THE DEATH OF BUY AND HOLD

How *Not* to Outlive Your Money
—Investing for, and in, Retirement

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THE DEATH OF BUY AND HOLD

How *Not* to Outlive Your Money
—Investing for, and in, Retirement

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Chris Minnucci

To my mother, Dorothy Minnucci, with love
(and apologies for the tables and graphs)

October. This is one of the peculiarly dangerous months to speculate in stocks in. The others are July, January, September, April, November, May, March, June, December, August and February.
—**Mark Twain**

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PART V
HOW TO HOLD

INTRODUCTION

I'm often asked whether the markets behave rationally.
My answer is that it all depends on your time horizon.
Turn on CNBC at 9:31 AM any weekday morning
and you're faced with a lunatic asylum described by the Three Stooges.
—**William Bernstein,** *The Four Pillars of Investing*

It was several years ago when I first heard the news—at least, it was news to me. The TV was tuned to CNBC, and a distinguished-looking gentleman was on camera. He spoke with an air of supreme confidence and authority. An éminence grise, no doubt about it. He was talking about the Lost Decade, those ten years beginning in 2000 when the stock market went down, then up, then down, and then up again—only to finish pretty much in the same place it started.

And then he delivered the grim news: "Buy and hold is dead."

How, he asked, can you possibly earn any returns simply holding your positions year in and year out, when the stock market has been moving sideways for a decade? Instead, he offered us viewers this advice: we would need to become "stock pickers." We would need to be nimble, to dart quickly in and out of positions, catching a stock with a little upward momentum here and there and then quickly dumping it before it goes back down. This approach is, he said, the only way to make money in a market going nowhere fast.

The stockbrokers watching that day were no doubt gladdened by his news, and by his advice on what we should do about it. After all, investors who just sit there holding the same old investments year after year don't generate commissions. "Buy and hold is dead? Well, good riddance," the brokers might well have been thinking.

And similar thoughts might have been passing through the heads of the CNBC on-camera personalities, their off-camera colleagues, and others who earn their living providing a 24/7 stream of market news and advice. After all, buy-and-hold investors have no need for the media's short-term investment advice. "Buy and hold is dead? Then by all means," the pundits, newsletter writers, and investment advisors might have thought to themselves, "follow Mr. Éminence Grise's advice and become a stock

the backtests provide the most realistic representation possible of the kinds of returns a typical, real-world investor might have achieved. Unlike data on market indices (such as the Dow Jones or S&P 500), the Morningstar mutual fund data capture the impact of real-world costs, including management fees and trading costs, on returns. Also, because the Morningstar data are averaged across all mutual funds in a given asset class, the backtest results assume neither superior nor inferior fund selection skills on the part of the typical investor. The backtests show us how each portfolio would have performed during bull and bear markets stretching back to 1972.

<p align="center">★★★</p>

In the second half of the book (Parts IV and V), we turn to the practical issues involved in implementing and maintaining an all-weather portfolio, such as how to develop a personalized asset allocation plan, how to select the specific investments that will compose your portfolio, how to check on and maintain your portfolio's health, and how to stick with a buy-and-hold approach through thick and thin. In the process of explaining these and other how-tos, we expand our scope beyond investing to the related fields of retirement planning (including saving for retirement) and taxes. As we explore these fields, we will discover potential solutions to the retirement risk beyond the principles of correlation and compromise. For example, in Part IV, we will learn that establishing a low withdrawal rate (the rate at which money is withdrawn from a retiree's portfolio to meet expenses) is an excellent way to minimize both components of the retirement risk (too much volatility and not enough returns to outpace inflation). In fact, a low initial withdrawal rate is even more effective than the principle of correlation at reducing the retirement risk.

