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NAÏVE INVESTING

We have been exploring the first part of saving for retirement: joining a plan and deciding how much to invest. We now turn to the all-important second part: how to invest the money.

Once again the switch from defined-benefit to defined-contribution plans has given employees more control, more options, and more responsibility. Although solving the problem of how much to save is hard, choosing the right portfolio is even harder. In fact, in an effort to make what we say about it comprehensible, we will simplify the actual problems people face. Just take our word for it that things are really even harder than we are letting on.

The first question investors face is this: how much risk to take? As a rule, riskier investments such as stocks (also called equities) earn higher rates of return than safer investments such as government bonds or money market accounts. Choosing the appropriate mix of stocks and bonds (and possibly other assets such as real estate) is called the asset-allocation decision. If an investor is willing to allocate more of her money to risky assets, then she will usually make more money, but of course more risk

means taking the chance that returns will actually be lower. And the decision of how much to save is related in complex ways to the willingness to bear risk. Someone who insists on investing everything in a safe money market account that earns a modest rate of interest had better be saving quite a bit if she wants to have enough to have a comfortable retirement.

Suppose an investor chooses to invest 70 percent of her money in stocks and 30 percent in bonds. That choice still leaves open many specific questions of how the money is to be invested. In retirement accounts, most investors do not choose stocks individually but rather invest via mutual funds. The funds themselves differ in how risky they are, and how much they charge for their services. Some funds are specialized (investing only in companies in a particular industry or country, for example) while others invest broadly. There are also funds designed for one-stop shopping, blending a mix of stocks and bonds together. Should investors form their own blend or choose a fund blended for them? Further complicating the mix is that some companies offer employees the opportunity to invest in the company's own shares. Should workers want to own shares in the company they work for?

Making all these decisions is hard work (or should be if done carefully), and participants might be excused for thinking that having made these choices they can relax and look forward to a wonderful retirement. However, all these decisions should be revisited periodically. An investor who chose to invest half her money in stocks and half in bonds could find that stocks have shot up and two-thirds of her portfolio is now invested in stocks.

Should something be done? Should some of the stocks be sold to get back to the 50–50 allocation? Or should she put more of her money in stocks, because they seem to be doing so well? Econs have no trouble with all these decisions, but Humans can easily become flummoxed. As we will see, Human investors are making all kinds of mistakes in this domain, and could benefit from a more helpful and forgiving investment choice architecture.

Stocks and Bonds

How should you decide how much of your portfolio should be invested in stocks? (Do you know how much of your portfolio *is* invested in stocks?) Of course you know that stocks have historically earned higher rates of return, but by how much?

Consider the eighty-year period from 1925 to 2005. If you had invested a dollar in U.S. Treasury bills (short-term, completely safe, bonds issued by the government), you would have turned your dollar into \$18, a 3.7 percent rate of return per year. That does not seem bad until you realize that just to keep up with inflation you had to earn 3.0 percent per year. If you had invested your money in longer-term bonds, your dollar would have become \$71, a 5.5 percent rate of return, which is quite a bit better. But if you had invested in mutual funds that held shares in the largest American companies (such as an S&P 500 index fund), your dollar would have grown into \$2,658, a 10.4 percent rate of return, and if you had invested in a broad portfolio of the stocks of smaller companies, you could have earned even more.

In economics jargon, in which stocks are referred to as equities, the difference in the returns between Treasury bills and equities is called the "equity premium." This premium is considered to be compensation for the greater risk associated with investing in stocks. Whereas Treasury bills are guaranteed by the federal government, and are essentially risk free, investments in stocks are risky. Although the average rate of return has been 10 percent, there have been years when stocks have fallen by more than 30 percent, and on October 19, 1987, stock indexes fell 20 percent or more all around the world in a single day.

How would Econs decide how much of their portfolio to invest in stocks? An Econ would make a trade-off between risk and return that would be based on his preferences about retirement income. That is, he would decide whether the possibility of being, say, 25 percent richer is worth the risk of being 15 percent poorer. Needless to say, even if it occurred to Humans to think about the problem this way, they would not know how to make the necessary calculations. The decisions they do make will differ from those of Econs in two ways. First, they will be unduly influenced by short-term fluctuations, and second, their decisions are likely to be based on rules of thumb. Let's consider each in turn.

