A Behavioral Framework for Time Diversification

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But the box is too small to include factors that affect choices but fall outside the boundaries of risk—frames and cognitive errors, self-control and regret. We explore the role of these factors in time diversification.

The belief that time diversification reduces risk underlies the current drive to invest Social Security funds in stocks. But is such investment prudent? We discuss the role of advisors in providing prudent advice, changes in the standards of prudence over time, the use of time diversification in guiding investors to prudent portfolios, and its use in the current debate on Social Security.

Time diversification has two aspects. One is the belief that the risk of stocks declines as the investment horizon increases. The other is a recommendation to young people to allocate high proportions of their portfolios to stocks and reduce these proportions as they age.

The belief that time diversification reduces risk is shared by individual and institutional investors alike. For example, Ibbotson Associates (1998) presented stock returns over periods ranging from 1 to 20 years and noted that the data show the effects of time diversification; holding assets for long periods of time has the effect of lowering the risk of losses. Stock return data are often presented in charts, such as **Figure 1**, accompanied by a note that there were no negative returns for periods lasting 15 years or longer.

Not everyone is in the time diversification camp. The belief that time reduces risk and the related portfolio recommendations have been challenged most forcefully by Samuelson (1963, 1969). Kritzman (1994, 1997), elaborating on Samuelson's argument, emphasized its underlying assumptions. Bodie (1995) used the language of options to reiterate the argument against time diversification. Bodie's article elicited many responses—some angry, others exasperated (see Cohen 1996, de Fontenay 1996, Gould 1996, and Sirera 1996).

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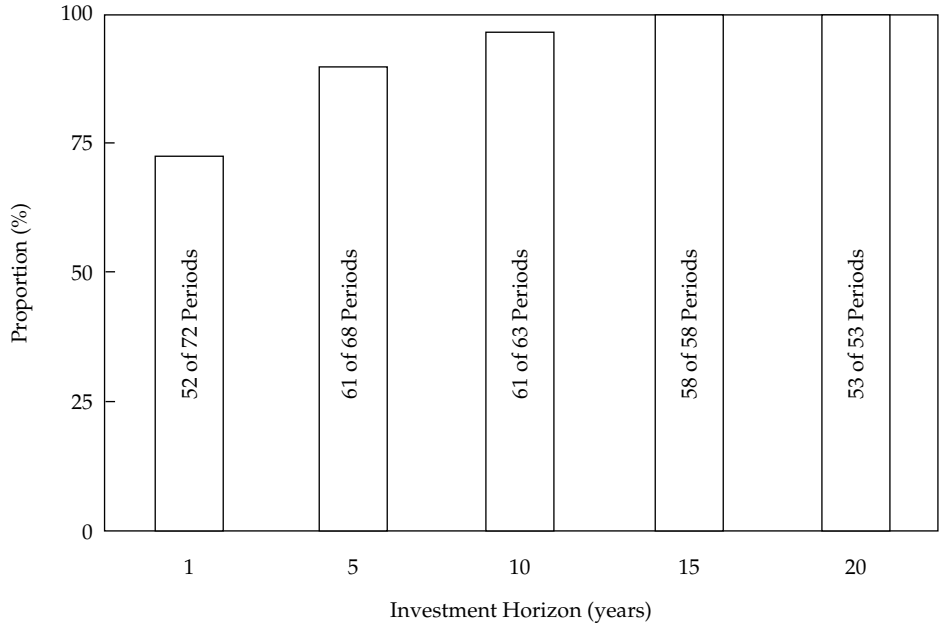
Kritzman (1997) described Samuelson's refutation of time diversification as a "mathematical truth." Samuelson's refutation is a mathematical truth because his conclusion flows directly from his assumptions. "What merits debate," wrote Kritzman, "is Samuelson's assumptions" (p. 2). We agree. Our first goal is to explore the assumptions that underlie time diversification.

"The time diversification debate," added Kritzman, "has degenerated into a referendum on the meaning of risk, which is futile" (p. 2). Again, we agree. Our second goal is to move the debate away from the meaning of risk to the wide range of factors that affect investment choices, factors that extend much beyond risk and expected returns.

Our third goal is to explore the prudence of the time diversification prescription. Is it prudent to advise young investors to allocate high proportions of their portfolios to stocks and reduce those proportions as they age?

