# 401(k)now

SUMMER 2008

*In this issue:*

- *Market timing and saving patterns*
- *The positioning and framing of retirement income solutions*
- *Helping employees develop a financial plan (and stop smoking)*

**Behavioral Finance Research Digest for plan sponsors and their advisors**

**Brought to you by Dr. Shlomo Benartzi**
**Professor and co-chair of the**
**Behavioral Decision Making Group**
**The Anderson School at UCLA**
**benartzi@ucla.edu**

# MARKET TIMING AND SAVING PATTERNS

Financial markets have experienced unusual volatility over the last few months. Take, for example, January 22, 2008, when the Dow started the day at 12,092, dropped about five percent to 11,508, rebounded to a small gain of half a percent (12,167) and ended the day with a loss of one percent (11,971).

Unusual market volatility raises important questions about investor behavior. In particular, do plan participants react to market volatility? And, if they do, how exactly do they alter their investing and saving patterns?

In the Winter 2008 issue of this newsletter, I covered a related topic titled "Buy high, sell low." As you might recall, I cited a 2007 study by Professor Ilia Dichev finding that the actual returns earned by investors were far lower than the buy and hold returns.

For example, investors in the New York Stock Exchange earned 8.6 percent per year, whereas a buy and hold strategy could have earned 9.9 percent. In the case of NASDAQ stocks, investors earned 4.3 percent versus 9.6 percent for the buy and hold strategy. I concluded that investors exhibit negative market timing. Put differently, they buy high and sell low.

> Plan participants tend to chase performance, ending up buying high and selling low.

It is also important, however, to investigate how investors make their *saving* decisions. Do they stick to their long-term saving goals despite market volatility? Or alternatively, do they get discouraged by the losses they experience and then reduce their deferral rates?

Choi et al (2007) investigated these questions using data on five large plans with a total of 24,624 employees. The average participant in their sample was 42.9 years old with annual income of $55,292 and an account balance of $65,964. The average participation rate across the five plans was 79 percent, and the time period covered by the study was 1997 to 2000.

The researchers calculated the average rate of return participants earned to be 11.9 percent. There was, however, substantial

variability across individuals with 95 percent of individuals earning between -21.9 percent and 45.7 percent. As expected, much of the variability across individuals was attributed to the degree of equity exposure and company stock holdings.

Results indicate that top performers (defined as performing two standard deviations above the mean) increased their deferral rates by 0.26 percent. Similarly, under-performers cut back on their savings.

Plan participants get demotivated by negative returns and end up decreasing their deferral rates.

A couple of questions immediately come to mind. First, are the results economically significant? As a reference point, note that the average change in saving rate across all participants in the sample was an increase of 0.30 percent. Hence, the effect of portfolio performance on saving patterns is economically significant.

Second, is it a sensible strategy to increase your saving rate after your portfolio soars and decrease it after you experience losses? Since there is no correlation between participants' past performance and future performance, it does not make much sense to increase your saving rate *after* your portfolio has gone up.

Furthermore, economic theory might actually prescribe the opposite strategy. You should probably save more after you experience substantial losses to make up for the funding deficit.

The evidence suggests that investors tend to chase performance. Interestingly, this behavior affects both investing and saving patterns. And, it applies across all income brackets.

To summarize, plan participants attempt to time the market. However, they exhibit *negative* market timing, where they end up buying high and selling low. The unusual market volatility we are experiencing calls for plan sponsors and their advisors to educate plan participants to stick to their long-term plans. One practical suggestion may be to reshuffle how performance information is shown on quarterly statements, placing the longer-term results on the front page and the most recent quarter results on the last page.

# THE POSITIONING AND FRAMING OF RETIREMENT INCOME SOLUTIONS

Consider the following simple question: would you rather have a half-full glass of wine or a half-empty glass of wine? While we all agree that a half-full and a half-empty glass contains the same quantity of wine, our gut feeling might push us to select the half-full glass. This simple question illustrates the powerful role framing plays in human behavior.

The seminal work by Amos Tversky and Daniel Kahneman (1981) documents the broad implications of framing. In their experiments, they asked subjects to consider medical treatments to combat an unusual Asian disease. Each medical treatment was expected to save some lives, but not all, so some people were expected to die.