Countin' Your Money While Sittin' at the Table

Recall from Chapter 1 that Humans are loss averse. Roughly speaking, they hate losses about twice as much as they like gains. With this in mind, consider the behavior of two

investors, Vince and Rip. Vince is a stock broker, and he has constant access to information about the value of all of his investments. By habit, at the end of each day, he runs a little program to calculate how much money he has made or lost that day. Being Human, when Vince loses five thousand dollars in a day he is miserable—about as miserable as he is happy at the end of a day when he gains ten thousand dollars. How does Vince feel about investing in stocks? Very nervous! On a daily basis, stocks go down almost as often as they go up, so if you are feeling the pain of losses much more acutely than the pleasure of gains, you will hate investing in stocks.

Now compare Vince with his friend and client Rip, a scion of the old Van Winkle family. In a visit to his doctor Rip is told that he is about to follow the long-standing family tradition and will soon go to sleep for twenty years. The doctor tells him to make sure he has a comfortable bed, and suggests that Rip call his broker to make sure his asset allocation is where it should be. How will Rip feel about investing in stocks? Quite calm! Over a twenty-year period, stocks are almost certain to go up. (There is no twenty-year period in history in which stocks have declined in real value, or have been outperformed by bonds.) So Rip calls Vince, tells him to put all his money in stocks, and sleeps like a baby.

The lesson from the story of Vince and Rip is that attitudes toward risk depend on the frequency with which investors monitor their portfolios. As Kenny Rogers advises in his famous song "The Gambler": "You never count your money when you're sittin' at the

table, / There'll be time enough for countin' when the dealin's done." Many investors do not heed this good advice and invest too little of their money in stocks. We believe this qualifies as a mistake, because if the investors are shown the evidence on the risks of stocks and bonds over a long period of time, such as twenty years (the relevant horizon for many investors), they choose to invest nearly all of their money in stocks.¹

Market Timing: Buy High, Sell Low

Throughout the 1990s, people were increasing the proportion of their retirement money invested in stocks, both in terms of the percentage of money contributed each year and the account balances held. What produced this shift in behavior? One (rather remote) possibility was that investors had spent the decade poring over finance and economics journals, had learned that stock returns had been substantially higher than bond returns over the past century or so, and so decided to invest more in stocks. The other (considerably more likely) possibility is that investors had come to believe that stocks only go up—or that even if stock prices fall, that is just another buying opportunity because they quickly rise again. The stock market provided an opportunity to test these competing hypotheses during the 2000–2002 market turndown.

One way to analyze the market-timing ability of investors is to see how their asset-allocation decisions (that is, the proportion of their portfolios invested in stocks) changed over time. The

problem with this approach is that, as we have already mentioned, most people hardly ever change their portfolios unless they change jobs and have to fill out a new set of forms. So a better way to judge what people are thinking is to look at the percentage of money being invested in stocks by new participants who have just made the decision. We have data on one large group of such participants who were customers of plans administered by the Vanguard mutual fund company. In 1992 new participants were allocating 58 percent of their assets to equities, and by 2000 that percentage had risen to 74. In the next two years, however, the allocation to equities for new participants fell back to 54 percent. Their market timing was backward. They were heavily buying stocks when stock prices were high, and then selling stocks when their prices were low.

We observe similar behavior in the asset allocations within equities. Some plans allow investors to choose funds that specialize in particular industries or sectors. We have data from one such plan that offered its employees the option of investing in a technology fund. In 1998, in the early phase of the rapid run-up in the shares of technology companies, only 12 percent of employees invested in the technology fund. By 2000, when technology share prices were peaking, 37 percent of employees had money invested in that fund. After the fall in these share prices, the number of new participants investing in the technology fund had dropped back down to 18 percent by 2001. Again, participants were buying into the technology fund most aggressively at the peak, and selling after prices had fallen.

Rules of Thumb

Even the most sophisticated investors can sometimes find the decision about how to invest their money daunting, and they resort to simple rules of thumb. Take the example of the financial economist and Nobel laureate Harry Markowitz, one of the founders of modern portfolio theory. When asked about how he allocated his retirement account, he 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."²

Markowitz was not alone. In the mid-1980s most educators had a defined-contribution pension plan provided by a company that goes by its initials, TIAA-CREF. At that time the plan had only two options—TIAA, which invests in fixed-income securities such as bonds, and CREF, which invests mostly in stocks. More than half of the participants in this plan, many of them professors of some sort, selected exactly a 50–50 split between these two options. One of these 50–50 investors was Sunstein. Notwithstanding his long-standing friendship with Thaler, who many years ago told him that over the long haul CREF was a better bet than TIAA, he hasn't changed a thing. It is on his list of things to do, right after canceling those magazine subscriptions.