Time diversification has much in common with dollar-cost averaging. Both are popular investment strategies, and both are denounced as poor. We consider time diversification and dollar-cost averaging neither good nor bad. Rather, we consider both as Rosetta Stones that help us decipher the perceptions and preferences of investors. Statman (1995) used the four factors of behavioral finance in his analysis of dollar-cost averaging: prospect theory, susceptibility to cognitive errors, aversion to regret, and imperfect self-control. In this article, we apply the same factors to time diversification.

Figure 1. Proportion of Periods When Stock Returns Were Positive, 1926–97



Prospect Theory

Samuelson's argument is not a general refutation of time diversification. Rather, the mathematical truth of his argument is that time diversification is false under specific assumptions. Samuelson's assumptions, as stated by Kritzman (1994), are as follows:

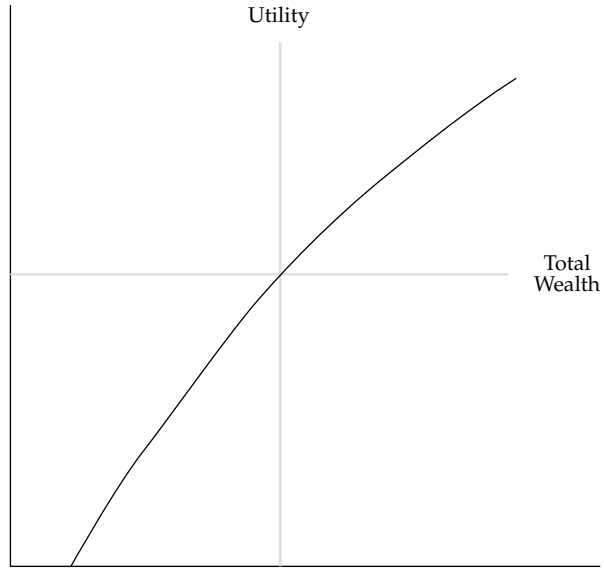
- Investors' risk aversion does not change as wealth changes.
- Investors believe that stock returns are random.
- Investors' future wealth depends only on their investment portfolios (not on, for example, labor income).

We accept, for now, the last two assumptions, but we know that the first assumption is false.

Underlying the first assumption, the assumption that risk aversion does not vary with wealth, are two more-basic assumptions. They are the standard finance assumptions that investors are always averse to risk and that utility is a function of wealth. As depicted in the curved line of **Figure 2**, standard finance investors make choices to maximize expected utility, where utility is a function of wealth.

Risk has a particular definition in standard finance. That definition is captured in the concavity of the utility function and by variance as the measure of risk. The concavity of the utility function implies that standard finance investors always prefer a sure amount over a gamble with the same expected value. So, they prefer a sure gain of $500 over a 50–50 chance for a $1,000 gain, and they prefer a sure $500 loss over a 50–50 chance for a $1,000 loss. Observation of actual choices demonstrates, however, that investors are not standard finance investors but behavioral investors: Their utility is not described well as a function of wealth, and they are not always risk averse. These observations led Kahneman and Tversky (1979) to develop prospect theory.

Figure 2. Standard Utility Function



To understand the features of prospect theory, consider the following experiment. One group of subjects received Problem 1: In addition to whatever you own, you have been given $1,000. You are now asked to choose between

A_1 = a sure gain of $500 and

B_1 = a 50 percent chance to gain $1,000 and a 50 percent chance to gain nothing.

Another group of subjects received Problem 2: In addition to whatever you own, you have been given $2,000. You are now asked to choose between

A_2 = a sure loss of $500 and

B_2 = a 50 percent chance to lose $1,000 and a 50 percent chance to lose nothing.

Kahneman and Tversky found that 84 percent of subjects chose A_1, the sure amount, in the first problem, but 69 percent of subjects chose B_2, the gamble, in the second problem.

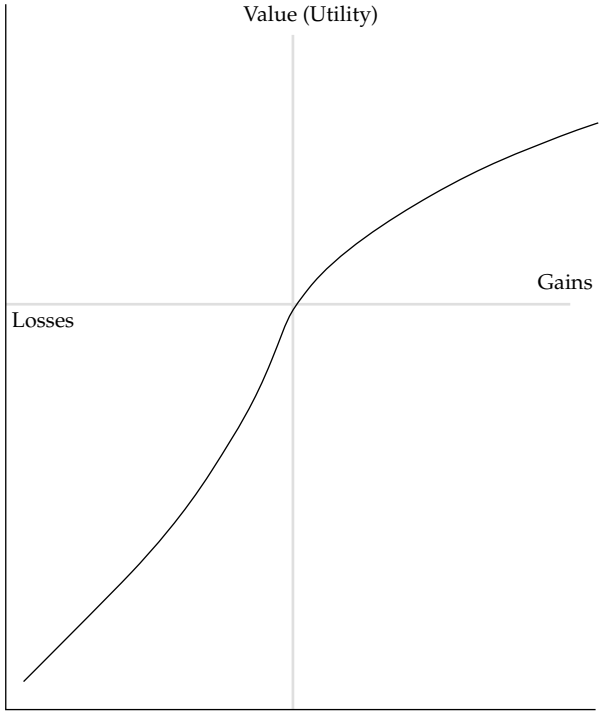
The predominant choice of the sure amount over the gamble in Problem 1 is consistent with risk aversion because the expected value of the gamble is equal to the sure amount but the variance of the gamble is higher. The choice of the gamble over the sure amount in Problem 2 is inconsistent with risk aversion, however, and therefore, inconsistent with standard finance.