Other solutions to the retirement risk considered in Part IV include index investing, liability-matching bond portfolios, dollar cost averaging, tax loss harvesting, and rebalancing. By reducing the percentage of returns you must give up to mutual fund managers and to Uncle Sam, index investing and tax loss harvesting reduce the risk posed by insufficient returns without simultaneously increasing the risk posed by market volatility. Dollar cost averaging is a reliable, disciplined way to "buy low" while saving for retirement—again, reducing the risk posed by inflation. As we will see in Chapter 12, implementing a liability-matching bond portfolio (LMBP) can virtually eliminate both components of the retirement risk—at least for a while, and possibly for the duration of your retirement. Finally, rebalancing your portfolio on a regular basis will afford you opportunities to buy low and sell high, thereby possibly yielding a rebalancing bonus that will reduce the inflation component of the retirement risk while simultaneously keeping your portfolio's volatility from rising over the long term.

In Part V, we turn to the emotional aspects of investing. You will learn why simply holding your investments is almost always the best strategy, and you will learn how to control your emotions and stick to a buy-and-hold approach through

thick and thin. We address not only the strengths of buy and hold but also its weaknesses. The strategy contains a major flaw: although holding your investments is almost always the best way to protect yourself from the retirement risk, exceptions to this rule are possible. Given a big enough drop in the stock market, you may suffer losses so large that bankruptcy becomes a near-certainty. If inflation gets out of control (as happened during the 1970s), your portfolio's returns may prove insufficient to outpace inflation, forcing you to draw down on your principal until it is entirely gone. Because investors have no way of knowing the difference between situations that truly threaten their portfolios' survival and situations that are merely scary but pose no real risk, they often make what is arguably a rational decision to sell their stock holdings rather than risk the slim possibility of a catastrophic loss. This fundamental uncertainty in part accounts for the unpopularity of the buy-and-hold strategy among amateur investors. In the last two chapters of Part V, we address the uncertainty underlying the buy-and-hold approach head-on, by providing tables of historical portfolio survival rates that you can use to gauge the probability that your portfolio will survive future market meltdowns. In addition, you will be given a hierarchy of actions you can take, ranging from reducing your withdrawal rate to selling your stocks, if and when the tables indicate that you are approaching a true danger zone.

The many solutions to the retirement risk we explore—the principles of correlation and compromise, a low initial withdrawal rate, an LMBP, index investing, rebalancing, dollar cost averaging, tax loss harvesting, and others—work well separately. But when they are combined within the framework of a buy-and-hold investment strategy, they form a very powerful "defense in depth" to protect your nest egg. You can never completely eliminate the risk of outliving your money, but this defense-in-depth approach will give you the best prospect of managing and minimizing this risk—and enjoying a comfortable, secure retirement.

THE RETIREMENT RISK: PROTECTING YOUR RETIREMENT WITH A WELL-DIVERSIFIED PORTFOLIO

OUTLIVING THEIR MONEY:
A SHORT STORY ABOUT THE RETIREMENT RISK

To an older man it must have seemed inevitable that we were heading for a crash but to most of us it seemed that we were in a "New Era" which would never end.
—**Benjamin Roth,** *The Great Depression: A Diary*

As recently as the 1970s, as inflation soared around the world, the bond market made a Nevada casino look like a pretty safe place to invest your money.
—**Niall Ferguson,** *The Ascent of Money*

Imagine for a moment that you are James Bond. You have been locked in a vault by an arch villain. Inside the vault is a doomsday device set to explode in one hour. It is up to you to disarm it and save the world. You have no idea how this particular device works and no means of communicating with anyone outside the vault. Besides you and the device, the vault is empty, except for two books. One is a lengthy manual that explains clearly and in detail how the device works but offers no solutions for how to disarm it. The other is a short manual offering quick descriptions of one hundred possible solutions; however, only one of those solutions will work. It will take you nearly the entire hour just to read the long manual, but you could quickly read and try a couple dozen of the possible solutions in the short manual.

The clock on the device is ticking more and more loudly. The background music grows more ominous. The beautiful woman waiting in bed for you is getting impatient. What would you do?

Well, Bond would probably mutter a joke, cut the red wire, and, with his incredible luck, save the world. But if you wanted to attempt a solution that relied less on luck and more on brains, you might start by considering what Einstein once said: "If I had one hour to save the world, I would spend fifty-five minutes defining the problem, and only five minutes finding the solution." Einstein would probably read the long manual first, and then, based on his understanding of how the device operates, he would search for and find the one solution in the short manual that made the most sense.