Of course, an even split between stocks and bonds is not a self-evidently dumb portfolio, but if the initial allocation is never changed (or "rebalanced," in the finance parlance), then over time the mix of assets will depend on the rates of return. For example,

Sunstein has been investing equal amounts into TIAA and CREF for more than twenty-five years, and he now has well over 60 percent of his money in CREF. The reason is that stocks have significantly outperformed bonds over the time period he has been a professor. If he had invested most of his money in stocks, he would have done a lot better.

Markowitz's strategy can be viewed as one example of what might be called the diversification heuristic. "When in doubt, diversify." Don't put all your eggs in one basket. In general, diversification is a great idea, but there is a big difference between sensible diversification and the naïve kind. A special case of this rule of thumb is what might be called the "1/n" heuristic: "When faced with 'n' options, divide assets evenly across the options."³ Put the same number of eggs in each basket.

Naïve diversification apparently starts young. Consider the following clever experiment conducted by Daniel Read and George Loewenstein on Halloween night.⁴ The "subjects" were trick-or-treaters. In one condition, the children approached two adjacent houses and were offered a choice between the same 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 two conditions produced quite different results. In the house with both kinds of candy, every child selected one of each candy. In contrast, only 48 percent of the children picked one of each candy when

they were choosing in sequence in two houses.

Although the consequences of picking two different candies are minimal (Three Musketeers and Milky Way are both pretty good), naïve diversification in portfolio selection can have more significant consequences on what people do, and on how much money they end up having. In a revealing study, university employees were asked how they would invest their retirement money if they had just two funds to choose from.⁵ In one condition, one of the funds invested entirely in stocks, the other in bonds. Most of the participants chose to invest their money half and half, achieving an asset allocation of 50 percent stocks. Another group was told that one fund invested entirely in stocks and the other "balanced" fund invested half in stocks and half in bonds. People in this group could have also have invested 50 percent of their money in stocks by putting all their money in the balanced fund. Instead, they followed the 1/n rule and divided their money evenly between the two funds—ending up with mostly stocks. People in a third group were given a choice between a balanced fund and a bond fund. Well, you can guess what they did.

This result implies that the set of funds offered in a particular plan can greatly influence the choices participants make. To test this prediction, Benartzi and Thaler (2001) examined behavior in retirement saving plans of 170 companies. They found that the more stock funds the plan offered, the greater was the percentage of participants' money invested in stocks.

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 pick only the fund that fits their risk preference. Some funds also adjust the asset allocation with the age of the participant.

Such a fund assortment is a good idea and represents an excellent set of default options (if the fees are reasonable). But when the funds are just included in a mix of other funds, many people appear not to understand how to use them. For example, few participants put all of their money into one of these funds, even though that is the mission for which they were designed. This is the equivalent of a not-particularly-hungry diner going to a restaurant that offers a set five-course menu and ordering the set menu plus the roast duck and a dessert. One study investigated the behavior of participants in a plan that offered three lifestyle funds and six other funds (an index fund, a growth fund, a bond fund, and so on).⁶ Curiously, the participants who invested in the conservative lifestyle fund allocated just 31 percent to that fund, dividing the rest among the other funds. Because the menu of other funds is dominated by stock funds, the resulting stock exposure for those investing in the conservative fund was 77 percent. These participants end up with a fairly aggressive portfolio, probably without being aware of it.

Company Stock

Consider the case of Charlie Prestwood, who spent his best years in the Texas energy business. He started at the bottom in 1967, sweeping sidewalks and emptying trash cans for a company called Houston Natural Gas. He was still there in 1985 when the company's CEO, a Houston native named Kenneth Lay, engineered its sale to a Nebraska-based competitor called Internorth. Lay helped restructure the new company, Enron, which distributed electricity and gas throughout the United States. "My job on the pipeline was keeping the gas flowing to our customers," says Prestwood. "I worked all my life devoted to it."

Life as an Enron employee was good. Prestwood's annual salary rose steadily to sixty-five thousand dollars, with additional retirement benefits paid in Enron stock. When Houston Natural and Internorth had merged, all of Prestwood's investments were automatically converted to Enron stock. He continued to set aside money in the company's retirement fund, buying even more stock. Internally, the company relentlessly promoted employee stock ownership. Newsletters touted Enron's growth as "simply stunning," and Lay, at company events, urged employees to buy more stock. To Prestwood, it didn't seem like a problem that his future was tied directly to Enron's. Enron had committed to him, and he was showing his gratitude. "To me, this is the American way, loyalty to your employer," he says.

