter/Articles/Reports/ArticleDetail.aspx?cid=2418>.

**Huberman, Gur, and Wei Jiang.** 2006. "Offering versus Choice in 401(K) Plans: Equity Exposure and Number of Funds." *Journal of Finance*, 61(2): 763–801.

**Iyengar, Sheena S., G. Huberman, and W. Jiang.** 2004. "How Much Choice is Too Much: Determinants of Individual Contributions in 401K Retirement Plans." In *Pension Design and Structure: New Lessons from Behavioral Finance*, ed. O. S. Mitchell and S. Utkus, 83–95. Oxford: Oxford University Press.

**Iyengar, Sheena, and Emir Kamenica.** 2006. "Choice Overload and Simplicity Seeking." <http://faculty.chicagogsb.edu/emir.kamenica/documents/simplicitySeeking.pdf>.

**Kahneman, Daniel, Jack L. Knetsch, and Richard H. Thaler.** 1986. "Fairness as a Constraint on Profit Seeking." *American Economic Review*, 76(4): 728–41.

**Kahneman, Daniel, and Amos Tversky.** 1979. "Prospect Theory: An Analysis of Decision Under Risk." *Econometrica*, 47(2): 263–91.

**Kahneman, Daniel, and Amos Tversky.** 1984. "Choices, Values and Frames." *American Psychologist*, 39(4): 341–50.

**Kamenica, Emir.** 2006. "Contextual Infer-

ence in Markets: On the Informational Content of Product Lines." <http://www.chicagogsb.edu/research/workshops/AppliedEcon/archive/WebArchive20052006/KamenicaJan182006AEW.pdf>.

**Kruse, Douglas L., and Joseph Blasi.** 1995. "Employee Ownership, Employee Attitudes, and Firm Performance." National Bureau of Economic Research Working Paper 5277.

**Madrian, Brigitte C., and Dennis F. Shea.** 2001a. "The Power of Suggestion: Inertia in 401(k) Participation and Savings Behavior." *Quarterly Journal of Economics*, 116(4): 1149–1525.

**Madrian, Brigitte C., and Dennis F. Shea.** 2001b. "Preaching to the Converted and Converting Those Taught: Financial Education in the Workplace." Unpublished paper, University of Chicago.

**Meulbroek, Lisa.** 2002. "Company Stock in Pension Plans: How Costly Is It?" Harvard Business School Working Paper 02-058.

**Mitchell, Olivia S., Gary R. Mottola, Stephen P. Utkus, and Takeshi Yamaguchi.** 2006. "The Inattentive Participant: Portfolio Trading Behavior in 401(k) Plans." Pension Research Council Working Paper 2006-5.

**Mitchell, S. Olivia, and Stephen P. Utkus.** 2004. "The Role of Company Stock in Defined Contribution Plans." In *The Pension Challenge: Risk Transfers and Retirement Income Security*, ed. Olivia Mitchell and Kent Smetters, 33–70. Oxford: Oxford University Press.

**Papke, Leslie, E.** 2004. "Pension Plan Choice in the Public Sector: The Case of Michigan State Employees." *National Tax Journal*, 57(2): 329–39.

**Poterba, James, Steven Venti, and David A. Wise.** 2006. "The Decline of Defined Benefit Retirement Plans and Asset Flows." National Bureau of Economic Research Working Paper 12834.

**Poterba, James M.** 2003. "Employer Stock and 401(k) Plans." *The American Economic Review*, 93(2): 398–404.

**Prendergast, Canice.** 1999. "The Provision of Incentives in Firms." *Journal of Economic Literature*, 37(1): 7–63.

**Ramaswamy, Krishna.** 2004. "Corporate Stock and Pension Plan Diversification." In *The Pension Challenge: Risk Transfers and Retirement Income Security*, ed. Olivia Mitchell and Kent Smetters, 71–88. Oxford: Oxford University Press.

**Read, Daniel, and George Loewenstein.** 1995. "Diversification Bias: Explaining the Discrepancy in Variety Seeking between Combined and Separated Choices." *Journal of Experimental Psychology: Applied*, 1(1): 34–49.

**Shafir, Eldar, Peter Diamond, and Amos Tversky.** 1997. "Money Illusion." *Quarterly Journal of Economics*, 112 (May): 341–74.

**Siegel, Jeremy.** 1998. "Stocks for the Long Run." McGraw-Hill Companies.

**Simonson, Itamar.** 1990. "The Effect of Purchase Quantity and Timing on Variety-Seeking Behavior." *Journal of Marketing Research*, 27(2): 150–62.

**Thaler, Richard H.** 1985. "Mental Accounting and Consumer Choice." *Marketing Science* 4(3): 199–214.

**Thaler, Richard H.** 1999. "Mental Accounting Matters." *Journal of Behavioral Decision Making*, 12(3): 183–206.

**Thaler, Richard H., and Shlomo Benartzi.** 2004. "Save More Tomorrow: Using Behavioral Economics to Increase Employee Savings." *Journal of Political Economy*, 112(1) Part 2: S164–87.

**Tversky, Amos, and Daniel Kahneman.** 1992. "Advances in Prospect Theory: Cumulative Representation of Uncertainty." *Journal of Risk and Uncertainty*, 5(4): 297–323.

**Vanguard.** 2004. "How America Saves: A Report on Vanguard Defined Contribution Plans 2004." [https://institutional.vanguard.com/VGApp/iip/Research?Path=PUBRR&File=RetResHowAmericaSaves2004.jsp&FW\\_Activity=ArticleDetailActivity&FW\\_Event=articleDetail&IIP\\_INF=BRRetResHowAmericaSaves2004.jsp](https://institutional.vanguard.com/VGApp/iip/Research?Path=PUBRR&File=RetResHowAmericaSaves2004.jsp&FW_Activity=ArticleDetailActivity&FW_Event=articleDetail&IIP_INF=BRRetResHowAmericaSaves2004.jsp)

**Yamaguchi, Takeshi, Olivia S. Mitchell, Gary R. Mottola, and Stephen P. Utkus.** 2006. "Winners and Losers: 401(k) Trading and Portfolio Performance." Pension Research Council Working Paper 2006-26, The Wharton School, University of Pennsylvania.

**Yang, Tongxuan.** 2005. "Understanding the Defined Benefit versus Defined Contribution Choice." Pension Research Council Working Paper 2005-4, The Wharton School, University of Pennsylvania.

**Zweig, Jason.** 1988. "Five Investing Lessons from America's Top Pension Fund." *Money*, January, pp. 115–8.

This article has been cited by:

1. Ran Etgar, Emanuel Tamir. 2020. Are millennial students better equipped to overcome choice bias?. *International Journal of Adolescence and Youth* 25:1, 373-381. [[Crossref](#)]
2. Michael Y. Lee, Melissa Mazmanian, Leslie Perlow. 2020. Fostering Positive Relational Dynamics: The Power of Spaces and Interaction Scripts. *Academy of Management Journal* 63:1, 96-123. [[Crossref](#)]
3. J. C. Hauff, A. Carlander, T. Gärling, G. Nicolini. 2020. Retirement Financial Behaviour: How Important Is Being Financially Literate?. *Journal of Consumer Policy* 13. . [[Crossref](#)]
4. Botond Köszegi, Filip Matějka. 2020. Choice Simplification: A Theory of Mental Budgeting and Naive Diversification\*. *The Quarterly Journal of Economics* 15. . [[Crossref](#)]
5. Anna Rita Bennato, Adrian Gourlay, Chris M. Wilson. 2020. A classroom experiment on the causes and forms of bounded rationality in individual choice. *The Journal of Economic Education* 51:1, 31-41. [[Crossref](#)]
6. Adam Eric Greenberg, Abigail B. Sussman, Hal E. Hershfield. 2020. Financial product sensitivity predicts financial health. *Journal of Behavioral Decision Making* 33:1, 15-26. [[Crossref](#)]
7. James Davis, Gordon Rausser. 2020. Amending conservation programs through expanding choice architecture: A case study of forestry and livestock producers. *Agricultural Systems* 177, 102678. [[Crossref](#)]
8. Matthew Lee, Arzi Adbi, Jasjit Singh. 2020. Categorical cognition and outcome efficiency in impact investing decisions. *Strategic Management Journal* 41:1, 86-107. [[Crossref](#)]
9. Luisa R. Blanco, O. Kenrik Duru, Carol M. Mangione. 2019. A Community-Based Randomized Controlled Trial of an Educational Intervention to Promote Retirement Saving Among Hispanics. *Journal of Family and Economic Issues* 53. . [[Crossref](#)]
10. Dongwoo Kim. 2019. Worker retirement responses to pension incentives: Do they respond to pension wealth?. *Journal of Economic Behavior & Organization* . [[Crossref](#)]
11. Thomas W. Doellman, Jennifer Itzkowitz, Jesse Itzkowitz, Sabuhi H. Sardarli. 2019. Alphabeticity Bias in 401(k) Investing. *Financial Review* 54:4, 643-677. [[Crossref](#)]
12. Edward J. Horwitz, Bradley T. Klontz, Faith Zabek. 2019. A Financial Psychology Intervention for Increasing Employee Participation in and Contribution to Retirement Plans: Results of Three Trials. *Journal of Financial Counseling and Planning* 30:2, 262-276. [[Crossref](#)]
13. Mo Hu, Tripp Shealy. 2019. Application of Functional Near-Infrared Spectroscopy to Measure Engineering Decision-Making and Design Cognition: Literature Review and Synthesis of Methods. *Journal of Computing in Civil Engineering* 33:6, 04019034. [[Crossref](#)]
14. William Price. Developing Coherent Pension Systems: Design Issues for Private Pension Supplements to NDC Schemes 317-338. [[Crossref](#)]
15. Adam S Hayes. 2019. The active construction of passive investors: roboadvisors and algorithmic 'low-finance'. *Socio-Economic Review* 35. . [[Crossref](#)]
16. VILLE RANTALA. 2019. How Do Investment Ideas Spread through Social Interaction? Evidence from a Ponzi Scheme. *The Journal of Finance* 74:5, 2349-2389. [[Crossref](#)]
17. Jonathan Cribb, Carl Emmerson. 2019. What happens to workplace pension saving when employers are obliged to enrol employees automatically?. *International Tax and Public Finance* 21. . [[Crossref](#)]
18. Serah Shin, Hyungsoo Kim, Claudia J. Heath. 2019. Narrow Framing and Retirement Savings Decisions. *Journal of Consumer Affairs* 53:3, 975-997. [[Crossref](#)]
19. Mariacristina Rossi, Dario Sansone, Arthur van Soest, Costanza Torricelli. 2019. Household preferences for socially responsible investments. *Journal of Banking & Finance* 105, 107-120. [[Crossref](#)]