Kahneman and Tversky described the motivation for the choice of the gamble over the sure amount in Problem 2 as aversion to losses. The desire to avoid the sure loss of $500 drives investors to accept the possibility of losing $1,000 in the hope of breaking even.

The utility of behavioral investors is reflected in a prospect theory function that has an S shape—concave in the domain of gains and convex in the domain of losses—as shown in **Figure 3**. The typical choice of the sure amount in Problem 1 is consistent with the concavity of the prospect utility function in the domain of gains. The typical choice of the gamble in Problem 2 is consistent with the convexity of the prospect utility function in the domain of losses.

The Kahneman and Tversky experiment demonstrates that, whereas standard finance investors choose as if they are always risk averse, behavioral finance investors choose as if they are risk averse in particular settings but not in others. Moreover, the experiment demonstrates that utility depends on gains and losses, not on overall wealth. To understand the role of gains and losses in prospect theory and the difference between utility that is based on gains and losses and utility that is based on wealth, observe again the choices in Problems 1 and 2. When the initial $1,000 wealth is integrated into the choice between A_1 and B_1 in Problem 1, the overall choice is between

Figure 3. Prospect Function



A_3 = a sure gain of $1,500 (the sum of the initial $1,000 and the sure $500) and

B_3 = a 50 percent chance to gain $2,000 and a 50 percent chance to gain $1,000.

Similarly, when the initial $2,000 is integrated into the choice between A_2 and B_2 in Problem 2, the overall choice is between

A_4 = a sure gain of $1,500 and

B_4 = a 50 percent chance to gain $2,000 and a 50 percent chance to gain $1,000.

The two problems are identical in their effect on wealth. So, if investors were standard finance investors, the two problems would lead to identical choices. The fact that the two problems lead to different choices teaches us that investors are behavioral investors. Gains and losses, not wealth, affect their choices.

Samuelson's refutation of time diversification holds under specific assumptions. Samuelson's mathematics are right, but his assumptions are wrong. Contrary to Samuelson's assumptions (and the underlying assumptions of standard finance), investors are not always averse to risk and their utility is not a function of wealth. So, we can set aside Samuelson's mathematical truth as a refutation of time diversification.

Cognitive Errors

Samuelson (1994) offered a different, much stronger, argument against time diversification than the

mathematical truth refutation. It is the argument that time diversification is built on a cognitive error, namely, the false belief that losses will never come to investors who hold on to their stocks for the long run.

To understand the nature of the cognitive error, consider a simple example of Samuelson's mathematical truth. Imagine an investor who invests $1,000 in a portfolio with a 50–50 chance to gain 20 percent or lose 10 percent each year. The investor has a 50 percent chance of losing money if the horizon is one year, but she has only a 25 percent chance of losing money if the horizon is two years. So, if risk is defined as the *probability of losing money*, risk declines as the horizon increases, but if risk is defined as the *amount of money* that the investor might lose, risk increases as the horizon increases. The investor might lose $100 after one year, but she might lose more, $190, after two years. These probabilities are laid out in **Figure 4**.

Samuelson's mathematical truth is that under his assumptions, the effect of time on the amount of losses is perfectly balanced in the mind of investors with the effect of time on the probability of losses. If so, risk neither increases nor decreases as the horizon increases. An unstated assumption under the mathematical truth, however, is that investors correctly assess the probabilities of losses. They do not.