Prestwood was loyal to the bitter end. When he retired in 2000, he had accumulated 13,500 shares of Enron stock, worth \$1.3 million at their peak. Then, at age sixty-eight, Prestwood suddenly lost his entire Enron nest egg. He now survives on a

previous employer's pension of \$521 a month and a Social Security check of \$1,294. "There ain't no such thing as a dream anymore," he says. He lives on a three-acre farm north of Houston willed to him as a baby in 1938 after his mother died. "I hadn't planned much for the retirement. Wanted to go fishing, hunting. I was gonna travel a little." Now he'll sell his family's land. Has to, he says. He is still paying off his mortgage.⁷

In some respects, Prestwood's case is not unusual. Often people do not diversify at all, and sometimes employees invest a lot of their money in their employer's stock. Amazing but true: five million Americans have more than 60 percent of their retirement savings in company stock.⁸ 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.

Remarkably, many employees still do not think these risks apply to their own employer. There are three problems here. First, employees do not seem to understand the risk-and-return profile of company stock. When the Boston Research Group surveyed 401(k) participants in 2002, it found that despite a high level of awareness of the Enron experience, half of the respondents thought that their own company stock carried the same or less risk than a money market fund. Another recent survey found that only a third of the respondents who owned company stock realized that it is riskier than a "diversified fund with many different stocks."⁹

Second, plan participants tend to extrapolate past performance into the future. Employees of companies whose stock has been performing well over the previous ten years tend to invest much more in company stock than employees at firms that were performing poorly. But this past performance is no prediction of the future. You might think that employees have especially good information about their firm's future prospects, but a careful study by Shlomo Benartzi (2001) finds otherwise. Specifically, there is no correlation between the allocation to company stock and subsequent stock performance. So workers at firms such as Enron, whose stock had been flying high, kept pouring more of their money into the company's stock (with encouragement from management) right up until the day the company imploded, and the stock became worthless.

Third, employees who receive an employer's matching contribution in company stock view that contribution as implicit advice. In particular, those who are required to take the employer's 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. By contrast, those who have the option, but not the requirement, to take the employer's match in the form of company stock allocate only 18 percent of their own funds to company stock.¹⁰

How risky is it to hold the shares of a single stock rather than a diversified portfolio? According to estimates by the economist Lisa Meulbroek (2002), a dollar in company stock is worth less than half the value of a dollar in a mutual fund! In other words,

when firms foist company stock onto their employees, it is like paying them fifty cents on the dollar. The upshot is that, in general, workers would be much better off with a diversified mutual fund than with company stock. (Hint: if you have more than 10 percent of your retirement money invested in the company you work for, diversify as quickly as possible.)

What nudges can help with this problem?¹¹ We prefer libertarian approaches, but we must acknowledge that a nonlibertarian argument can be made for limiting the percentage of an employee's retirement portfolio that is held in company stock—say, to 10 percent. Bills to this effect have been introduced in Congress. A more libertarian alternative is to treat company stock like any other investment in a 401(k) plan. Company stock in defined-contribution plans now enjoys an important benefit under the principal federal fiduciary law, an extremely important and largely unintelligible statute named the Employee Retirement Income Security Act of 1974 (ERISA). ERISA sets forth three fiduciary principles for retirement-plan investments: the exclusive benefit rule, requiring that plans be managed exclusively for the benefit of participants; the prudence rule, requiring that plan assets be invested according to a "prudent investor" standard; and the diversification rule, requiring that plan assets be diversified so as to minimize the risk of large losses. Most notably, company stock is exempted from the diversification requirement in defined-contribution plans—largely because, at the time ERISA was passed, large employers with profit-sharing plans lobbied Congress to exempt them from the diversification requirements imposed on

defined-benefit plans.¹² Employers are still expected to act prudently, however, in determining whether company stock is a suitable investment.

Why did Congress give preferred standing to company stock? No sensible definition of *prudence* can accommodate a concentrated position in a single stock—especially if that stock's performance is correlated with participants' work earnings. By giving company stock this odd preferential treatment, existing law actually encourages the inclusion of company stock in 401(k) plans. From the standpoint of workers' welfare, this is perverse. A natural alternative would be to treat company stock just like every other investment, without any kind of preference. This simple change might, in and of itself, solve the problem because firms might conclude that the fiduciary risk of giving large amounts of company stock to employees is not worth bearing.