Of course, most of us don't think like Einstein, nor do we possess James Bond's ability to remain cool under extreme duress. Fortunately, unlike Bond, we are not called on to save the world on a routine basis. But we do face financial challenges that, if solved incorrectly, could blow up our own little worlds. For many of us, by

It was around this time that Federal Reserve chairman Paul Volcker, by raising interest rates to double-digit levels, finally brought an end to stagflation and ushered in the great 1980s–90s bull market in stocks and bonds. In 1982, the average investment-grade, intermediate-term bond fund returned a whopping 32.4 percent. For the remainder of the 1980s, the average return of these same funds remained more than 8 percent in every year but one. Unfortunately, all this came too late for Joe and Emily Bondsman. They reduced their inflation adjustment back to 3 percent starting in 1983, but despite the much better returns and the tamed inflation, their remaining nest egg was now too small to recover. In 1984, the year Joe turned eighty-seven and Emily eighty-four, they ran out of money. They sold their duplex unit and move back to their old Iowa hometown to live with their youngest daughter and her husband —himself a retiree on limited income. The Bondsmans had outlived their money. Joe Bondsman, who had been financially independent since age fourteen and hated the thought of being a burden on anyone, let alone his own daughter, would have to survive on her charity and a small stipend from Social Security for the remaining eight years of his life.

Stockman's and Bondsman's Two Paths to Ruin

Let's now analyze what happened to Stockman and Bondsman. In Stockman's case, it's pretty obvious. His road to financial ruin is the one all investors know about, and fear. Over the long run, stocks have proven to be an excellent investment, yielding annualized returns of about 10 percent from the 1920s to the present. But these returns have been anything but steady. During the Depression, the Dow lost a staggering 89 percent of its value. More recently, the S&P 500 dropped 47 percent in the 2000–2002 bear market and 55 percent in the 2007–9 financial crisis. It is difficult enough to watch these kinds of losses ravage your savings when you enjoy steady income from a secure job. But if you are retired and, like Stockman, entirely dependent on the stock market for your income, such losses can lead to bankruptcy.

But it was not just the magnitude of his losses that sent Stockman to the poorhouse. It was also the timing of those losses. Stockman began his retirement in spring 1929, only a few months before the October crash. Retirees who encounter a major bear market soon after retiring are in much greater danger of losing everything than those who retire in the early or middle years of a bull market. The latter retirees will have time to grow their portfolios, and this early growth will help to offset their losses when the inevitable bear market finally arrives. But for those who have the bad luck of retiring shortly before a major market crash, the investment losses, coming on top of the need to keep withdrawing money from a dwindling nest egg to meet living expenses, can spell financial doom.

The risk posed by the timing of market losses is referred to as sequencing risk. Sequencing risk in turn combines with the magnitude and frequency of market

crashes to compose the risk posed by market volatility — one of the two components of the retirement risk, and the undoing of John Stockman.

<div align="center">★★★</div>

What happened to Joe Bondsman is less obvious. The financial route that Bondsman followed through his retirement seemed *much* safer than Stockman's. Stockman's road was a short one that sent him over a cliff. Although much longer and less dramatic, Bondsman's road ended at the same destination — bankruptcy. Bondsman was bound and determined to reduce the risk posed by market volatility to an absolute minimum. It was for this reason that he invested his entire life savings in bonds. What Joe Bondsman didn't know — what he couldn't possibly have known — is that the first twenty years of his retirement would parallel a long bear market in bonds. A bond bear market looks, and feels, much different than a bear market in stocks. During this entire period, Joe lost money in only five years. Furthermore, the worst loss was only 15.7 percent, in 1969. Compare this with the 90 percent loss suffered by Stockman during the Depression, and it is clear that bonds are indeed much less "risky" than stocks — if by "risky" we mean *only* less volatile.