Tversky and Kahneman found that the attractiveness of a specific medical treatment is dramatically enhanced by framing the treatment as the number of lives *saved* as opposed to the number of lives *lost*. Note the similarity with the wine glass example, where framing things as a gain (i.e., half-full glass) is more appealing than framing things as a loss (i.e., half-empty glass).

Another interesting illustration of framing effects is offered by John Gourville (1998), focusing on temporal framing. Gourville asked people about their willingness to donate money through a payroll deduction system. He found that many more people are willing to donate 85 cents a day than $300 a year, even though the daily amount is actually slightly more than the annual amount.

The framing of choices and alternatives affects medical treatments, charity contributions and financial decisions.

Framing also plays an important role in the domain of financial decisions. For example, understanding the role of framing in the design and marketing of retirement income solutions is crucial, especially for the many countries with aging populations.

A recent study by Brown et al (2008) offers unique insights into the role of framing in the decision whether to annuitize retirement savings. While their study focuses on a very specific type of retirement income solution

(i.e., annuities), the findings apply to a wide range of retirement income solutions, including systematic withdrawal programs.

The researchers propose that many consumers intuitively frame annuities as an investment plan. In particular, they focus on the risk and return profile of annuities as well as their account value.

Note that annuities are not very attractive as an investment plan because one might buy an annuity, die the next day and then lose all of the money. Framed as an investment plan, annuities seem very risky. In addition, they are often associated with loss of control.

The researchers hypothesize that annuities are a lot more appealing when framed as a consumption plan. Under the consumption plan, annuities simply offer guaranteed income for life.

Note that annuities are fairly attractive as a consumption plan, since they offer longevity insurance. When viewed this way, they are perceived as safe rather than risky. In addition, annuities as a consumption plan provide control of your income flow, whereas annuities as an investment plan are perceived as losing control of your money.

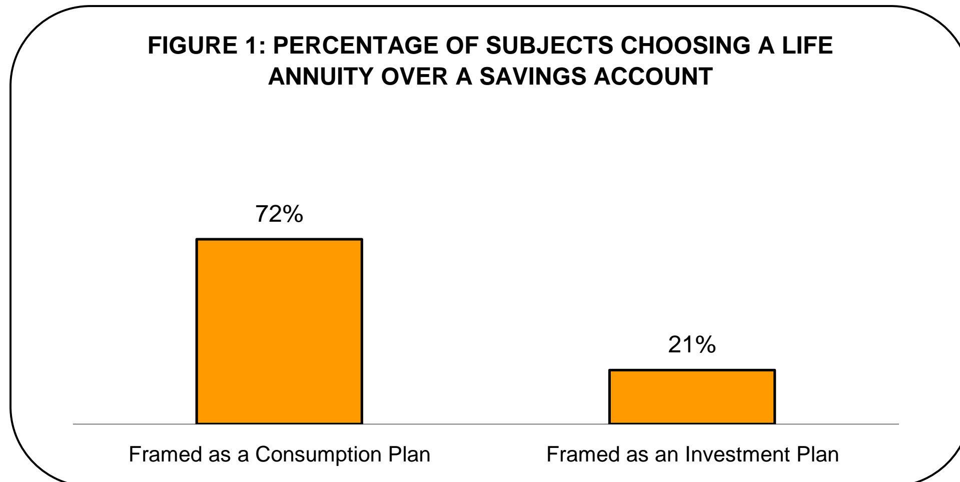
To test their hypothesis, the researchers surveyed 1,342 individuals older than 50. Each subject was asked to choose between:

1. A life annuity paying $650 each month until death, or
2. A traditional savings account of $100,000 bearing four percent interest.

Half the subjects were presented with the investment frame emphasizing the return on an account, and half were presented with the consumption frame emphasizing monthly income. The two alternatives have the same actuarial value.

The results indicate that framing has a dramatic effect on the attractiveness of annuities. Seventy-two percent of subjects preferred the $650 per month provided by the life annuity to the consumption stream from a saving account. However, only 21 percent preferred an account returning $650 each month for life to investing $100,000 at four percent.