20. Sara Pavia, Simon Grima. Chapter 8 Retirement Planning: A Literature Review 97-138. [[Crossref](#)]
21. Stephanie Dornschneider. 2019. High-Stakes Decision-Making Within Complex Social Environments: A Computational Model of Belief Systems in the Arab Spring. *Cognitive Science* **43**:7. . [[Crossref](#)]
22. Stefan Graf, Jochen Ruß, Stefan Schelling. 2019. As you like it: Explaining the popularity of life-cycle funds with multi cumulative prospect theory. *Risk Management and Insurance Review* **22**:2, 221-238. [[Crossref](#)]
23. Tripp Shealy, Leidy Klotz, Elke U. Weber, Eric J. Johnson, Ruth Greenspan Bell. 2019. Bringing Choice Architecture to Architecture and Engineering Decisions: How the Redesign of Rating Systems Can Improve Sustainability. *Journal of Management in Engineering* **35**:4, 04019014. [[Crossref](#)]
24. Satish K. Mittal. 2019. Behavior biases and investment decision: theoretical and research framework. *Qualitative Research in Financial Markets* **7**. . [[Crossref](#)]
25. Julia Bayuk, Suzanne Aurora Altobello. 2019. Can gamification improve financial behavior? The moderating role of app expertise. *International Journal of Bank Marketing* **37**:4, 951-975. [[Crossref](#)]
26. Jennifer Alonso-García, Michael Sherris. 2019. One size fits all? Drawdown structures in Australia and The Netherlands. *The Journal of the Economics of Ageing* **13**, 14-27. [[Crossref](#)]
27. R. Paul Battaglio, Paolo Belardinelli, Nicola Bellé, Paola Cantarelli. 2019. Behavioral Public Administration ad fontes: A Synthesis of Research on Bounded Rationality, Cognitive Biases, and Nudging in Public Organizations. *Public Administration Review* **79**:3, 304-320. [[Crossref](#)]
28. Nassim Nicholas Taleb. 2019. How much data do you need? An operational, pre-asymptotic metric for fat-tailedness. *International Journal of Forecasting* **35**:2, 677-686. [[Crossref](#)]
29. Xi Lin, Aaron Bruhn, Jananie William. 2019. Extending financial literacy to insurance literacy: a survey approach. *Accounting & Finance* **59**:S1, 685-713. [[Crossref](#)]
30. Daniel Maman, Zeev Rosenhek. 2019. Facing future uncertainties and risks through personal finance: conventions in financial education. *Journal of Cultural Economy* **15**, 1-15. [[Crossref](#)]
31. M. Lukas. 2019. Relative prices and product substitution: Evidence from shocks to consumer credit interest rates. *Journal of Behavioral and Experimental Finance* **21**, 39-49. [[Crossref](#)]
32. Geoffrey Kingston, Susan Thorp. 2019. Superannuation in Australia: A Survey of the Literature. *Economic Record* **95**:308, 141-160. [[Crossref](#)]
33. Peter A. Forsyth, Kenneth R. Vetzal. 2019. Optimal Asset Allocation for Retirement Saving: Deterministic Vs. Time Consistent Adaptive Strategies. *Applied Mathematical Finance* **26**:1, 1-37. [[Crossref](#)]
34. Colin R. Kuehnhanss. 2019. The challenges of behavioural insights for effective policy design. *Policy and Society* **38**:1, 14-40. [[Crossref](#)]
35. Benjamin F. Cummings, Sarah Newcomb. Frameworks for Financial Decision Making 127-140. [[Crossref](#)]
36. K. Sankaran, C. K. Manjunath. The Bhagavad Gītā as an Antidote to Duality: A Challenge to the Orthodoxy of Current Decisions Theory 193-207. [[Crossref](#)]
37. T. Scott Findley, Erin Cottle Hunt. 2019. Quasi-Hyperbolic Discounting and the Save More Tomorrow Program. *SSRN Electronic Journal* . [[Crossref](#)]
38. Eric Brouwer. 2019. Regulating Bitcoin Exchanges: A Risk-Based Approach. *SSRN Electronic Journal* . [[Crossref](#)]
39. Davide Cerruti, Claudio Daminato, Massimo Filippini. 2019. The Impact of Policy Awareness: Evidence from Vehicle Choices Response to Fiscal Incentives. *SSRN Electronic Journal* . [[Crossref](#)]

40. Moritz Lukas, Markus Noeth. 2019. What Induces Children to Save (More)? . *SSRN Electronic Journal* . [\[Crossref\]](#)
41. Ashlesha Khedekar-Swaminathan. Behavioral Strategies to Achieve Financial Stability in Uncertain Times 177-198. [\[Crossref\]](#)
42. Redouane Elkamhi, Chanik Jo. 2019. Time-Varying Market Participation, Consumption Risk-Sharing, and Asset Dynamics. *SSRN Electronic Journal* . [\[Crossref\]](#)
43. Moritz Lukas, Markus Noeth. 2019. Commitment and Borrower Heterogeneity: Evidence from Revolving Consumer Credit. *SSRN Electronic Journal* . [\[Crossref\]](#)
44. Linda Sandris Larsen, Claus Munk. 2019. Designing Mandatory Pension Plans. *SSRN Electronic Journal* . [\[Crossref\]](#)
45. Havva Serim, Fahriye Öztürk. 2018. DAVRANIŞSAL İKTİSAT VE ZAMANLARARASI TERCİH: TASARRUF DAVRANIŞI ÜZERİNE BİR İNCELEME. *Politik Ekonomik Kuram* 146-172. [\[Crossref\]](#)
46. William G. Gale, Sarah E. Holmes, David C. John. 2018. Retirement plans for contingent workers: issues and options. *Journal of Pension Economics and Finance* 1-13. [\[Crossref\]](#)
47. Adam Eric Greenberg, Hal E. Hershfield. 2018. Financial decision making. *Consumer Psychology Review* 17. . [\[Crossref\]](#)
48. Sebastian Schiffels, Thomas Fliedner, Rainer Kolisch. 2018. Human Behavior in Project Portfolio Selection: Insights from an Experimental Study. *Decision Sciences* 49:6, 1061-1087. [\[Crossref\]](#)
49. Leonore Riitsalu. 2018. Goals, commitment and peer effects as tools for improving the behavioural outcomes of financial education. *Citizenship, Social and Economics Education* 17:3, 188-209. [\[Crossref\]](#)
50. Michelle Reyers. 2018. Perceptions of Retirement Adequacy: Evidence From South Africa. *Journal of Financial Counseling and Planning* 29:2, 343-356. [\[Crossref\]](#)
51. Junius Gunaratne, Lior Zalmanson, Oded Nov. 2018. The Persuasive Power of Algorithmic and Crowdsourced Advice. *Journal of Management Information Systems* 35:4, 1092-1120. [\[Crossref\]](#)
52. Colin M. Ramsay, Victor I. Oguledo. 2018. The Annuity Puzzle and an Outline of Its Solution. *North American Actuarial Journal* 22:4, 623-645. [\[Crossref\]](#)
53. Wookjae Heo, John E. Grable, Abed G. Rabbani. 2018. A test of the relevant association between utility theory and subjective risk tolerance: Introducing the Profit-to-Willingness ratio. *Journal of Behavioral and Experimental Finance* 19, 84-88. [\[Crossref\]](#)
54. Katrin Gödker, Lasse Mertins. 2018. CSR Disclosure and Investor Behavior: A Proposed Framework and Research Agenda. *Behavioral Research in Accounting* 30:2, 37-53. [\[Crossref\]](#)
55. Michele E. Tolson, Christian E. Weller. 2018. Policy responses during the Trump administration to older people's growing economic risk exposure. *Journal of Aging & Social Policy* 30:3-4, 337-356. [\[Crossref\]](#)
56. MAGNUS DAHLQUIST, OFER SETTY, ROINE VESTMAN. 2018. On the Asset Allocation of a Default Pension Fund. *The Journal of Finance* 73:4, 1893-1936. [\[Crossref\]](#)
57. Javed Ahmed, Brad M. Barber, Terrance Odean. 2018. Made poorer by choice: Worker outcomes in social security vs. private retirement accounts. *Journal of Banking & Finance* 92, 311-322. [\[Crossref\]](#)
58. Oscar Stolper. 2018. It takes two to Tango: Households' response to financial advice and the role of financial literacy. *Journal of Banking & Finance* 92, 295-310. [\[Crossref\]](#)
59. David R. Lewis. 2018. The perils of overconfidence: Why many consumers fail to seek advice when they really should. *Journal of Financial Services Marketing* 23:2, 104-111. [\[Crossref\]](#)
60. Richard Taffler. 2018. Emotional finance: investment and the unconscious. *The European Journal of Finance* 24:7-8, 630-653. [\[Crossref\]](#)