But it is an ironclad rule of investing that risk and return go together. Buyers of a high-risk (meaning highly volatile) investment, such as a stock, are compensated for the risk they undertake with high expected returns. Investors in low-risk (i.e., low volatility) bonds must expect low returns. Over the twenty-year period of 1962–81, the average investment-grade, intermediate-term bond fund generated annualized returns of only 3.2 percent. In 1962, Joe withdrew 4 percent of his portfolio for living expenses, and increased his withdrawals each subsequent year. It is clear that you cannot keep taking out 4 percent or more of the value of a portfolio that is growing only 3.2 percent per year and expect it to last.

The Night Thief

But while he couldn't have done it forever, Bondsman *could* have taken a flat $25,000 per year for the twenty years that the bear market lasted, and he would have been able to recover financially once the bear market ended. It was inflation — the need to keep increasing the withdrawal rate to keep up with rising prices — that bankrupted Bondsman. Whereas John Stockman was done in by too much market volatility, Joe Bondsman was financially ruined by returns insufficient to keep up with inflation. The effect of inflation on Bondsman's portfolio is illustrated in Figure 1.1. This figure compares the actual trajectory of Joe's portfolio, with the original 3 percent inflation adjustment and the 9 percent adjustment he used from 1977 through 1982, with the trajectory it would have taken if Joe had lived in some inflation-free fantasyland where he could have kept his annual withdrawals for living expenses at a flat $25,000.

The difference between the two trajectories is stark. By 1984, just twenty-two years into Joe's retirement, the portfolio subject to the inflation adjustments went bust, but in that same year, the fantasy portfolio with no annual inflation adjustment would have been worth $596,000.

Figure 1.1. Trajectory of Joe Bondsman's Portfolio with Inflation Adjustments to Annual Withdrawal, Compared with a "Fantasy" Portfolio with No Increase in the Annual Withdrawal for Inflation

Source: Developed by the author using data from www.morningstar.com.

And this isn't the worst of it. Even if stagflation hadn't occurred and Bondsman didn't have to increase the inflation adjustment starting in 1977, the portfolio *still* would have gone bust by the time Joe turned ninety-one (and Emily eighty-eight). In that same year, the fantasy, no-inflation portfolio would have grown to $798,000. Increasing the inflation adjustment from 3 percent to 9 percent between 1977 and 1982 didn't cause the Bondsmans' financial ruin—it just hastened it.

Why does a small, 3 percent increase in the annual amount withdrawn from the portfolio have such a huge impact on the portfolio's final value? The answer is simple. The effects of inflation compound over time, in the same way as the interest you earn on a savings account. A few years ago, I took a night class on retirement planning. The instructor had a colorful way of warning us against two key risks to our nest eggs. There are, he would say, two thieves we must guard against. First, there is the bold thief who comes in the broad daylight and demands a cut of everything

ever since the rulers of antiquity discovered that they could make their tax revenues go further by debasing (reducing the gold or silver content of) their coinage. And it is a fact that as government debt rises—as it is doing across the globe today—the temptation governments face to inflate their way out of that debt (by paying it off in debased dollars, euros, yen, etc.) also rises. The night thief is still with us today, and he could still surprise us by going on a rampage, as he did back in the 1970s. The investor in bonds should never lose sight of this possibility and the risk it poses for her bond portfolio.

That said, we can perhaps take some comfort from the fact that Joe Bondsman didn't run out of money until he was eighty-seven years old. After all, what are the odds of living eighty-seven years or more?

To a Long Life (and a Merry One)

Well, according to actuarial tables from the Social Security Administration, the odds are pretty high. If a male makes it to retirement age (sixty-five), he has a 33 percent chance of living until at least eighty-seven. For a female, the odds increase to 46 percent.[15] And what are the odds that at least one spouse of a couple, both age sixty-five, will make it to age eighty-seven or more? These odds can be estimated easily from the two preceding numbers. I've done the calculation, and the result is 64 percent.[16] Chances are better than even that at least one spouse will live to age eighty-seven, or longer.

In Table 1.1, I've used the Social Security data to calculate the odds of making it to other advanced ages. The table gives the probabilities that a sixty-five-year old male, a sixty-five-year old female, and at least one member of a sixty-five-year-old couple will live to at least eighty-five, ninety, ninety-five, and one hundred. For example, at least one member of a 65-year-old couple has a 19 percent (nearly one in five) chance of making it to age 95.