When framed as a consumption plan, 72% preferred the annuity option. However, when framed as an investment plan, only 21% elected the annuity.




To summarize, the positioning and framing of retirement income solutions could have a dramatic effect on participant behavior. Annuities become more attractive when framed as a consumption plan rather than an investment plan. The explanation for this phenomenon is that the consumption frame highlights the longevity insurance provided by an annuity, whereas the investment frame emphasizes loss of control.

In the case of retirement income solutions, I believe that the consumption frame is "broader" and more meaningful. It provides individuals with the implications of their financial decisions for their lifestyle. I encourage plan sponsors and their advisors to consider using the consumption frame, whether they offer annuities, systematic withdrawal programs, or other retirement income solutions.

# HELPING EMPLOYEES DEVELOP A FINANCIAL PLAN (AND STOP SMOKING)

People crave immediate gratification. While they can imagine themselves choosing a healthy option such as a banana over chocolate next week, when the time comes, they end up consuming the chocolate. Similarly, people can imagine themselves developing a financial plan, quitting smoking, and losing weight "tomorrow," but they keep spending, smoking and overindulging today.

Academic work on immediate gratification hints at a possible solution. To the extent that individuals are sophisticated enough to be aware of their self-control issues, they might be interested in commitment devices that empower them to follow up on their good intentions.

Individuals suffering from self-control issues might be interested in commitment devices to enable them to reach their long-term goals.

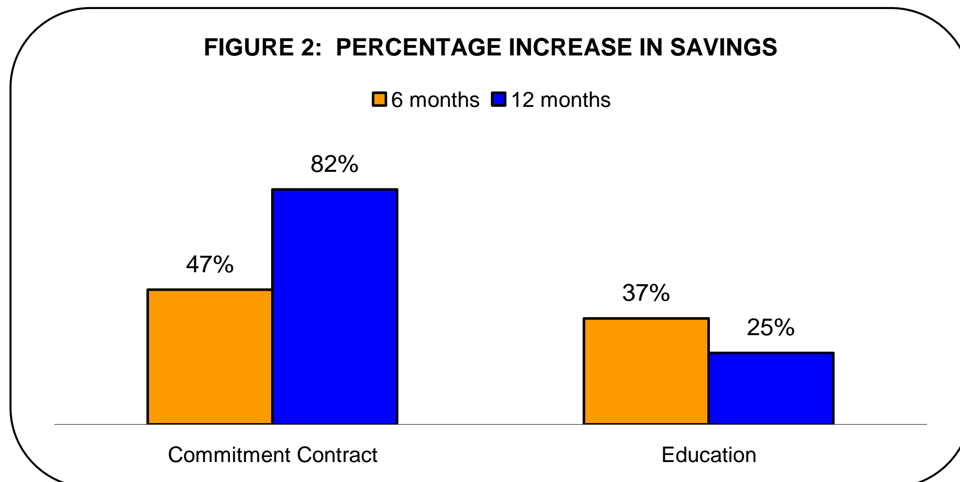
Recent research by Ashraf et al (2006) put the theory to test. In particular, the researchers designed and tested a commitment savings product for farmers in the Philippines. For these farmers, saving is crucial, since they need to put aside sufficient funds to buy seeds at the beginning of the next season.

The commitment device was labeled "SEED," which stands for Save, Earn, Enjoy Deposits. The process is straightforward: individuals deposit funds and earn interest, but they cannot access the funds until they reach their stated goal. The goal could be set as an amount of savings or a date (i.e., no withdrawals for 12 months).

It is important to note that the SEED accounts do not compensate consumers for the lack of liquidity. In other words, they provide the same interest rate as standard, fully liquid and fully accessible savings accounts. Hence, SEED accounts are pure commitment devices.

The experiment included three groups. The first group of subjects was offered the SEED commitment accounts. The second group was offered education materials on the importance of saving, but they were not offered the SEED accounts. A third group served as a control group.

Of the 710 individuals who were offered the SEED accounts, 202 accepted the offer (28.5 percent). SEED account owners were also asked to specify the purpose of their savings. The most common goals were money for Christmas (or other celebrations), education, housing and capital for business.