61. Peter E. Earl. 2018. Richard H. Thaler: A Nobel Prize for Behavioural Economics. *Review of Political Economy* 30:2, 107-125. [[Crossref](#)]
62. Amitrajeet A. Batabyal, Peter Nijkamp. 2018. On pessimism and optimism by forward looking agents and the need for pensions. *Asia-Pacific Journal of Regional Science* 2:1, 1-14. [[Crossref](#)]
63. Park Jong Ok, Sang Hee Sohn. 2018. The Effects of Financial Beliefs on Dysfunctional Financial Behaviors. *Journal of consumer policy studies* 49:1, 163-195. [[Crossref](#)]
64. Ashlesha Khedekar-Swaminathan, Savita Kulkarni. 2018. Behavioral Challenges for Retirement Planning. *International Journal of Applied Behavioral Economics* 7:2, 15-29. [[Crossref](#)]
65. C. Yiwei Zhang, Abigail B. Sussman. The Role of Mental Accounting in Household Spending and Investing Decisions 65-96. [[Crossref](#)]
66. C. Yiwei Zhang, Abigail B. Sussman. 2018. Perspectives on mental accounting: An exploration of budgeting and investing. *Financial Planning Review* 1:1-2, e1011. [[Crossref](#)]
67. Lu Fan, Swarn Chatterjee. 2018. Application of situational stimuli for examining the effectiveness of financial education: A behavioral finance perspective. *Journal of Behavioral and Experimental Finance* 17, 68-75. [[Crossref](#)]
68. Vicki L. Bogan, Angela R. Fertig. 2018. Mental health and retirement savings: Confounding issues with compounding interest. *Health Economics* 27:2, 404-425. [[Crossref](#)]
69. Nicolas P.B. Bollen, Steven Posavac. 2018. Gender, risk tolerance, and false consensus in asset allocation recommendations. *Journal of Banking & Finance* 87, 304-317. [[Crossref](#)]
70. Daniel D. Andrino, Ricardo P. C. Leal. 2018. Equally Weighted Strategic Allocation and Balanced Funds in Brazil. *Latin American Business Review* 19:1, 23-53. [[Crossref](#)]
71. David Lewis. Computers May Not Make Mistakes but Many Consumers Do 361-371. [[Crossref](#)]
72. B. Douglas Bernheim, Dmitry Taubinsky. Behavioral Public Economics 381-516. [[Crossref](#)]
73. John Beshears, James J. Choi, David Laibson, Brigitte C. Madrian. Behavioral Household Finance 177-276. [[Crossref](#)]
74. Sudipto Banerjee, Youngkyun Park. 2018. Coworker Influence on Annuitization Decisions: Evidence from Defined Benefit Plans. *SSRN Electronic Journal* . [[Crossref](#)]
75. Abigail Hurwitz, Orly Sade, Eyal Winter. 2018. Anchoring Bias in Annuity Choices: An Experimental Investigation. *SSRN Electronic Journal* . [[Crossref](#)]
76. Mariacristina Rossi, Dario Sansone, Arthur <!--van Soest, Costanza Torricelli. 2018. Household Preferences for Socially Responsible Investments. *SSRN Electronic Journal* . [[Crossref](#)]
77. Jennifer Alonso-Garcca, Hazel Bateman, Johan Bonekamp, Arthur van Soest, Ralph Stevens. 2018. Saving Preferences After Retirement. *SSRN Electronic Journal* . [[Crossref](#)]
78. Matthew Lee, Arzi Adbi, Jasjit Singh. 2018. Outcome Efficiency in Impact Investing Decisions. *SSRN Electronic Journal* . [[Crossref](#)]
79. Aman Sunder, Lance Palmer, Joseph W. Goetz, Swarn Chatterjee. 2018. Comprehensive Advisors vs. Modular Advisors: A Study of Household Financial Assets During the Great Recession. *SSRN Electronic Journal* . [[Crossref](#)]
80. Rene Schwaiger, Michael Kirchler, Florian Lindner, Utz Weitzel. 2018. Determinants of Investor Expectations and Satisfaction: A Study With Financial Professionals. *SSRN Electronic Journal* . [[Crossref](#)]
81. Thomas Doellman, Jennifer Itzkowitz, Jesse Itzkowitz, Sabuhi Sardarli. 2018. Alphabeticity Bias in 401(k) Investing. *SSRN Electronic Journal* . [[Crossref](#)]
82. C. Königsheim, M. Lukas, M. Nöth. 2018. Individual preferences and the exponential growth bias. *Journal of Economic Behavior & Organization* 145, 352-369. [[Crossref](#)]

83. Adam Butt, M. Scott Donald, F. Douglas Foster, Susan Thorp, Geoffrey J. Warren. 2018. One size fits all? Tailoring retirement plan defaults. *Journal of Economic Behavior & Organization* **145**, 546-566. [[Crossref](#)]
84. David A. Comerford, Jenny Robinson. 2017. Die-by Framing both Lengthens and Shortens Life: Further Evidence on Constructed Beliefs in Life Expectancy. *Journal of Behavioral Decision Making* **30**:5, 1104-1112. [[Crossref](#)]
85. William F. Johnson, Ha-Chin Yi. 2017. Do target date mutual funds meet their targets?. *Journal of Asset Management* **18**:7, 566-579. [[Crossref](#)]
86. Sunwoo Lee, Hyuncha Choe, Minjung Kim. 2017. Mental Accounting of Retired Household by the Type of Household Financial Strategy. *Korean Journal of Human Ecology* **26**:5, 403-417. [[Crossref](#)]
87. Elisabeth C. Brüggen, Jens Høgreve, Maria Holmlund, Sertan Kabadayi, Martin Löfgren. 2017. Financial well-being: A conceptualization and research agenda. *Journal of Business Research* **79**, 228-237. [[Crossref](#)]
88. James J. Choi, Emily Haisley, Jennifer Kurkoski, Cade Massey. 2017. Small cues change savings choices. *Journal of Economic Behavior & Organization* **142**, 378-395. [[Crossref](#)]
89. Julia Le Blanc, Almuth Scholl. 2017. OPTIMAL SAVINGS FOR RETIREMENT: THE ROLE OF INDIVIDUAL ACCOUNTS. *Macroeconomic Dynamics* **21**:6, 1361-1388. [[Crossref](#)]
90. Susan E. K. Christoffersen, Mikhail Simutin. 2017. On the Demand for High-Beta Stocks: Evidence from Mutual Funds. *The Review of Financial Studies* **30**:8, 2596-2620. [[Crossref](#)]
91. Robert French, Philip Oreopoulos. 2017. Applying behavioural economics to public policy in Canada. *Canadian Journal of Economics/Revue canadienne d'économie* **50**:3, 599-635. [[Crossref](#)]
92. Ana C. Santos. 2017. Cultivating the self-reliant and responsible individual: the material culture of financial literacy. *New Political Economy* **22**:4, 410-422. [[Crossref](#)]
93. Taejun (David) Lee. 2017. Clear, conspicuous, and improving. *International Journal of Bank Marketing* **35**:5, 761-780. [[Crossref](#)]
94. Vered Halamish, Nira Liberman. 2017. How much information to sample before making a decision? It's a matter of psychological distance. *Journal of Experimental Social Psychology* **71**, 111-116. [[Crossref](#)]
95. John Beshears, James J. Choi, David Laibson, Brigitte C. Madrian. 2017. Does front-loading taxation increase savings? Evidence from Roth 401(k) introductions. *Journal of Public Economics* **151**, 84-95. [[Crossref](#)]
96. Glen W. S. Dowell, Suresh Muthulingam. 2017. Will firms go green if it pays? The impact of disruption, cost, and external factors on the adoption of environmental initiatives. *Strategic Management Journal* **38**:6, 1287-1304. [[Crossref](#)]
97. Maureen Maloney, Alma McCarthy. 2017. Understanding pension communications at the organizational level: Insights from bounded rationality theory & implications for HRM. *Human Resource Management Review* **27**:2, 338-352. [[Crossref](#)]
98. Yves Stevens. 2017. The silent pension pillar implosion. *European Journal of Social Security* **19**:2, 98-117. [[Crossref](#)]
99. Sandro Casal, Nives DellaValle, Luigi Mittone, Ivan Soraperra. 2017. Feedback and efficient behavior. *PLOS ONE* **12**:4, e0175738. [[Crossref](#)]
100. Dan Goldhaber, Cyrus Grout, Nick Huntington-Klein. 2017. Screen Twice, Cut Once: Assessing the Predictive Validity of Applicant Selection Tools. *Education Finance and Policy* **12**:2, 197-223. [[Crossref](#)]
101. Magnus Dahlquist, José Vicente Martinez, Paul Söderlind. 2017. Individual Investor Activity and Performance. *The Review of Financial Studies* **30**:3, 866-899. [[Crossref](#)]



102. Michal Grinstein-Weiss, Blair D. Russell, William G. Gale, Clinton Key, Dan Ariely. 2017. Behavioral Interventions to Increase Tax-Time Saving: Evidence from a National Randomized Trial. *Journal of Consumer Affairs* 51:1, 3-26. [[Crossref](#)]
103. Pia Ramchandani, Mark Paich, Anand Rao. Incorporating Learning into Decision Making in Agent Based Models 789-800. [[Crossref](#)]
104. Imad A. Moosa, Vikash Ramiah. Recent Developments 125-150. [[Crossref](#)]
105. Matthew T. Gustafson. 2017. The market sensitivity of retirement and defined contribution pensions: Evidence from the public sector. *Journal of Public Economics* 145, 1-13. [[Crossref](#)]
106. Chia-Ying Chan, Hsuan-Chi Chen, Yu Hsuan Chiang, Christine W. Lai. 2017. Fund selection in target date funds. *The North American Journal of Economics and Finance* 39, 197-209. [[Crossref](#)]
107. Jaume Roig Hernando. 2017. Crowdfunding: The collaborative economy for channelling institutional and household savings. *The Spanish Review of Financial Economics* 15:1, 12-20. [[Crossref](#)]
108. Ainol Sarin Ahmad Zazili, Mohammad Firdaus Bin Ghazali, Norlinda Tendot Binti Abu Bakar, Mastura Binti Ayob, Irwani Hazlina Binti Abd Samad. 2017. Retirement Planning: Young Professionals in Private Sector. *SHS Web of Conferences* 36, 00024. [[Crossref](#)]
109. Tiziana Assenza, William A. Brock, Cars H. Hommes. 2017. ANIMAL SPIRITS, HETEROGENEOUS EXPECTATIONS, AND THE AMPLIFICATION AND DURATION OF CRISES. *Economic Inquiry* 55:1, 542-564. [[Crossref](#)]
110. Amitrajeet A. Batabyal, Peter Nijkamp. 2017. On Pessimism and Optimism by Forward Looking Agents and the Need for Social Security. *SSRN Electronic Journal* . [[Crossref](#)]
111. In Do Hwang. 2017. Behavioral Aspects of Household Portfolio Choice: Effects of Loss Aversion on Life Insurance Uptake and Savings. *SSRN Electronic Journal* . [[Crossref](#)]
112. Peter Forsyth, Kenneth R. Vetzal. 2017. Optimal Asset Allocation for Retirement Savings: Deterministic vs. Adaptive Strategies. *SSRN Electronic Journal* . [[Crossref](#)]
113. William J. Bazley, Henrik Cronqvist, Milica Milosavljevic Mormann. 2017. In the Red: The Effects of Color on Investment Behavior. *SSRN Electronic Journal* . [[Crossref](#)]
114. Andrew D. Cuccia, Marcus Doxey, Shane Stinson. 2017. The Relative Effects of Economic and Non-Economic Factors on Taxpayers' Preferences between Front-Loaded and Back-Loaded Retirement Savings Plans. *SSRN Electronic Journal* . [[Crossref](#)]
115. Rob Bauer, Inka Eberhardt, Paul Smeets. 2017. Financial Incentives Beat Social Norms: A Field Experiment on Retirement Information Search. *SSRN Electronic Journal* . [[Crossref](#)]
116. Jennifer Alonso-Garcca, Michael Sherris. 2017. One Size Fits All? Drawdown Structures in Australia and the Netherlands. *SSRN Electronic Journal* . [[Crossref](#)]
117. Manuel Enrique Garcia Huitron, Eduardo Rodriguez-Montemayor. 2017. Pension Goals and Institutional Arrangements: Reforms DC 2.0 for Latin America. *SSRN Electronic Journal* . [[Crossref](#)]
118. Sjoerd Timmermans, J. M. Schumacher, Eduard H.M. Ponds. 2017. A Multi-Objective Decision Framework for Lifecycle Investment. *SSRN Electronic Journal* . [[Crossref](#)]
119. Nicolas P. B. Bollen, Steven S. Posavac. 2017. Gender, Risk Tolerance, and False Consensus in Asset Allocation Recommendations. *SSRN Electronic Journal* . [[Crossref](#)]
120. Francesco C. mname Billari, Carlo A. mname Favero, Francesco mname Saita. 2017. Nudging Financial and Demographic Literacy: Experimental Evidence from an Italian Trade Union Pension Fund. *SSRN Electronic Journal* . [[Crossref](#)]
121. Jason A. Aimone, Sheryl Ball, Brooks King-Casas. 2016. 'Nudging' risky decision-making: The causal influence of information order. *Economics Letters* 149, 161-163. [[Crossref](#)]