Table 1.1. Probabilities of Living to Advanced Ages
for Sixty-Five-Year-Old Males, Females, and Couples

Age (years)	Probability for 65-Year-Old Male (%)	Probability for 65-Year-Old Female (%)	Probability for 65-Year-Old Couple (%)
85 or older	42	54	73
90 or older	21	33	47
95 or older	7	13	19
100 or older	1	3	4

Source: Calculated by the author from the Social Security Administration's 2009 Actuarial Life Table, www.ssa.gov/oact/STATS/table4c6.html.

Take a good, long look at the probabilities in Table 1.1. The good news is that life expectancy in the United States has increased significantly over the years. The downside is that, if you don't want to wind up flipping burgers at McDonald's when you're ninety, you'd best make financial preparations for a long retirement.

A Postscript

We lost track of John Stockman in Depression-era New York, but in 1948, he reappeared as the owner of a small restaurant in Los Angeles, with a wife (Brenda) and son (Anthony). In the mid-1950s, he hit upon the idea of expanding his small business by opening a chain of restaurants to serve travelers along the interstate highway system then being built by the Eisenhower administration. His interstate restaurant chain was small but growing rapidly by the late 1950s, and he was able to sell the business for the then-sizable sum of $625,000 in 1962. Thus he entered into retirement at the same time, and with the same-sized nest egg, as Joe Bondsman. And although he didn't plan his retirement out with anything like the same precision as Bondsman, he nonetheless wound up withdrawing 4 percent in the first year to cover his and Brenda's living expenses and then adjusting the withdrawal upward 3 percent per year—just like Bondsman. And like Bondsman, he had to increase the inflation adjustment to 9 percent between 1977 and 1982, before going back to 3 percent after 1982. The only difference is that whereas Bondsman invested all of his savings in bond mutual funds, Stockman invested 100 percent of his nest egg in large cap (large company) stock mutual funds.

Although Stockman's total reliance on stocks had proven disastrous in the 1930s, it worked out okay for him in the 1960s and 1970s. Figure 1.2 shows the trajectory of Stockman's portfolio compared with Bondsman's. There were a few rough patches for Stockman—especially 1973–74, when the average large cap mutual fund lost 38.8 percent of its value. In 1974, Stockman's portfolio hit a low of $355,000. But by 1984, the year Joe Bondsman went broke, Stockman's portfolio had recovered to $505,000. John's nest egg lasted his entire lifetime, and was still worth $476,000 when it was passed on to his son Anthony.

As would be expected, and as Figure 1.2 confirms, Bondsman's all-bond portfolio followed a much smoother path than Stockman's all-stock portfolio. But that smooth path led to a much different destination.

In 1987, Brenda Stockman passed away, and John, still in good mental and physical health at age ninety, decided to visit his Iowa birthplace for the first time in more than seventy years. His son Anthony agreed to take him there. On the drive from the Des Moines airport, he noticed an old, run-down clapboard house on the west side of town. In a rocking chair on the porch sat a very old man. Staring at the man's ancient face, a sense of recognition, or connection, passed over Stockman.

It was a vaguely disquieting feeling. But it quickly passed as the light turned green and they continued their drive to Stockman's childhood home on the east side of town.