Many proponents of time diversification assume, in error, that the probability of losses for stocks held over the long run is zero. For example, de Fontenay, arguing for time diversification, wrote:

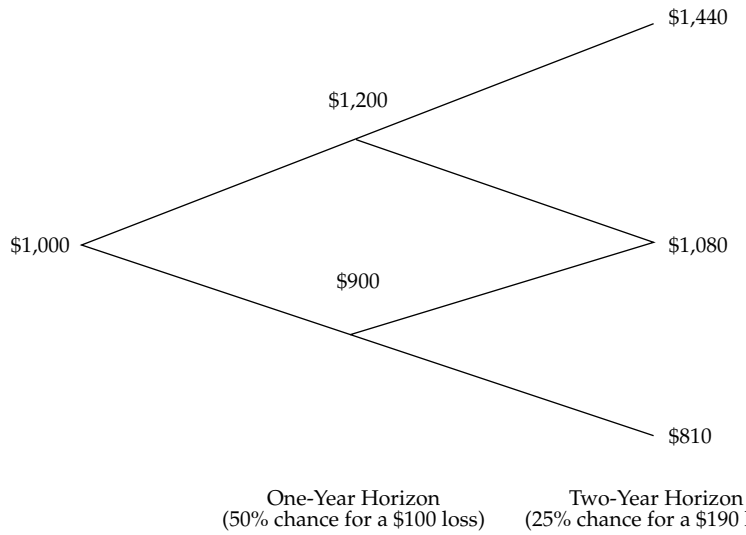
> A positive return [on stocks] in the long run is near certainty. . . . There is no reason to expect a negative return on the broadest possible stock index. . . .

To the contrary, there is *some* reason to expect a negative return even on the broadest possible stock index and even in the very long run. As Samuelson noted:

> When a 35-year-old lost 82 percent of his pension portfolio between 1929 and 1932, do you think that it was fore-ordained in heaven that it would come back and fructify to +400 percent by his retirement at 65? How did the 1913 Tsarist executives fare in their retirement years on the Left Bank of Paris? (1994, p. 7)

The cognitive error that Samuelson points out is the error of treating small probabilities as zero probabilities and might be called the "illusory happy end"—that is, a mistaken belief in a guaranteed happy outcome for those who invest for the long run. This error is manifested in many financial settings. For example, U.S. Treasury securities are often referred to as default-free securities. In truth, a positive, albeit very small, probability does exist of a default by the U.S. government. Tversky and Kahneman (1992), commenting on this cognitive error, noted that "very small probabilities can be either greatly overweighted or neglected altogether" (p. 303).

Figure 4. Relationship between Investment Horizon and Probability and Amount of Loss



Source: Meir Statman, "The Psychology of Risk and Taxes," *Investment Counseling for Taxable Clients* (Charlottesville, VA: Association for Investment Management and Research, Forthcoming 1999).

Proponents of time diversification frame stocks as if the stocks were long-term default-free bonds; the proponents assure long-term investors that they will not suffer a loss if they hold stocks for the long run. Common presentations of long-term returns of stocks, such as the picture in Figure 1, facilitate the cognitive error because they show no long periods with negative returns.

The "happy end" cognitive error that Samuelson pointed out stands in contrast to another cognitive error—"myopic loss aversion"—which was pointed out by Benartzi and Thaler (1995, 1997).

Benartzi and Thaler (1997) presented to their subjects distributions of simulated 1-year and 30-year returns similar to those in Panels A and B, respectively, of **Figure 5**. These charts are based on 10,000 random drawings of U.S. stock and bond returns from the group of 1926–97 returns. The first bar on the left in Panel A is the mean return of the lowest 200-bond group one-year returns. The bar next to it is the mean return of the lowest 200-stock group one-year returns, and so on. Similarly, the first bar on the left in Panel B is the mean return of the lowest 200 annualized 30-year bond returns, and so on.

The difference in the allocation to stocks between those who saw the 1-year chart and those who saw the 30-year chart was enormous. The median allocation to stocks among those who saw the 1-year chart was 40 percent. The median allocation to stocks among those who saw the 30-year chart was 90 percent.

Benartzi and Thaler argued that investors who saw the 1-year chart made the wrong choice because they were fooled by myopic loss aversion into thinking that the probability of losses over the long run is higher than it is. Samuelson might counter that perhaps investors who saw the 30-year chart are the ones who made the wrong choice because they were fooled by the illusory happy end into thinking that the probability of losses over the long run is zero.

The difference in allocations raises a troubling question: What is the meaning of attitudes toward risk if investors can be guided to radical switches from 40 percent stock allocations to 90 percent stock allocations by a mere change of frame? The switches mean, at the very least, that frames and cognitive errors are important choice factors. They also mean that financial advisors can choose portfolios suitable for their investors and use investors' susceptibility to cognitive errors to guide them to accept those portfolios. Cocky investors who want to allocate everything to stocks might be tamed when they see the large stock losses in the 1-year chart. Timid investors who want to allocate nothing to stocks might be made courageous when they see the small stock losses in the 30-year chart.