122. Christopher R. Gustafson, Travis J. Lybbert, Daniel A. Sumner. 2016. Consumer knowledge affects valuation of product attributes: Experimental results for wine. *Journal of Behavioral and Experimental Economics* **65**, 85-94. [[Crossref](#)]
123. Lee, Euisun. 2016. Study on the Influence of Subjective Financial Knowledge to Financial Attitudes and Behaviors of Financial Consumers- Focused on the Paths of Each Categories of Financial Goods. *Journal of Consumption Culture* **19**:4, 111-134. [[Crossref](#)]
124. Cristian Badarinza, John Y. Campbell, Tarun Ramadorai. 2016. International Comparative Household Finance. *Annual Review of Economics* **8**:1, 111-144. [[Crossref](#)]
125. JOACHIM INKMANN, ZHEN SHI. 2016. Life-cycle patterns in the design and adoption of default funds in DC pension plans. *Journal of Pension Economics and Finance* **15**:4, 429-454. [[Crossref](#)]
126. J. Michael Collins, Carly Urban. 2016. THE ROLE OF INFORMATION ON RETIREMENT PLANNING: EVIDENCE FROM A FIELD STUDY. *Economic Inquiry* **54**:4, 1860-1872. [[Crossref](#)]
127. Dan Goldhaber, Cyrus Grout. 2016. Pension Choices and the Savings Patterns of Public School Teachers. *Education Finance and Policy* **11**:4, 449-481. [[Crossref](#)]
128. Jeffrey R. Brown, Anne M. Farrell, Scott J. Weisbenner. 2016. Decision-making approaches and the propensity to default: Evidence and implications. *Journal of Financial Economics* **121**:3, 477-495. [[Crossref](#)]
129. Jaume Roig Hernando. 2016. Crowdfunding: The collaborative economy for channelling institutional and household savings. *Research in International Business and Finance* **38**, 326-337. [[Crossref](#)]
130. Cary Frydman, Colin F. Camerer. 2016. The Psychology and Neuroscience of Financial Decision Making. *Trends in Cognitive Sciences* **20**:9, 661-675. [[Crossref](#)]
131. Martin Geiger, Wolfgang J. Luhan, Johann Scharler. 2016. When do fiscal consolidations lead to consumption booms? Lessons from a laboratory experiment. *Journal of Economic Dynamics and Control* **69**, 1-20. [[Crossref](#)]
132. Robert L. Goldstone, Gary Lupyan. 2016. Discovering Psychological Principles by Mining Naturally Occurring Data Sets. *Topics in Cognitive Science* **8**:3, 548-568. [[Crossref](#)]
133. Michael Steiner, Nico Wiegand, Andreas Eggert, Klaus Backhaus. 2016. Platform adoption in system markets: The roles of preference heterogeneity and consumer expectations. *International Journal of Research in Marketing* **33**:2, 276-296. [[Crossref](#)]
134. Omar Isaac Asensio, Magali A. Delmas. 2016. The dynamics of behavior change: Evidence from energy conservation. *Journal of Economic Behavior & Organization* **126**, 196-212. [[Crossref](#)]
135. Pat Auger, Timothy Devinney, Grahame Dowling, Christine Eckert. 2016. Inertia and discounting in the selection of socially responsible investments. *Annals in Social Responsibility* **2**:1, 29-47. [[Crossref](#)]
136. Jeanette Carlsson Hauff, Anders Carlander, Amelie Gamble, Tommy Gärling, Martin Holmen. 2016. Breaking the ice of low financial involvement. *International Journal of Bank Marketing* **34**:2, 151-170. [[Crossref](#)]
137. Cheri Ostroff, David E. Bowen. 2016. Reflections on the 2014 Decade Award: Is There Strength in the Construct of HR System Strength?. *Academy of Management Review* **41**:2, 196-214. [[Crossref](#)]
138. Heiko Jacobs, Alexander Hillert. 2016. Alphabetic Bias, Investor Recognition, and Trading Behavior \*. *Review of Finance* **20**:2, 693-723. [[Crossref](#)]
139. Jing Jian Xiao. Consumer Financial Capability and Wellbeing 3-17. [[Crossref](#)]
140. Allan Lee, Yingzi Xu, Kenneth F. Hyde. Factors Influencing Investor Choice of Retirement Funds 224-245. [[Crossref](#)]

141. Andreas Hüsser, Werner Wirth. Do Investors Show an Attentional Bias toward Past Performance? An Eye-Tracking Experiment on Visual Attention to Mutual Fund Disclosures in Simplified Fund Prospectuses 77-102. [[Crossref](#)]
142. Taejun David Lee, TaiWoong Yun, Kwang Seok Han. The Role of Creative Strategy, Ad Disclosure and Regulatory Focus in Investors' Decision Making: An Experimental Investigation 103-134. [[Crossref](#)]
143. A.M. Lavecchia, H. Liu, P. Oreopoulos. Behavioral Economics of Education 1-74. [[Crossref](#)]
144. O.S. Mitchell, J. Piggott. Workplace-Linked Pensions for an Aging Demographic 865-904. [[Crossref](#)]
145. Hazel Bateman, Loretti I. Dobrescu, Ben R. Newell, Andreas Ortmann, Susan Thorp. 2016. As easy as pie: How retirement savers use prescribed investment disclosures. *Journal of Economic Behavior & Organization* **121**, 60-76. [[Crossref](#)]
146. Christian E. Weller. Charting a New Course 151-164. [[Crossref](#)]
147. Christian E. Weller. Americans' Growing Risk Exposure 13-26. [[Crossref](#)]
148. Christian E. Weller. More Risk, Greater Wealth Inequality 27-40. [[Crossref](#)]
149. Christian E. Weller. Sink-or-Swim Retirement Plans 73-88. [[Crossref](#)]
150. Christian E. Weller. The Pitfalls of Employer-Sponsored Retirement 101-118. [[Crossref](#)]
151. Christian E. Weller. Upside-Down Tax Incentives 119-136. [[Crossref](#)]
152. Stephan Lewandowsky. 2016. Future Global Change and Cognition. *Topics in Cognitive Science* **8**:1, 7-18. [[Crossref](#)]
153. Magnus Dahlquist, Ofer Setty, Roine Vestman. 2016. On the Asset Allocation of a Default Pension Fund. *SSRN Electronic Journal* . [[Crossref](#)]
154. Assaf Hamdani, Eugene Kandel, Yevgeny Mugerma, Yishay Yafeh. 2016. Incentive Fees and Competition in Pension Funds: Evidence from a Regulatory Experiment. *SSRN Electronic Journal* . [[Crossref](#)]
155. Monica Gentile, Paola Soccorso. 2016. Financial Advice Seeking, Financial Knowledge and Overconfidence. Evidence from the Italian Market. *SSRN Electronic Journal* . [[Crossref](#)]
156. Sven Schreiber, Miriam Beblo. 2016. Leisure and Housing Consumption after Retirement: New Evidence on the Life-Cycle Hypothesis. *SSRN Electronic Journal* . [[Crossref](#)]
157. Jason Anthony Aimone, Sheryl B. Ball, Brooks King-Casas. 2016. Nudging Risky Decision-Making: The Causal Influence of Information Order. *SSRN Electronic Journal* . [[Crossref](#)]
158. Ryan Bubb, Patrick L. Warren. 2016. An Equilibrium Theory of Retirement Plan Design. *SSRN Electronic Journal* . [[Crossref](#)]
159. Nam Dinh Pham, Alexander J. Triantis. 2016. Strengthening the U.S. Retirement Savings System. *SSRN Electronic Journal* . [[Crossref](#)]
160. James J. Choi. 2015. Contributions to Defined Contribution Pension Plans. *Annual Review of Financial Economics* **7**:1, 161-178. [[Crossref](#)]
161. Jean M. Lown, Jinhee Kim, Michael S. Gutter, Anne-Therese Hunt. 2015. Self-efficacy and Savings Among Middle and Low Income Households. *Journal of Family and Economic Issues* **36**:4, 491-502. [[Crossref](#)]
162. Alvin Pastore, Umberto Esposito, Eleni Vasilaki. Modelling stock-market investors as Reinforcement Learning agents 1-6. [[Crossref](#)]
163. Keith Jacks Gamble, Patricia A. Boyle, Lei Yu, David A. Bennett. 2015. Aging and Financial Decision Making. *Management Science* **61**:11, 2603-2610. [[Crossref](#)]