The results displayed in Figure 2 illustrate the power of commitment devices. Relative to the control group, those committing to the SEED accounts increased their savings by 47 percent and 82 percent after six months and twelve months, respectively. In comparison, those who were educated about the need to save, but were not offered the SEED accounts, experienced a far more modest growth in their account balances.

In a related study, Giné et al (2008) used similar principles to create a commitment device for smoking cessation, labeled "CARES" (Committed Action to Reduce and End Smoking). Smokers were asked to deposit money into a bank account, which they would get back only if they pass a nicotine test six months down the road. Those who fail the test will forfeit their money to a charity.

The researchers found the CARES commitment device was far more effective than nicotine patches and standard cigarette warning labels. In particular, 11 of those offered the CARES program signed up, and they were 29 percentage points more likely to stop smoking. Hence, commitment devices can help employees be healthier, which in turn, could trim the escalating healthcare costs employers face.

How can plan sponsors and their advisors apply the above lessons to help their employees? Luckily, two Yale Professors, Ian Ayers and Dean Karlan, have recently launched a website, www.stickk.com, that makes a variety of commitment devices available to individuals. Here's how the "commitment store" works:

1. Pick a goal, such as losing weight.
2. Decide how much it is worth to you to lose weight.
3. Choose a referee to report your progress (or you can self-report).
4. Measure results. If you lose weight, you get your money back. If you fail, the money goes to your favorite charity.

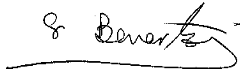
Professors Ayers and Karlan are in the process of developing similar applications for employers and employees. They are interested in helping employees accomplish goals such as losing weight or establishing a financial plan. For example, employees can commit to revisiting their retirement accounts at specific times or to meeting with a planner to develop an overall financial plan.

To summarize, many individuals face self-control issues, and as a result, they overindulge. Some find commitment devices powerful in helping to reach long-term goals. And, it is exciting to see that the academic lessons are finally put into practice.

It is important to note that helping employees reach their goals is not just a paternalistic exercise. It can also affect the bottom line of firms. For example, healthier lifestyles could help employers reduce their healthcare expenses. But, the applications are far broader than lifestyle issues and financial planning. One could imagine a variety of commitment contracts, including showing up for meetings on time, emptying your mailbox on a daily basis, and spending at least five minutes a day thinking how to improve your productivity, among many other applications.

I hope you enjoyed reading the 401(k)now research digest. If you have any comments, suggestions or feedback, feel free to send me an email at benartzi@ucla.edu.

Sincerely,



Shlomo Benartzi, Ph.D

## REFERENCES

Ashraf, Nava, Dean Karlan, and Wesley Yin, 2006, "Tying Odysseus to the Mast: Evidence from a Commitment Savings Product in the Philippines," *Quarterly Journal of Economics*, pp. 635-672.

Brown, Jeffrey R., Jeffrey R. Kling, Sendhil Mullainathan, and Marian V. Wrobel, 2008, "Why Don't People Insure Late Life Consumption? A Framing Explanation of the Under-Annuitization Puzzle," NBER Working Paper 13748, http://www.nber.org/papers/w13748.

Choi, James J., David Laibson, Brigitte C. Madrian, and Andrew Metrick, 2007, "Reinforcement Learning and Investor Behavior," Working Paper, Harvard University, http://ssrn.com/abstract=1014655.

Dichev, Ilia D., 2007, "What are Stock Investors' Actual Historical Returns? Evidence from Dollar-Weighted Returns," *The American Economic Review* 97.1, pp. 386-401.

Giné, Xavier, Dean Karlan, and Jonathan Zinman, 2008, "Put Your Money Where Your Butt Is: A Commitment Savings Account for Smoking Cessation," Working Paper, Yale University, http://www.poverty-action.org/images_ipa/CARES.pdf.

Gourville, John T., 1998, "Pennies-a-Day: The Effect of Temporal Reframing on Transaction Evaluation," *The Journal of Consumer Research* 24.4, pp. 395-408.

Tversky, Amos, and Daniel Kahneman, 1981, "The Framing of Decisions and the Psychology of Choice," *Science* 211, pp. 453-458.