Cognitive Errors and Self-Control

Three years of losses often turn investors with thirty-year horizons into investors with three-year horizons; they want out. The tendency of investors to extrapolate recent trends in stock prices is well documented. Clarke and Statman (1998), for example, found that writers of investment newsletters become optimistic after increases in stock prices and pessimistic after decreases. This tendency to extrapolate recent stock movements is a manifestation of representativeness, a cognitive error. Resisting the temptation to action based on this cognitive error is an aspect for which investor self-control is important. Rules and investment advisors can provide second and third lines of defense when self-control, the first line of defense, fails.

For example, saving for the future is difficult; current consumption is so tempting. Rules are useful in enforcing the self-control needed to maintain a savings plan. Shefrin and Statman (1984) discussed the usefulness of "don't dip into capital" rules in bolstering the self-control of investors who are tempted by current consumption.

Some investors, recognizing their tendency to extrapolate three bad stock market years into a world-is-coming-to-the-end conclusion, use the stay-the-course rules of time diversification to stop themselves from cashing in their stocks. Other investors enlist financial advisors to reinforce the stay-the-course lessons of time diversification.

Aversion to Regret

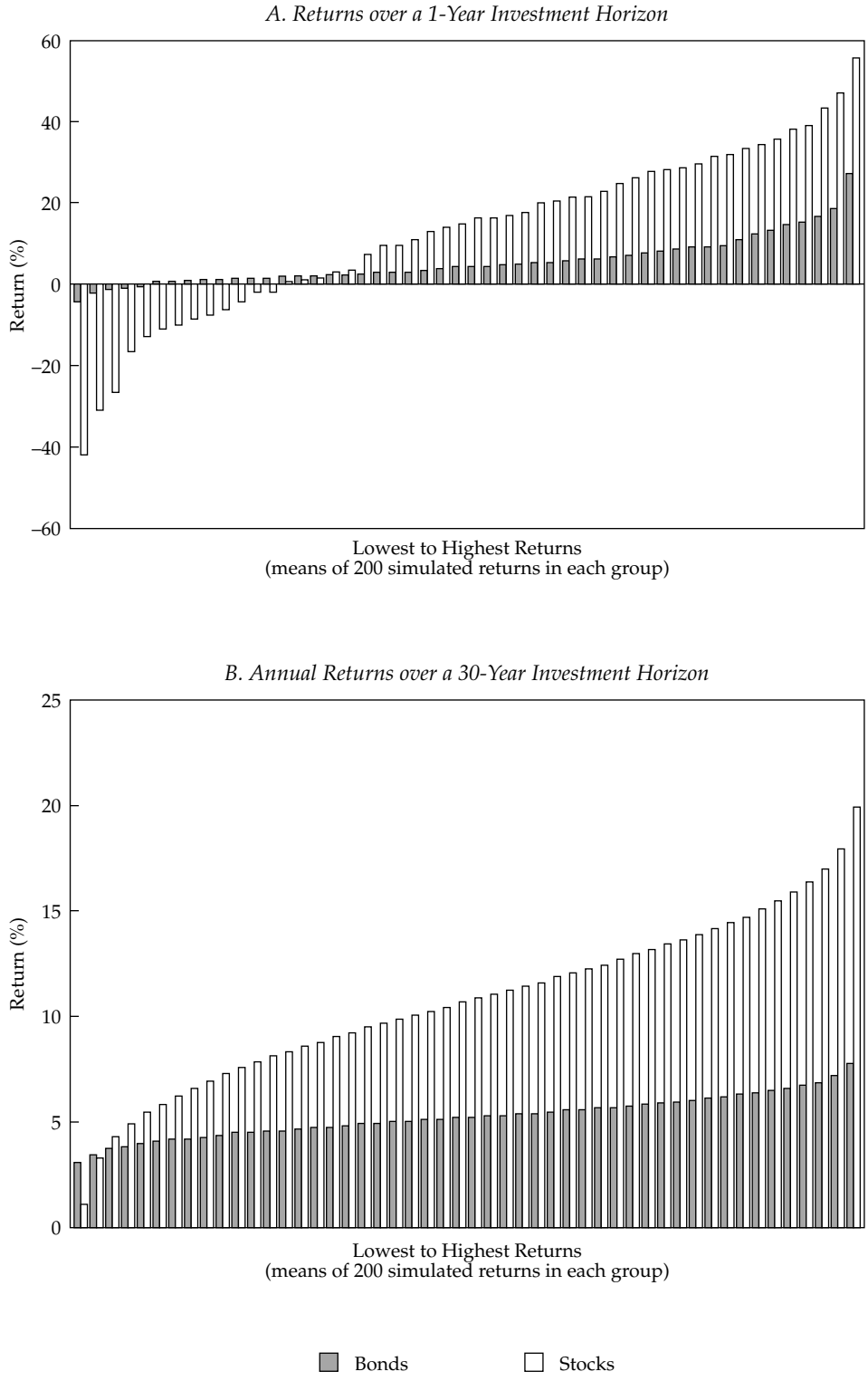
Choices bring consequences in money and emotions. Jeffrey (1984) wrote about the money consequences. As quoted by Bernstein (1996, p. 261), Jeffrey said:

> "The real risk in holding a portfolio is that it might not provide its owner, either during the interim or at some terminal date or both, with the cash he requires to make essential outlays."

Bernstein also told the story of a relative who did not care whether the market was going up or down. "I didn't buy in order to sell," she said.

The risk faced by Bernstein's relative is to Jeffrey's "real risk" what a car crash in a video game is to a real car crash on the highway. An investor who did not buy in order to sell faces no real risk because she never needs the money to "make essential outlays." But even those who need no money for essential outlays care about their investments, because investment choices bring

Figure 5. Distribution of Returns over Different Horizons



Note: Stock returns are CRSP Value Weighted Index returns; bond returns are five-year U.S. Treasury bond returns. Simulation is based on 10,000 random drawings of realized 1926–97 returns.

more than money lost and gained; they also bring the joy of pride and the pain of regret.

A stock bought for $1,000 might rise to $1,200, or it might fall to $900. The $200 monetary gain is accompanied by pride; the $100 monetary loss is accompanied by regret. Kahneman and Tversky (1982) described regret as the frustration that comes, *ex post*, when a choice results in a bad outcome.

Ignorance is one way to combat regret. Investors who avoid information about the ups and downs of the market avoid the regret that comes when markets are down. A shift of responsibility is another way to combat regret, because there is no regret without responsibility for choices. Responsibility can be shifted to rules, such as rigid schedules. The rigid schedule of dollar-cost averaging, for example, helps combat regret by taking the timing responsibility out of the hands of investors. Responsibility can also be shifted to financial advisors: "I'm not stupid," says the investor. "My financial advisor is stupid."

Time diversification comes with stay-the-course rules. These rules reduce regret over paper losses because paper losses leave alive the hope of breaking even. But the time comes when the horizon is reached and the hope for breaking even is gone. This is when the option to extend the time horizon is most valuable.

Time diversification is usually discussed in a context in which the time horizon is fixed when the investment is made. For example, Thorley (1995) reported that there is a 0.1 percent probability that stocks will register a loss relative to T-bills when the time horizon is 40 years, but investors often describe the time horizon in a flexible fashion—simply "the long-run"— rather than in a fixed fashion—"40 years." A flexible specification of time horizon does not alter wealth. The wealth and the ability to make essential outlays of an investor with a $10,000 paper loss at the end of a 40-year horizon are no different from those of an investor with a $10,000 realized loss. But investors with options on time can avoid regret by postponing the realization of paper losses.

The combination of an option on time and an aversion to regret can compound losses. McGough and Siconolfi (1997) described investors in the Steadman mutual funds who continue to hold on to Steadman shares bought 40 years ago. The shares register paper losses, and the losses are likely to deepen because the Steadman funds have expense ratios of 25 percent a year. Still, said a Steadman investor, he "never wanted to sell it at a loss."

Financial advisors often recommend dollar-cost averaging into stocks to investors with all-cash portfolios and 40-year investment horizons. Dollar-cost averaging does little to reduce risk (the stock market could crash just as soon as the dollar-cost-averaging program is complete and the investor is ready to retire), but dollar-cost averaging does much to reduce the fear of regret that comes to those who invest all their money today only to see the stock market crash tomorrow. Financial advisors use time diversification in a similar way. The long-run frame of time diversification shifts attention from the fear of regret over short-run losses to the anticipation of the pride over long-run gains.