164. JAMES BANKS, ROWENA CRAWFORD, GEMMA TETLOW. 2015. Annuity choices and income drawdown: evidence from the decumulation phase of defined contribution pensions in England. *Journal of Pension Economics and Finance* 14:4, 412-438. [[Crossref](#)]
165. Martin Hedesström, Tommy Gärling, Maria Andersson, Anders Biel. 2015. Effects of bonuses on diversification in delegated stock portfolio management. *Journal of Behavioral and Experimental Finance* 7, 60-70. [[Crossref](#)]
166. Hans K. Hvide, Per Östberg. 2015. Social interaction at work. *Journal of Financial Economics* 117:3, 628-652. [[Crossref](#)]
167. KEE-LEE CHOU, KAR-MING YU, WAI-SUM CHAN, ALFRED M. WU, ALEX Y. F. ZHU, VIVIAN W. Q. LOU. 2015. Perceived retirement savings adequacy in Hong Kong: an interdisciplinary financial planning model. *Ageing and Society* 35:8, 1565-1586. [[Crossref](#)]
168. Karen Page Winterich, Gergana Y. Nenkov. 2015. Save Like the Joneses. *Journal of Service Research* 18:3, 384-404. [[Crossref](#)]
169. Christian Weller, Sara Bernardo. 2015. Aging With Rising Risk: Have Older Households Experienced Faster Growing Risk Exposure Than Younger Ones Since the 1990s?. *Journal of Aging & Social Policy* 35, 150706145616002. [[Crossref](#)]
170. Carin Huber, Nadine Gatzert, Hato Schmeiser. 2015. How Does Price Presentation Influence Consumer Choice? The Case of Life Insurance Products. *Journal of Risk and Insurance* 82:2, 401-432. [[Crossref](#)]
171. Julie R. Agnew, Lisa R. Anderson, Lisa R. Szykman. 2015. An Experimental Study of the Effect of Market Performance on Annuitization and Equity Allocations. *Journal of Behavioral Finance* 16:2, 120-129. [[Crossref](#)]
172. Michelle Reyers, Cornelis Hendrik van Schalkwyk, Daniël Gerhardus Gouws. 2015. Rational and behavioural predictors of pre-retirement cash-outs. *Journal of Economic Psychology* 47, 23-33. [[Crossref](#)]
173. Arran Caza, Matthew W. McCarter, Gregory B. Northcraft. 2015. Performance benefits of reward choice: a procedural justice perspective. *Human Resource Management Journal* 25:2, 184-199. [[Crossref](#)]
174. Giles W. Story, Ivo Vlaev, Peter Dayan, Ben Seymour, Ara Darzi, Raymond J. Dolan. 2015. Anticipation and Choice Heuristics in the Dynamic Consumption of Pain Relief. *PLOS Computational Biology* 11:3, e1004030. [[Crossref](#)]
175. Derek J. Koehler, Jesse Langstaff, Wu-Qi Liu. 2015. A simulated financial savings task for studying consumption and retirement decision making. *Journal of Economic Psychology* 46, 89-97. [[Crossref](#)]
176. Henrik Cronqvist, Stephan Siegel. 2015. The Origins of Savings Behavior. *Journal of Political Economy* 123:1, 123-169. [[Crossref](#)]
177. Ganlin Xu. 2015. The Risk Profiles of 401(k) Accounts. *The Journal of Retirement* 2:3, 67-77. [[Crossref](#)]
178. Jing Jian Xiao. Consumer Saving 199-214. [[Crossref](#)]
179. Geneviève Helleringer. Retail Investors and Disclosure Requirements 193-209. [[Crossref](#)]
180. Werner D. Kristjanpoller, Josephine E. Olson. 2015. Choice of Retirement Funds in Chile: Are Chilean Women More Risk Averse than Men?. *Sex Roles* 72:1-2, 50-67. [[Crossref](#)]
181. Michal Grinstein-Weiss, Krista Comer, Blair Russell, Clinton Key, Dana Perantie, Dan Ariely. Refund to Savings: Creating Contingency Savings at Tax Time 87-106. [[Crossref](#)]
182. Jeffrey R. Brown, Anne M. Farrell, Scott J. Weisbenner. 2015. Decision-Making Approaches and the Propensity to Default: Evidence and Implications. *SSRN Electronic Journal* . [[Crossref](#)]

183. Manuel Garcia-Huitron, Eduard H.M. Ponds. 2015. Worldwide Diversity in Funded Pension Plans: Four Role Models on Choice and Participation. *SSRN Electronic Journal* . [[Crossref](#)]
184. Michael Steiner, Nico Wiegand, Andreas Eggert, Klaus Backhaus. 2015. Platform Adoption in System Markets: The Roles of Preference Heterogeneity and Consumer Expectations. *SSRN Electronic Journal* . [[Crossref](#)]
185. Raj Aggarwal, John W. Goodell. 2015. Determinants of Expected Returns at Public Defined-Benefit Pension Plans. *SSRN Electronic Journal* . [[Crossref](#)]
186. Timothy (Jun) Lu, Ning Tang. 2015. Social Interaction Effects and Individual Portfolio Choice: Evidence from 401(k) Pension Plan Investors. *SSRN Electronic Journal* . [[Crossref](#)]
187. Adam Butt, M. Scott Donald, F. Douglas Foster, Susan Thorp, Geoff Warren. 2015. Delegation, Trust and Defaulting in Retirement Savings: Perspectives from Plan Executives and Members. *SSRN Electronic Journal* . [[Crossref](#)]
188. Cristian Badarinza, John Y. Campbell, Tarun Ramadorai. 2015. International Comparative Household Finance. *SSRN Electronic Journal* . [[Crossref](#)]
189. Assaf Hamdani, Eugene Kandel, Yevgeny Mugerma, Yishay Yafeh. 2015. Incentive Fees and Competition in Pension Funds: Evidence from a Regulatory Experiment in Israel. *SSRN Electronic Journal* . [[Crossref](#)]
190. Oscar Anselm Stolper, Andreas Walter. 2015. It Takes Two to Tango: Households' Response to Financial Advice and the Role of Financial Sophistication. *SSRN Electronic Journal* . [[Crossref](#)]
191. Giulio Bottazzi, Pietro Dindo, Daniele Giachini. 2015. Long-Run Heterogeneity in an Exchange Economy with Fixed-Mix Traders. *SSRN Electronic Journal* . [[Crossref](#)]
192. A. Heinberg, A. Hung, A. Kapteyn, A. Lusardi, A. S. Samek, J. Yoong. 2014. Five steps to planning success: experimental evidence from US households. *Oxford Review of Economic Policy* **30**:4, 697-724. [[Crossref](#)]
193. Ilona Babenko, Rik Sen. 2014. Money Left on the Table: An Analysis of Participation in Employee Stock Purchase Plans. *Review of Financial Studies* **27**:12, 3658-3698. [[Crossref](#)]
194. Marco Caramelli, Edward J. Carberry. 2014. Understanding employee preferences for investing in employer stock: evidence from France. *Human Resource Management Journal* **24**:4, 548-566. [[Crossref](#)]
195. Yevgeny Mugerma, Orly Sade, Moses Shayo. 2014. Long term savings decisions: Financial reform, peer effects and ethnicity. *Journal of Economic Behavior & Organization* **106**, 235-253. [[Crossref](#)]
196. GIUSEPPE CAPPELLETTI, GIOVANNI GUAZZAROTTI, PIETRO TOMMASINO. 2014. The effect of age on portfolio choices: evidence from an Italian pension fund. *Journal of Pension Economics and Finance* **13**:4, 389-419. [[Crossref](#)]
197. Tabea Bucher-Koenen, Michael Ziegelmeyer. 2014. Once Burned, Twice Shy? Financial Literacy and Wealth Losses during the Financial Crisis\*. *Review of Finance* **18**:6, 2215-2246. [[Crossref](#)]
198. Hooman Estelami. 2014. An ethnographic study of consumer financial sophistication. *Journal of Consumer Behaviour* **13**:5, 328-341. [[Crossref](#)]
199. Andreas Hüsser, Werner Wirth. 2014. Do investors show an attentional bias toward past performance? An eye-tracking experiment on visual attention to mutual fund disclosures in simplified fund prospectuses. *Journal of Financial Services Marketing* **19**:3, 169-185. [[Crossref](#)]
200. Jeanette Carlsson Hauff, Anders Carlander, Amelie Gamble, Tommy Gärling, Martin Holmen. 2014. Storytelling as a means to increase consumers' processing of financial information. *International Journal of Bank Marketing* **32**:6, 494-514. [[Crossref](#)]
201. Hersh Shefrin, Christina M. Nicols. 2014. Credit card behavior, financial styles, and heuristics. *Journal of Business Research* **67**:8, 1679-1687. [[Crossref](#)]

202. Alessandro Previtero. 2014. Stock market returns and annuitization. *Journal of Financial Economics* 113:2, 202-214. [[Crossref](#)]
203. Shinichi Nishiyama, Kent Smetters. 2014. Financing Old Age Dependency. *Annual Review of Economics* 6:1, 53-76. [[Crossref](#)]
204. Ana Cordeiro Santos, João Rodrigues. 2014. Neoliberalism in the Laboratory? Experimental Economics on Markets and their Limits. *New Political Economy* 19:4, 507-533. [[Crossref](#)]
205. Ana-Maria Fuertes, Gulnur Muradoglu, Belma Ozturkkal. 2014. A behavioral analysis of investor diversification. *The European Journal of Finance* 20:6, 499-523. [[Crossref](#)]
206. Heiko Jacobs, Sebastian Müller, Martin Weber. 2014. How should individual investors diversify? An empirical evaluation of alternative asset allocation policies. *Journal of Financial Markets* 19, 62-85. [[Crossref](#)]
207. Wei Zhang, Ziqiang Wu, Yongjie Zhang, Xiong Xiong. 2014. Adaptive Behavior and Strategy Switching. *International Journal of Information Technology & Decision Making* 13:03, 567-584. [[Crossref](#)]
208. James A. Howard, Rassoul Yazdipour. Retirement Planning: Contributions from the Field of Behavioral Finance and Economics 285-305. [[Crossref](#)]
209. Vicki L. Bogan. Household Investment Decisions 83-98. [[Crossref](#)]
210. Stefan Traub. 2014. Positionen: Theorie und Experimente in der Rentenpolitik. *Sozialer Fortschritt* 63:3, 65-69. [[Crossref](#)]
211. Anita M. Schwarz, Omar S. Arias, Asta Zviniene, Heinz P. Rudolph, Sebastian Eckardt, Johannes Koettl, Herwig Immervoll, Miglena Abels. The Role of Savings in the Provision of Retirement Income 115-156. [[Crossref](#)]
212. Vered Blass, Charles J. Corbett, Magali A. Delmas, Suresh Muthulingam. 2014. Top management and the adoption of energy efficiency practices: Evidence from small and medium-sized manufacturing firms in the US. *Energy* 65, 560-571. [[Crossref](#)]
213. Michael K. Lindell. Judgment and Decision-Making 403-431. [[Crossref](#)]
214. DAVID TUESTA. 2014. Factors behind the administrative fees of private pension systems: an international analysis. *Journal of Pension Economics and Finance* 13:1, 88-111. [[Crossref](#)]
215. Mira Fischer, Patrick Kampkötter. 2014. Striving for Excellence: University Competition, Quality Perceptions, and Ability Sorting. *SSRN Electronic Journal* . [[Crossref](#)]
216. Thomas Etheber. 2014. Trading Volume Effects of Moving Average Heuristics. *SSRN Electronic Journal* . [[Crossref](#)]
217. Thomas Etheber, Andreas Hackethal, Steffen Meyer. 2014. Trading on Noise: Moving Average Trading Heuristics and Private Investors. *SSRN Electronic Journal* . [[Crossref](#)]
218. Eduardo Rodriguez-Montemayor. 2014. Investment Choice in Defined-Contribution Pension Schemes: International Experience and Policy Issues. *SSRN Electronic Journal* . [[Crossref](#)]
219. Benjamin Goodman, David P. Richardson. 2014. Back to the Future: Hybrid Co-Operative Pensions and the TIAA-CREF System. *SSRN Electronic Journal* . [[Crossref](#)]
220. Philippe Mongin, Mikael Cozic. 2014. Rethinking Nudges. *SSRN Electronic Journal* . [[Crossref](#)]
221. Aileen Heinberg, Angela Hung, Arie Kapteyn, Annamaria Lusardi, Anya Savikhin Samek, Joanne Yoong. 2014. Five Steps to Planning Success. Experimental Evidence from U.S. Households. *SSRN Electronic Journal* . [[Crossref](#)]
222. Robert L. Clark, Jennifer A. Maki, Melinda Sandler Morrill. 2014. Can Simple Informational Nudges Increase Employee Participation in a 401(k) Plan?. *Southern Economic Journal* 80:3, 677-701. [[Crossref](#)]