In the absence of a change in the law, public-spirited firms can take some steps themselves to nudge employees to reduce exceptionally large holdings of company stock. Here is an approach that will now be familiar: Sell More Tomorrow. The idea is to solve two problems. First, even if firms recognize that company stock is not so great for employees, they do not want all or most employees to sell their stock at once, for fear that such sales will lower the stock's price. Second, firms do not want to be signaling that they think their stock is a bad investment. The Sell More Tomorrow plan gives employees the option to sell off their shares gradually over a period of time (say, three years), with the proceeds directed into a diversified portfolio. The program could

be done on either an opt-in or opt-out basis.

Nudges

Through better choice architecture, plans can help their participants on many dimensions. Attention to choice architecture has become increasingly important over the years because plans have greatly increased the number of options they offer, making it even harder for people to choose well.

Defaults

Historically, most defined-contribution plans did not have a default option. Participants who joined the plan would be given a list of options, with the instructions to allocate their money as they wished among the funds offered. No default option was necessary until plans began to adopt automatic enrollment, a regime that requires a default: if participants are enrolled automatically, they have to be enrolled into some specific asset allocation. Traditionally, firms have selected their most conservative investment option as the default, usually a money market account.

Most specialists consider a 100 percent allocation to a money market account to be much too conservative. The combination of the low rates of return earned in these funds (barely above inflation) and the low savings rates by many employees is simply a recipe for being poor when you get old. Firms chose this option not because they thought it was smart but because they were worried about getting sued if they defaulted employees into

something more sensible (but riskier). This fear was exacerbated by the reluctance of the Department of Labor to issue guidelines officially blessing (by granting a "safe harbor" status) any fund that could ever decline in value. The Department of Labor has finally issued new guidelines that are quite sensible, so the legal impediment to choosing a good default fund should no longer exist.

Many good default options are available. One alternative is to offer a set of model portfolios that have varying degrees of risk. We have noted that some plan sponsors offer conservative, moderate, and aggressive "lifestyle" portfolios. All a participant needs to do is select the lifestyle fund that best fits his 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 her expected retirement date. Managers of the target maturity funds select the degree of risk and gradually shift the allocation away from stocks and toward conservative investments 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 a target maturity fund based on a standard retirement age. Others are defaulting participants into "managed accounts," which are typically portfolios of stocks and bonds whose allocations are based on the age of the participants and possibly other information.

Structuring Complex Choices

A 401(k) plan is an excellent domain in which to offer a process for making decisions that fit the needs of participants who have various levels of interest and sophistication. Here is an outline of a promising approach. New enrollees would be told that if they do not want to select their own investment plan, they can choose the default fund that has been selected with some care by knowledgeable experts. This might be the managed account discussed above. Participants who want to be somewhat more involved would be offered a choice among a small set of balanced or life-cycle funds (with the intention that each participant would invest all her money in a single fund). For those who wanted to get really involved, a full menu of mutual funds would be offered, allowing sophisticated investors (or those who believe themselves to be sophisticated) the ability to invest as exotically as they choose. Many firms are starting to implement plans much like this.

Expect Error

To help those who would not get it together to join, we encourage automatic enrollment, which we would combine with Save More Tomorrow to help people achieve an adequate savings rate. For those who did not invest in a life-cycle fund, we would recommend offering an automatic rebalancing plan so that a participant's asset allocation would be adjusted over time.

Mappings and Feedback

Most employees have difficulty understanding how

numbers like savings rates, expected rates of return, and volatility translate into changes in their lifestyle when they are old. These abstract concepts can be brought into focus by offering translations into concepts anyone can understand. For example, one might create pictures of various housing options that would be available with alternative levels of retirement income. For the lowest outcome, the participant would be shown a very small, possibly rundown apartment. For higher outcomes, larger homes with swimming pools. These visual displays could be incorporated into regular feedback to participants about how they are doing in reaching their retirement savings goals. So a participant could be told in his annual report that he is currently headed for the hovel, but if he increases his savings rate now (or joins Save More Tomorrow), he could still get to the two-bedroom condo.

Incentives

The primary incentive problems in this context are possible conflicts of interest between the employer and the employee. The issues regarding company stock are a good example. The ERISA laws already require firms to act in the best interest of the employees. These laws should be enforced.

Forming and managing an investment portfolio over a long period of years is difficult. Most firms ask a team of internal experts, helped by outside consultants, to perform this task for the assets they manage. But individual participants typically undertake this task on their own, or with the help of a coworker or relative who may have intuition but lack training for the job. The end

result is similar to what might be expected if most of us tried to cut our own hair—a mess. Most people need some help; good choice architecture and carefully selected nudges can go a long way.