The Box of Risk

The box of factors called risk is big; it includes, among others, the variance and semivariance of returns, the probability of losses, and the amount of losses. Thorley (1995) advocated the use of probability of losses as the "commonsense" measure of risk. Olsen and Khaki (1998) advocated a view of risk as an "emergent" phenomenon, with dimensions unique to its environment. But the concept of risk is fraught with problems for two reasons. First, risk means many things, and second, we each have specific ideas about the meaning of risk. So, discussions about risk are all too often discussions among people who are deaf but not mute. We regularly talk about inflation risk and liquidity risk, management risk and market risk. But although it is large, the box of risk is too small to include many factors that affect investment choices.

Consider social responsibility. Some investors use social responsibility to exclude from their portfolios particular stocks, such as stocks of tobacco companies. But social responsibility is neither within the definition of risk nor within the definition of expected returns. Similarly, frames, cognitive errors, regret, and self-control fall outside the definition of risk, but they do affect investment choices.

The attempts, in the name of simplification, to confine the meaning of risk to variance and the attempts to confine factors that affect investment choices to risk and expected returns do us no favor. The attempts at simplification make investment choices incomprehensible. We would do better to recognize that investment choices are affected by many factors and to direct our efforts toward their identification.[1]

Prudent Advice and Social Security

Prudence is a longstanding concept in finance, manifested in the paternalistic Prudent Man or

"suitability" rules. The range of prudent advice is wide, but it has limits. Juries and arbitrators regularly penalize investment advisors for imprudent advice. Time diversification can be a tool for such advice.

Prudence, like beauty, has a circular definition: Beauty is what people find beautiful, and prudence in this context is what financial advisors find prudent. Financial advisors balance many factors as they advise their investors. Factors include the probability of losses and their amounts, the effect of losses on the investor's ability to make essential outlays, and the effect of losses on regret. Factors also include the ability of investors to exercise self-control as they execute their investment plans and the ability of investors to overcome cognitive errors that might lead them to abandon their plans.

We do not know yet the process by which the factors and the interaction among them lead to particular portfolio recommendations, but we can learn about the process as we study the role of "prudence entrepreneurs" in changing the content of prudence.

The Ford Foundation served as a prudence entrepreneur in 1967. The foundation, acting out of concern for the financial needs of U.S. colleges and universities, formed an advisory committee composed of academics and business executives to assess the soundness of the institutions' financial bases.

In its published report (Ford Foundation 1969), the foundation noted that "[t]he record of most American colleges and universities in increasing the value of their endowments through investment management has not been good" (p. 3). Whereas stock mutual funds had an average return of 14.6 percent a year over the 1959–68 period, the average return of the portfolios of educational institutions was only 8.7 percent. The foundation traced the performance shortfall to a low allocation to stocks and traced that low allocation to standards of prudence that placed primary emphasis on avoiding losses and maximizing income rather than on maximizing long-term total returns. The foundation recommended a shift in the standards of prudence so as to place primary emphasis on the maximization of long-term total returns and, consequently, an increase in the allocation to stocks.

The Ford Foundation argued that the reluctance to allocate much to stocks was a result of a cognitive error, an excessive fear of stocks born of the 1929–32 crash:

> It is our conclusion that past thinking by many endowment managers has been overly influenced by fear of a major crash. Although nobody can ever be certain what the future may bring, we do not think a long-term policy founded on such fear can survive dispassionate analysis of the probability of a crash and the long-term cost of guarding against one. (p. 14)

The Ford Foundation proved successful in its entrepreneurial work, but its timing was poor: The 1970s were bad for stocks. Nevertheless, the average stock allocation in portfolios of college and university endowments stood at 60 percent in 1993.

Thaler and Williamson (1994) argued that even this 60 percent allocation was too little. They proposed that even a 100 percent allocation is prudent and attributed the reluctance to increase stock allocations beyond 60 percent to myopic loss aversion.

The memories of the crashes of 1929–32, 1973–74, and 1987 are faded now, whereas the memory of this decade's bull market is vivid. Prudence entrepreneurs are working now in the Social Security arena. Those who advocate investing Social Security funds in stocks are relying on the argument of time diversification, treating stocks as default-free long-term bonds that have extra returns tossed in as a bonus. The Clinton administration projects that stocks will extend the life of the Social Security system. Even critics of the Clinton Social Security plan, such as Feldstein (1999), accept its time diversification premise. Feldstein's criticism focuses instead on the need to keep stocks in the hands of individuals, away from the Social Security Administration.