223. ###, ###. 2013. An Analysis for the Behavior of Asset Allocation in a Defined Contribution Plan. *The Journal of Risk Management* **24**:2, 3-39. [[Crossref](#)]
224. . References 311-319. [[Crossref](#)]
225. Margaret McConnell. 2013. Behavioral economics and aging. *The Journal of the Economics of Ageing* **1-2**, 83-89. [[Crossref](#)]
226. PAUL GERRANS, GORDON L. CLARK. 2013. Pension plan participant choice: Evidence on defined benefit and defined contribution preferences. *Journal of Pension Economics and Finance* **12**:4, 351-378. [[Crossref](#)]
227. Suresh Muthulingam, Charles J. Corbett, Shlomo Benartzi, Bohdan Oppenheim. 2013. Energy Efficiency in Small and Medium-Sized Manufacturing Firms: Order Effects and the Adoption of Process Improvement Recommendations. *Manufacturing & Service Operations Management* **15**:4, 596-615. [[Crossref](#)]
228. Daniel Jubinski, Marc Tomljanovich. 2013. Do FOMC minutes matter to markets? An intraday analysis of FOMC minutes releases on individual equity volatility and returns. *Review of Financial Economics* **22**:3, 86-97. [[Crossref](#)]
229. Taejun Lee, TaiWoong Yun, Kwang Seok Han. 2013. The role of creative strategy, ad disclosure and regulatory focus in investors' decision making: An experimental investigation. *Journal of Financial Services Marketing* **18**:3, 158-176. [[Crossref](#)]
230. Christian Wagner, Ayoung Suh. The role of task difficulty in the effectiveness of collective intelligence 90-95. [[Crossref](#)]
231. Matti Tuomala, Sanna Tenhunen. 2013. On the design of an optimal non-linear tax/pension system with habit formation. *International Tax and Public Finance* **20**:3, 485-512. [[Crossref](#)]
232. Allan Lee, Yingzi Xu, Kenneth F Hyde. 2013. Factors influencing investor choice of retirement funds. *Journal of Financial Services Marketing* **18**:2, 137-151. [[Crossref](#)]
233. Michael Kremer,, Jean Lee,, Jonathan Robinson,, Olga Rostapshova. 2013. Behavioral Biases and Firm Behavior: Evidence from Kenyan Retail Shops. *American Economic Review* **103**:3, 362-368. [[Abstract](#)] [[View PDF article](#)] [[PDF with links](#)]
234. ANURAG N. BANERJEE, CHI-HSIU D. HUNG. 2013. Active momentum trading versus passive 'naive diversification'. *Quantitative Finance* **13**:5, 655-663. [[Crossref](#)]
235. Leona Tam, Utpal M. Dholakia. 2013. The Consequences and Correction of Inflation in Personal Savings Estimates in Specific Future Time Frames. *Journal of Behavioral Decision Making* **26**:2, 139-151. [[Crossref](#)]
236. Brad M. Barber, Terrance Odean. The Behavior of Individual Investors 1533-1570. [[Crossref](#)]
237. Werner De Bondt, Rosa M. Mayoral, Eleuterio Vallelado. 2013. Behavioral decision-making in finance: An overview and assessment of selected research. *Spanish Journal of Finance and Accounting / Revista Española de Financiación y Contabilidad* **42**:157, 99-118. [[Crossref](#)]
238. Hans K. Hvide, Per Östberg. 2013. Social Interaction at Work: Co-Worker Influence on Stock Investments. *SSRN Electronic Journal* . [[Crossref](#)]
239. Dmitriy Glumov. 2013. How Did the Great Financial Crisis Affect Portfolio Allocations and Attitudes towards Risk? Evidence from the 'Survey of Consumer Finances'. *SSRN Electronic Journal* . [[Crossref](#)]
240. Hazel Bateman, J. Deetlefs, Loretta Dobrescu, Ben Newell, Andreas Ortmann, Susan Thorp. 2013. Just Interested or Getting Involved? An Analysis of Superannuation Attitudes and Actions. *SSRN Electronic Journal* . [[Crossref](#)]
241. Nicolas Salamanca, Andries de Grip, Olaf Sleijpen. 2013. How Individuals React to Defined Benefit Pension Risk. *SSRN Electronic Journal* . [[Crossref](#)]



242. soren arnberg, Mikkel Barslund. 2013. The Crowding-Out Effect of Mandatory Labour Market Pension Schemes on Private Savings: Evidence from Renters in Denmark. *SSRN Electronic Journal* . [[Crossref](#)]
243. Keith Jacks Gamble, Patricia Boyle, Lei Yu, David Alan Bennett. 2013. Aging, Financial Literacy, and Fraud. *SSRN Electronic Journal* . [[Crossref](#)]
244. Tiziana Assenza, William A. Brock, Cars H. Hommes. 2013. Animal Spirits, Heterogeneous Expectations and the Emergence of Booms and Busts. *SSRN Electronic Journal* . [[Crossref](#)]
245. Hazel Bateman, Christine Eckert, Fedor Iskhakov, Jordan J. Louviere, Stephen E. Satchell, Susan Thorp. 2013. Default and 1/N Heuristics in Annuity Choice. *SSRN Electronic Journal* . [[Crossref](#)]
246. Oskar Poiesz, Laurens Swinkels. 2012. Myth busting: Defined contribution Clearing up common misperceptions about defined contribution pension schemes. *Pensions: An International Journal* 17:4, 260-269. [[Crossref](#)]
247. Morris Altman. 2012. Implications of behavioural economics for financial literacy and public policy. *The Journal of Socio-Economics* 41:5, 677-690. [[Crossref](#)]
248. Ann Marie Hibbert, Edward R. Lawrence, Arun J. Prakash. 2012. The Role of Financial Education in the Management of Retirement Savings. *Journal of Behavioral Finance* 13:4, 299-307. [[Crossref](#)]
249. Jason West. 2012. Financial literacy education and behaviour unhinged: combating bias and poor product design. *International Journal of Consumer Studies* 36:5, 523-530. [[Crossref](#)]
250. Maureen Morrin, Susan M. Broniarczyk, J. Jeffrey Inman. 2012. Plan Format and Participation in 401(k) Plans: The Moderating Role of Investor Knowledge. *Journal of Public Policy & Marketing* 31:2, 254-268. [[Crossref](#)]
251. Judd B. Kessler, Alvin E. Roth. 2012. Organ Allocation Policy and the Decision to Donate. *American Economic Review* 102:5, 2018-2047. [[Abstract](#)] [[View PDF article](#)] [[PDF with links](#)]
252. Joachim Klement, Robin E. Miranda. 2012. Kicking the Habit: How Experience Determines Financial Risk Preferences. *The Journal of Wealth Management* 15:2, 10-25. [[Crossref](#)]
253. Lea Kosnik. 2012. The anticommons and the environment. *Journal of Environmental Management* 101, 206-217. [[Crossref](#)]
254. TAEJUN DAVID LEE, TAI WOONG YUN, ERIC HALEY. 2012. The Interplay between Advertising Disclosures and Financial Knowledge in Mutual Fund Investment Decisions. *Journal of Consumer Affairs* 46:2, 260-287. [[Crossref](#)]
255. Mary Hale Tolar. 2012. Mentoring Experiences of High-Achieving Women. *Advances in Developing Human Resources* 14:2, 172-187. [[Crossref](#)]
256. HENDRIK P. VAN DALEN, KÈNE HENKENS, KEES KOEDIJK, ALFRED SLAGER. 2012. Decision making by pension fund trustees in the face of demographic and economic shocks: a vignette study. *Journal of Pension Economics and Finance* 11:2, 183-201. [[Crossref](#)]
257. Utpal Bhattacharya, Andreas Hackethal, Simon Kaesler, Benjamin Loos, Steffen Meyer. 2012. Is Unbiased Financial Advice to Retail Investors Sufficient? Answers from a Large Field Study. *Review of Financial Studies* 25:4, 975-1032. [[Crossref](#)]
258. Pam Scholder Ellen, Joshua L. Wiener, M. Paula Fitzgerald. 2012. Encouraging People to save for their Future: Augmenting Current Efforts with Positive Visions of the Future. *Journal of Public Policy & Marketing* 31:1, 58-72. [[Crossref](#)]
259. Carin Huber, Nadine Gatzert, Hato Schmeiser. 2012. Price presentation and consumers' choice. *Zeitschrift für die gesamte Versicherungswissenschaft* 101:1, 63-73. [[Crossref](#)]
260. JULIE R. AGNEW, LISA R. SZYKMAN, STEPHEN P. UTKUS, JEAN A. YOUNG. 2012. Trust, plan knowledge and 401(k) savings behavior. *Journal of Pension Economics and Finance* 11:1, 1-20. [[Crossref](#)]