Figure 1.2. Trajectory of John Stockman's Portfolio, Compared with Joe Bondsman's Portfolio
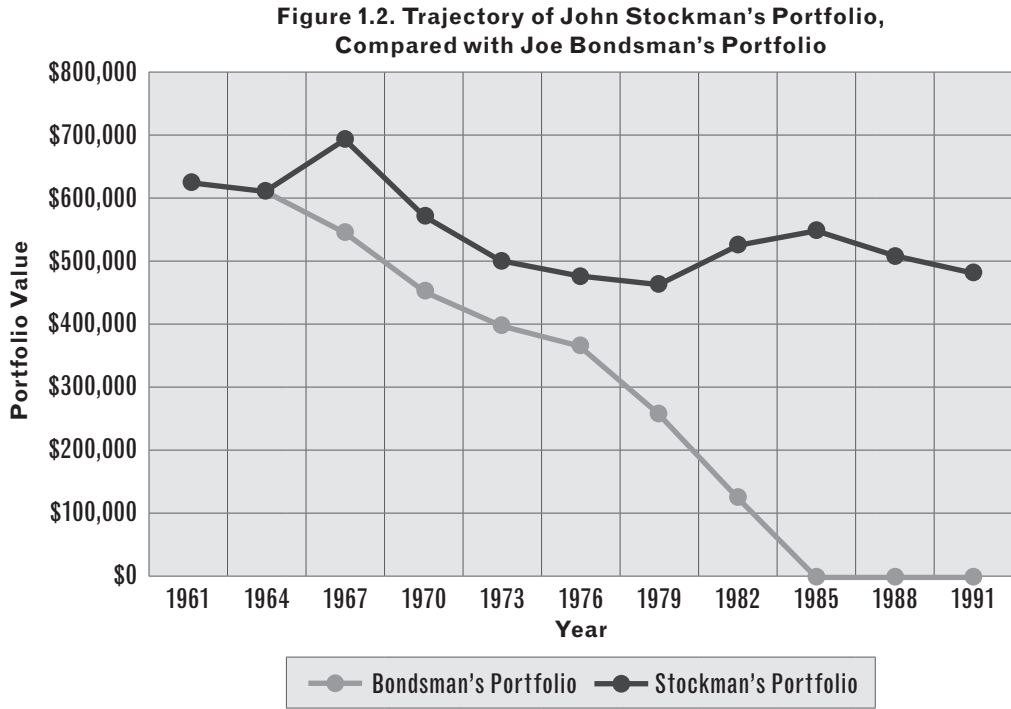
Source: Developed by the author using data from www.morningstar.com.

TWO PATHS TO DIVERSIFICATION

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Say to yourself every day, "I cannot predict the future, therefore I diversify."
—**William Bernstein,** *Rational Expectations*

Thanks to John Stockman and Joe Bondsman, we now have a clearer understanding of the problem we are seeking to solve in this book. That problem is the retirement risk—the risk of outliving your money. It is now clear that there are two components to this risk—too much (negative) volatility (Stockman's undoing) and not enough returns to outpace inflation (Bondsman's path to the poorhouse).

Diversifying Using the Principle of Compromise

We also have the beginnings of a solution to the retirement risk problem. Clearly John Stockman and Joe Bondsman brought on their own financial ruin by failing to diversify their portfolios. Had Stockman mixed some bonds in with his stocks, he could have survived the 1929 Crash. For example, Vanguard's venerable Wellington mutual fund, which invests in a mix of stocks and bonds, lost only 59 percent of its value during the 1929 Crash,[17] as compared to the Dow's 89 percent loss. Similarly, had Bondsman added a large helping of stocks (70 percent or more) to his bond investments he would have made it to his ninety-fifth birthday without going bankrupt. A possible solution to the retirement risk is simply to mix stocks with bonds.

But this solution does not quite fit the problem. Mixing stocks with bonds, or bonds with stocks, *reduces* one part of the retirement risk by *increasing* the other part. This is the fundamental dilemma that Stockman and Bondsman faced—and that you and I face.

If, like Bondsman, your personality drives you to keep volatility to a minimum, you must accept low returns—and the risk of bankruptcy stemming from those low

returns. Adding stocks to an all-bond portfolio will increase the portfolio's returns, but only at the cost of increased volatility. If, like Stockman, you want to maximize returns, you must accept high volatility—and the risk of bankruptcy that comes with volatility. You can add bonds to an all-stock portfolio to reduce its volatility, but that will compromise your goal of high returns.

A truly satisfactory solution to the problem of the retirement risk would address both of its component parts. It would enable you to reduce volatility while increasing, or at least not reducing, returns. What we really need is an investment that combines high returns with low volatility.