Some critics of the Social Security stock plan have noted that time diversification does not provide a guarantee against losses; stocks go down as easily as they go up, even in the long run. For example, Malkiel (1999) wrote that "[o]ver the past 16 years we have witnessed a tenfold increase in stock prices . . . at some point a severe bear market is a possibility." He added that

> [a] sharp decline in stock prices could lead to anxiety among older Americans and undermine public confidence in the Social Security system. There could be pressure to sell off the equities just as their valuations decrease.

But Malkiel's warning might be too late; the time diversification argument has taken firm hold on the minds of investors. Lee (1999) wrote the editor of the *Wall Street Journal* to protest Malkiel's opinions and remind the *WSJ* that neither it nor other newspapers has dissuaded investors from investing in equities. Lee wrote:

> [I]t is usually recognized that equities offer superior long-term returns regardless of whether people invest their money in a market peak or trough. As Social Security would also invest for the long term, the benefits realized from equity investment should be no different for it than for the individual investor.

Conclusion

We have discussed two aspects of time diversification—the idea that the risk of stocks declines as the investment horizon increases and the investment recommendations based on a belief in this idea.

The debate about the relationship between risk and investment horizon takes us to a dead end, but it also points us to an open road. The debate takes us to a dead end because the box of factors that we call risk is large enough to include many conflicting choice factors but too small to include all choice factors. Risk is variance, and it is semivariance; it is the probability of losses, and it is the amount of losses. Frames are not risk, cognitive errors are not risk, regret is not risk, and self-control is not risk. Yet, all of them play roles in time diversification.

The time diversification debate teaches us that the box of risk and expected returns, tidy as it seems, is inadequate for a description of the world of financial choices. We should abandon that box and turn to the box of many choice factors.

The move from the tidy box of risk and returns to the messy box of many factors is unsettling because the box of many factors seems inelegant and vague. But we argue, along with Lopes (1981), that

> this may be the price that has to be paid, if we are to have the kind of useful decision technology that captures and clarifies the concerns of real people in real environments. (p. 385)

Moreover, the box of many factors need not be inelegant or vague. A multitude of factors, once identified and sorted, can make the box clear, even elegant.

Investors balance many factors as they choose the allocations in their portfolios, and they face many pitfalls. Financial advisors can be useful in helping investors negotiate these pitfalls. Time diversification is like eyeglasses. Eyeglasses may be wrong; they distort the sight of people with 20/20 vision. But eyeglasses may be right; they improve the sight of people with less than 20/20 vision. Eyeglasses correct one distortion by introducing another. It is a case of two wrongs that make a right.

Myopic people can focus well on short horizons but not on long ones. Their myopic loss aversion leads them to allocate too little to stocks, and they need eyeglasses that help them focus on long horizons. Hyperopic people can focus well on long horizons but not on short ones. Their belief in an illusory happy end leads them to allocate too much to stocks, so they need eyeglasses that help them focus on short horizons. Optometrists need to make the right decisions to correct the vision of individuals in the right direction. Financial advisors are like optometrists. They correct the investment vision of investors and lead them to prudent investment decisions. Prudent financial advisors use the arguments of time diversification to guide some investors to increase allocations to stocks in their portfolios and to guide others to decrease allocations to stocks.

Investors have an advantage over financial advisors; they know their own minds. But advisors know the facts of investments, and they know the range of investor errors. The consensus prescriptions of financial advisors change over time (financial advisors prescribe lower stock allocations after bear markets than they prescribe after bull markets), and there are always advisors who tug toward one side or the other. But we have no better measure of the prudent allocations to stocks than the consensus prescriptions of financial advisors.

Time diversification is a paradox, like the St. Petersburg paradox and the Allais paradox. As Lopes (1996) noted, advocates of expected utility theory are impatient with paradoxes; they treat paradoxes as if they were bugs in their computer programs. "Instead," she wrote, "paradoxes should be savored, debated, and recited . . ." (p. 188). Indeed.

The time diversification debate teaches us little about the relationship between risk and the investment horizon, but it teaches us much about the many factors that affect financial choices. The time diversification debate teaches us little about the right allocation to stocks, but it teaches us much about the role of financial advisors in helping investors negotiate the pitfalls of investment choices and maintain their investment plans.

We thank Jennifer Clayton and Jonathan Scheid for their research assistance and Peter Bernstein, Mark Kritzman, Lola Lopes, Hersh Shefrin, and Steven Thorley for their comments. Meir Statman acknowledges financial support from the Dean Witter Foundation.

Notes

1. For a discussion of risk and choice factors in the context of portfolio construction, see Shefrin and Statman (1999) and Fisher and Statman (1997a, 1997b).

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