261. Andreas Fuster, Benjamin Hebert, David Laibson. 2012. Natural Expectations, Macroeconomic Dynamics, and Asset Pricing. *NBER Macroeconomics Annual* **26**:1, 1-48. [[Crossref](#)]
262. Pat Auger, Timothy M. Devinney, Grahame Dowling, Christine Eckert, Nidhida Lin. 2012. Inertia and Discounting in the Selection of Socially Responsible Investments: An Experimental Investigation. *SSRN Electronic Journal* . [[Crossref](#)]
263. Yevgeny Mugerman, Orly Sade, Moses Shayo. 2012. Long Term Savings Decisions: Inertia, Peer Effects and Ethnicity. *SSRN Electronic Journal* . [[Crossref](#)]
264. Susan Kerr Christoffersen, Mikhail Simutin. 2012. Risk-Taking and Retirement Investing in Mutual Funds. *SSRN Electronic Journal* . [[Crossref](#)]
265. Valery Polkovnichenko, Kelsey D. Wei, Feng Zhao. 2012. Cautious Risk-Takers: Investor Preferences and Demand for Active Management. *SSRN Electronic Journal* . [[Crossref](#)]
266. Alessandro Previtero. 2012. Stock Market Returns and Annuitization: A Case of Myopic Extrapolation. *SSRN Electronic Journal* . [[Crossref](#)]
267. James J. Choi, Emily Haisley, Jennifer Kurkoski, Cade Massey. 2012. Small Cues Change Savings Choices. *SSRN Electronic Journal* . [[Crossref](#)]
268. Vicki L. Bogan, Angela R. Fertig. 2012. Mental Health and Retirement Savings: Confounding Issues with Compounding Interest. *SSRN Electronic Journal* . [[Crossref](#)]
269. Ana-Maria Fuertes, Yaz Gulnur Muradoglu, Belma Ozturkkal. 2012. A Behavioural Analysis of Investor Diversification. *SSRN Electronic Journal* . [[Crossref](#)]
270. Tiziana Assenza, C. H. Hommes, William A. Brock. 2012. Animal Spirits, Heterogeneous Expectations and the Amplification and Duration of Crises. *SSRN Electronic Journal* . [[Crossref](#)]
271. Rimawan Pradiptyo, Gumilang Aryo Sahadewo. 2012. On the Complexity of Eliminating Fuel Subsidy in Indonesia: A Behavioral Approach. *SSRN Electronic Journal* . [[Crossref](#)]
272. Javed Ahmed, Brad M. Barber, Terrance Odean. 2012. Made Poorer by Choice: Worker Outcomes in Social Security vs. Private Retirement Accounts. *SSRN Electronic Journal* . [[Crossref](#)]
273. Keith Jacks Gamble, Patricia Boyle, Lei Yu, David Bennett. 2012. Aging, Financial Literacy, and Fraud. *SSRN Electronic Journal* . [[Crossref](#)]
274. Ilona Babenko, Rik Sen. 2012. Money Left on the Table: An Analysis of Participation in Employee Stock Purchase Plans. *SSRN Electronic Journal* . [[Crossref](#)]
275. Laura L. Chivers, Stephen T. Higgins. 2012. Some Observations from Behavioral Economics for Consideration in Promoting Money Management among Those with Substance Use Disorders. *The American Journal of Drug and Alcohol Abuse* **38**:1, 8-19. [[Crossref](#)]
276. Frank T. Denton, Ross Finnie, Byron G. Spencer. 2011. Income Replacement in Retirement: Longitudinal Evidence from Income Tax Records. *Canadian Journal on Aging / La Revue canadienne du vieillissement* **30**:4, 523-539. [[Crossref](#)]
277. Julie Richardson Agnew. Pension Participant Behavior 577-594. [[Crossref](#)]
278. Richard J. Taffler, David A. Tuckett. Emotional Finance: The Role of the Unconscious in Financial Decisions 95-112. [[Crossref](#)]
279. Shlomo Benartzi,, Alessandro Previtero,, Richard H. Thaler. 2011. Annuitization Puzzles. *Journal of Economic Perspectives* **25**:4, 143-164. [[Abstract](#)] [[View PDF article](#)] [[PDF with links](#)]
280. Lee S. Friedman. 2011. The importance of marginal cost electricity pricing to the success of greenhouse gas reduction programs. *Energy Policy* **39**:11, 7347-7360. [[Crossref](#)]
281. Warren Bailey, Alok Kumar, David Ng. 2011. Behavioral biases of mutual fund investors. *Journal of Financial Economics* **102**:1, 1-27. [[Crossref](#)]

282. Hazel Bateman, Towhidul Islam, Jordan Louviere, Stephen Satchell, Susan Thorp. 2011. Retirement Investor Risk Tolerance in Tranquil and Crisis Periods: Experimental Survey Evidence. *Journal of Behavioral Finance* 12:4, 201-218. [[Crossref](#)]
283. Swee-Hoon Chuah, James Devlin. 2011. Behavioural economics and financial services marketing: a review. *International Journal of Bank Marketing* 29:6, 456-469. [[Crossref](#)]
284. TAEJUN DAVID LEE, ERIC HALEY, TAI WOONG YUN, WONJUN CHUNG. 2011. US Retirement Financial Services Advertising's Financial Information Provisions, Communication Strategies and Judgmental Heuristic Cues. *Journal of Consumer Affairs* 45:3, 391-418. [[Crossref](#)]
285. Qianqiu Liu, Rosita P. Chang, Jack C. De Jong, John H. Robinson. 2011. Are Lifecycle Funds Getting a Bum Rap? A Comprehensive Comparison of Lifecycle versus Lifestyle Retirement Strategies from Accumulation through Withdrawal. *The Journal of Wealth Management* 14:2, 68-84. [[Crossref](#)]
286. Orla Gough, Claudia Niza. 2011. Retirement Saving Choices: Review of the Literature and Policy Implications. *Journal of Population Ageing* 4:1-2, 97-117. [[Crossref](#)]
287. JOHN BESHEARS, JAMES J. CHOI, DAVID LAIBSON, BRIGITTE C. MADRIAN. 2011. Behavioral economics perspectives on public sector pension plans. *Journal of Pension Economics and Finance* 10:2, 315-336. [[Crossref](#)]
288. ###. 2011. An Investigation of Financial Consumers' Investment Decision Making and Resultant Welfare Improvement from a Behavioral Decision Making Perspective. *journal of consumer policy studies* null:39, 1-21. [[Crossref](#)]
289. Leona Tam, Utpal M. Dholakia. 2011. Delay and duration effects of time frames on personal savings estimates and behavior. *Organizational Behavior and Human Decision Processes* 114:2, 142-152. [[Crossref](#)]
290. Hal E. Hershfield, Daniel G. Goldstein, William F. Sharpe, Jesse Fox, Leo Yeykelis, Laura L. Carstensen, Jeremy N. Bailenson. 2011. Increasing Saving Behavior Through Age-Progressed Renderings of the Future Self. *Journal of Marketing Research* 48:SPL, S23-S37. [[Crossref](#)]
291. Moty Amar, Dan Ariely, Shahar Ayal, Cynthia E. Cryder, Scott I. Rick. 2011. Winning the Battle but Losing the War: The Psychology of Debt Management. *Journal of Marketing Research* 48:SPL, S38-S50. [[Crossref](#)]
292. Lisa E. Bolton, Paul N. Bloom, Joel B. Cohen. 2011. Using Loan plus Lender Literacy Information to Combat One-Sided Marketing of Debt Consolidation Loans. *Journal of Marketing Research* 48:SPL, S51-S59. [[Crossref](#)]
293. Anuj C. Desai. 2011. Libertarian Paternalism, Externalities, and the "Spirit of Liberty": How Thaler and Sunstein Are Nudging Us toward an "Overlapping Consensus". Richard H. Thaler, and Cass R. Sunstein. 2008 . *Nudge: Improving Decisions about Health, Wealth, and Happiness* . New Haven, CT: Yale University Press. Pp. x + 293. \$26.00 cloth. *Law & Social Inquiry* 36:01, 263-295. [[Crossref](#)]
294. Henrik Cronqvist, Stephan Siegel. 2011. The Origins of Savings Behavior. *SSRN Electronic Journal* . [[Crossref](#)]
295. Utpal Bhattacharya, Andreas Hackethal, Simon Kaesler, Benjamin Loos, Steffen Meyer. 2011. Is Unbiased Financial Advice To Retail Investors Sufficient? Answers from a Large Field Study. *SSRN Electronic Journal* . [[Crossref](#)]
296. Arvid O. I. Hoffmann, Hersh M. Shefrin. 2011. Online Investors: What They Want, What They Do, and How Their Portfolios Perform. *SSRN Electronic Journal* . [[Crossref](#)]
297. Tabea Bucher-Koenen, Michael Heinrich Ziegelmeyer. 2011. Who Lost the Most? Financial Literacy, Cognitive Abilities, and the Financial Crisis. *SSRN Electronic Journal* . [[Crossref](#)]
298. Hersh M. Shefrin, Christina M. Nicols. 2011. Credit Card Behavior, Financial Styles, and Heuristics. *SSRN Electronic Journal* . [[Crossref](#)]

299. John Leonard Beshears, James J. Choi, David I. Laibson, Brigitte C. Madrian. 2011. Behavioral Economics Perspectives on Public Sector Pension Plans. *SSRN Electronic Journal* . [[Crossref](#)]
300. Alessandro Previtero. 2011. Stock Market Returns and Annuitization: A Case of Myopic Extrapolation. *SSRN Electronic Journal* . [[Crossref](#)]
301. Vallapuzha Sandhya. 2011. Agency Problems in Target-Date Funds. *SSRN Electronic Journal* . [[Crossref](#)]
302. Brad M. Barber, Terrance Odean. 2011. The Behavior of Individual Investors. *SSRN Electronic Journal* . [[Crossref](#)]
303. Sjoerd Timmermans, J. M. (Hans) Schumacher, Eduard Ponds. 2011. A Cohort-Specific Collar Approach to Retirement Security. *SSRN Electronic Journal* . [[Crossref](#)]
304. Gregory J. DeAngelo, Steven Beckman, Lanxin Chen, James W. Smith, Xieting Zhang. 2011. Microeconomics and Psychology. *SSRN Electronic Journal* . [[Crossref](#)]
305. Timothy (Jun) Lu. 2011. Social Interaction Effects and Individual Portfolio Choice: Evidence from 401(k) Pension Plan Investors. *SSRN Electronic Journal* . [[Crossref](#)]
306. Shlomo Benartzi, Alessandro Previtero, Richard H. Thaler. 2011. Annuity Puzzles. *SSRN Electronic Journal* . [[Crossref](#)]
307. Carin van der Cruisen, Jakob de Haan, David-Jan Jansen, Robert H. J. Mosch. 2011. Household Savings Behaviour in Crisis Times. *SSRN Electronic Journal* . [[Crossref](#)]
308. Lea-Rachel D. Kosnik. 2011. The Anticommons and the Environment. *SSRN Electronic Journal* . [[Crossref](#)]
309. Anurag Narayan Banerjee, Chi-Hsiou Daniel Hung. 2011. Active Momentum Trading versus Passive '1/N Naive Diversification'. *SSRN Electronic Journal* . [[Crossref](#)]
310. J. Costa-Font. 2010. Family ties and the crowding out of long-term care insurance. *Oxford Review of Economic Policy* **26**:4, 691-712. [[Crossref](#)]
311. DAVID CESARINI, MAGNUS JOHANNESSON, PAUL LICHTENSTEIN, ÖRJAN SANDEWALL, BJÖRN WALLACE. 2010. Genetic Variation in Financial Decision-Making. *The Journal of Finance* **65**:5, 1725-1754. [[Crossref](#)]
312. HAZEL BATEMAN, JORDAN LOUVIERE, SUSAN THORP, TOWHIDUL ISLAM, STEPHEN SATCHELL. 2010. Investment Decisions for Retirement Savings. *Journal of Consumer Affairs* **44**:3, 463-482. [[Crossref](#)]
313. Sheena S. Iyengar, Emir Kamenica. 2010. Choice proliferation, simplicity seeking, and asset allocation. *Journal of Public Economics* **94**:7-8, 530-539. [[Crossref](#)]
314. James Forbes, S. Murat Kara. 2010. Confidence mediates how investment knowledge influences investing self-efficacy. *Journal of Economic Psychology* **31**:3, 435-443. [[Crossref](#)]
315. YANNIS BILIAS, DIMITRIS GEORGARAKOS, MICHAEL HALIASSOS. 2010. Portfolio Inertia and Stock Market Fluctuations. *Journal of Money, Credit and Banking* **42**:4, 715-742. [[Crossref](#)]
316. CHRISTINE W. LAI, JING JIAN XIAO. 2010. Consumer Biases and Competences in Company Stock Holdings. *Journal of Consumer Affairs* **44**:1, 179-212. [[Crossref](#)]
317. Andrej Stuchlik. Einleitung: Renten Krisen – Impulse und Politikleitbilder für die Europäische Union? 7-14. [[Crossref](#)]
318. Laurette Dubé. Libertarian Paternalism 435-441. [[Crossref](#)]
319. Lans Bovenberg, Theo Nijman. Innovative Institutions and Products for Retirement Provision in Europe 67-104. [[Crossref](#)]
320. D. J. Ekerdt. 2010. Frontiers of Research on Work and Retirement. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences* **65B**:1, 69-80. [[Crossref](#)]

321. Shun-Yao Tseng, Chyan Yang. Risk aversion, information searches, and distinct risky investment preference: The moderator effect of gender on risk aversion 718-722. [[Crossref](#)]
322. Heiko Jacobs, Sebastian Müller, Martin Weber. 2010. How Should Private Investors Diversify? - An Empirical Evaluation of Alternative Asset Allocation Policies to Construct A World Market Portfolio. *SSRN Electronic Journal* . [[Crossref](#)]
323. Hendrik P. van Dalen, Kene Henkens, Kees C. G. Koedijk, Alfred Slager. 2010. Decision Making in the Pension Fund Board Room: An Experiment with Dutch Pension Fund Trustees. *SSRN Electronic Journal* . [[Crossref](#)]
324. Vallapuzha Sandhya. 2010. Agency Problems in Target-Date Funds. *SSRN Electronic Journal* . [[Crossref](#)]
325. Alessandro Previtero. 2010. Stock Market Returns and Annuitization. *SSRN Electronic Journal* . [[Crossref](#)]
326. Charles M. Sutcliffe. 2010. Back to the Future: A Long Term Solution to the Occupational Pensions Crisis. *SSRN Electronic Journal* . [[Crossref](#)]
327. Hazel Bateman, Susan Thorp, Jordan J. J. Louviere, Towhidul Islam, Stephen E. Satchell. 2010. An Experimental Survey of Investment Decisions for Retirement Savings. *SSRN Electronic Journal* . [[Crossref](#)]
328. Hazel Bateman, Jordan J. J. Louviere, Stephen E. Satchell, Towhidul Islam, Susan Thorp. 2010. Retirement Investor Risk Tolerance in Tranquil and Crisis Periods: Experimental Survey Evidence. *SSRN Electronic Journal* . [[Crossref](#)]
329. Nathan Berg, Jeong-Yoo Kim. 2010. Demand for Self Control: A Model of Consumer Response to Programs and Products that Moderate Consumption. *SSRN Electronic Journal* . [[Crossref](#)]
330. Xiaohong Huang, Ronald J. Mahieu. 2010. Generational Pension Plan Designs. *SSRN Electronic Journal* . [[Crossref](#)]
331. David Leiser, Nirit Gads, Noa Basher, Avia Spivak. 2010. Paradoxical Effects of the Disclosure of Conflict of Interest on the Selection of a Pension Plan. *SSRN Electronic Journal* . [[Crossref](#)]
332. Miriam Beblo, Sven Schreiber. 2010. The Life-Cycle Hypothesis Revisited: Evidence on Housing Consumption after Retirement. *SSRN Electronic Journal* . [[Crossref](#)]
333. Nicolas Aubert, Thomas Rapp. 2010. Employee's investment behaviors in a company based savings plan. *Finance* 31:1, 5. [[Crossref](#)]
334. VICTOR STANGO, JONATHAN ZINMAN. 2009. Exponential Growth Bias and Household Finance. *The Journal of Finance* 64:6, 2807-2849. [[Crossref](#)]
335. W.A. Brock, C.H. Hommes, F.O.O. Wagener. 2009. More hedging instruments may destabilize markets. *Journal of Economic Dynamics and Control* 33:11, 1912-1928. [[Crossref](#)]
336. Michael Millar, Dwayne Devonish. 2009. Attitudes, savings choices, level of knowledge and investment preferences of employees toward pensions and retirement planning: Survey evidence from Barbados. *Pensions: An International Journal* 14:4, 299-317. [[Crossref](#)]
337. Francisco Gomes, Alexander Michaelides, Valery Polkovnichenko. 2009. Optimal savings with taxable and tax-deferred accounts. *Review of Economic Dynamics* 12:4, 718-735. [[Crossref](#)]
338. Katherine L. Milkman, Dolly Chugh, Max H. Bazerman. 2009. How Can Decision Making Be Improved?. *Perspectives on Psychological Science* 4:4, 379-383. [[Crossref](#)]
339. Christina Werner, Andreas Oehler. 2009. Verbraucherbildung und Verbraucherberatung in der Altersvorsorge – Ein Überblick über deutsche und britische Initiativen. *Vierteljahrshefte zur Wirtschaftsforschung* 78:3, 125-143. [[Crossref](#)]

340. Linda G. Martin. 2009. Interventions to Improve Late Life. *Population and Development Review* 35:2, 331-340. [[Crossref](#)]
341. Cars Hommes, Florian Wagener. Complex Evolutionary Systems in Behavioral Finance 217-276. [[Crossref](#)]
342. Carolyn Yoon, Catherine A. Cole, Michelle P. Lee. 2009. Consumer decision making and aging: Current knowledge and future directions. *Journal of Consumer Psychology* 19:1, 2-16. [[Crossref](#)]
343. Guido Baltussen. 2009. Behavioral Finance: An Introduction. *SSRN Electronic Journal* . [[Crossref](#)]
344. Christian E. Weller. 2009. Did Retirees Save Enough to Compensate for the Increase in Individual Risk Exposure?. *SSRN Electronic Journal* . [[Crossref](#)]
345. Lee S. Friedman. 2009. The Importance of Marginal Cost Electricity Pricing to the Success of Greenhouse Gas Reduction Programs. *SSRN Electronic Journal* . [[Crossref](#)]
346. Christian E. Weller, Amy Helburn. 2009. Public Policy Options to Build Wealth for America's Middle Class. *SSRN Electronic Journal* . [[Crossref](#)]
347. Voon Phua, James W. McNally. 2008. Men Planning for Retirement. *Journal of Applied Gerontology* 27:5, 588-608. [[Crossref](#)]
348. JOSH WIENER, TABITHA DOESCHER. 2008. A Framework for Promoting Retirement Savings. *Journal of Consumer Affairs* 42:2, 137-164. [[Crossref](#)]
349. C. H. Hommes, Florian O. O. Wagener. 2008. Complex Evolutionary Systems in Behavioral Finance. *SSRN Electronic Journal* . [[Crossref](#)]
350. Hendrik P. van Dalen, Kene Henkens, Douglas A. Hershey. 2008. Are Pension Savings Sufficient? Perceptions and Expectations of American and Dutch Workers. *SSRN Electronic Journal* . [[Crossref](#)]
351. Leona Tam, Utpal M. Dholakia. 2008. The Effects of Time Frames on Personal Savings Estimates, Saving Behavior, and Financial Decision Making. *SSRN Electronic Journal* . [[Crossref](#)]
352. Keith Ambachtsheer. 2008. The Canada Supplementary Pension Plan (CSPP). *SSRN Electronic Journal* . [[Crossref](#)]
353. Helen Levy, Kristin Seefeldt. 2008. How Do Lower-Income Families Think About Retirement?. *SSRN Electronic Journal* . [[Crossref](#)]
354. William A. Brock, C. H. Hommes, Florian O. O. Wagener. 2008. More Hedging Instruments May Destabilize Markets. *SSRN Electronic Journal* . [[Crossref](#)]
355. Waldo Tapia, Juan Yermo. 2007. Implications of Behavioural Economics for Mandatory Individual Account Pension Systems. *SSRN Electronic Journal* . [[Crossref](#)]
356. Julie Agnew, Lisa Szykman, Stephen P. Utkus, Jean Young. 2007. Literacy, Trust and 401(K) Savings Behavior. *SSRN Electronic Journal* . [[Crossref](#)]
357. Shlomo Benartzi, Ehud Peleg, Richard H. Thaler. 2007. Choice Architecture and Retirement Saving Plans. *SSRN Electronic Journal* . [[Crossref](#)]
358. . Consumer Well-Being and Happiness 62-86. [[Crossref](#)]