Unfortunately, there's no such investment. But there *is* a way to construct a *portfolio* of investments that minimizes volatility and maximizes returns. So far, we've talked about mixing stocks with bonds. This is one way to diversify your portfolio. It works—and works well—simply by blending a set of low-volatility, low-return investments with high-volatility, high-return investments. The resulting mix has characteristics somewhere between stocks and bonds. You wind up with a portfolio that is not as volatile as stocks but more volatile than bonds, and that generates returns larger than bonds but not as large as stocks. This way of diversifying works on the principle of *compromise*—you give up some returns to reduce volatility. In essence, you are balancing one component of the retirement risk against the other component.

The second way to diversify your portfolio actually gives you a way of reducing volatility without having to give up returns (in some cases, it may even boost your returns, as we shall see). It is a very powerful diversification strategy that works on the principle of *correlation* rather than *compromise*. The principle of correlation is a key foundation of modern portfolio theory (MPT), the Nobel Prize–winning strategy for optimizing the risk-return profile of investment portfolios. While the optimization mathematics composing MPT is complicated and not particularly useful from a practical standpoint, the principle of correlation on which MPT is based is simple and extremely useful. In this book, we borrow the simple principle without delving into the complicated theory.

Diversifying Using the Principle of Correlation

To understand how the principle of correlation works, we must first draw a sharp distinction between a *single investment* and a *portfolio* of investments. And before we can talk about how to build portfolios that maximize returns while minimizing risk, we first need to understand why single investments can never do this. Every single investment that offers the potential of high returns comes with high volatility. Every single investment that offers low volatility comes with low expected returns. It is an ironclad rule of investing—risk and reward go together. It *must* be this way. To understand why, consider what would happen if this rule were ever to be broken. Suppose, for example, that two different bonds, each priced at its face value of $1,000

some returns to reduce our portfolio's volatility, or we must take on more volatility to increase our returns. The dilemma this poses is clear—to reduce one risk to our portfolio, we must increase the other risk.

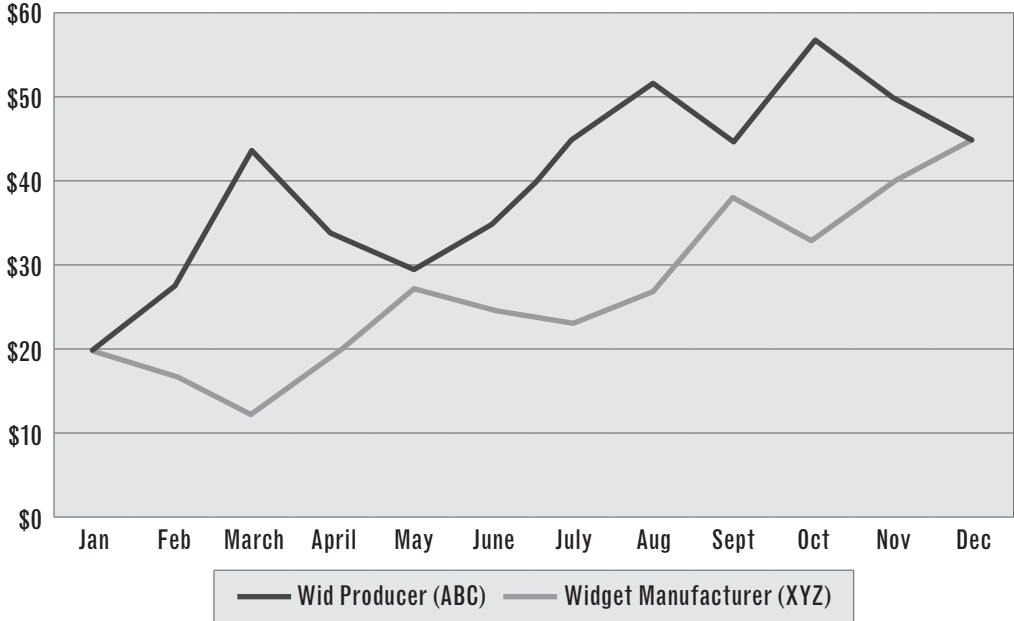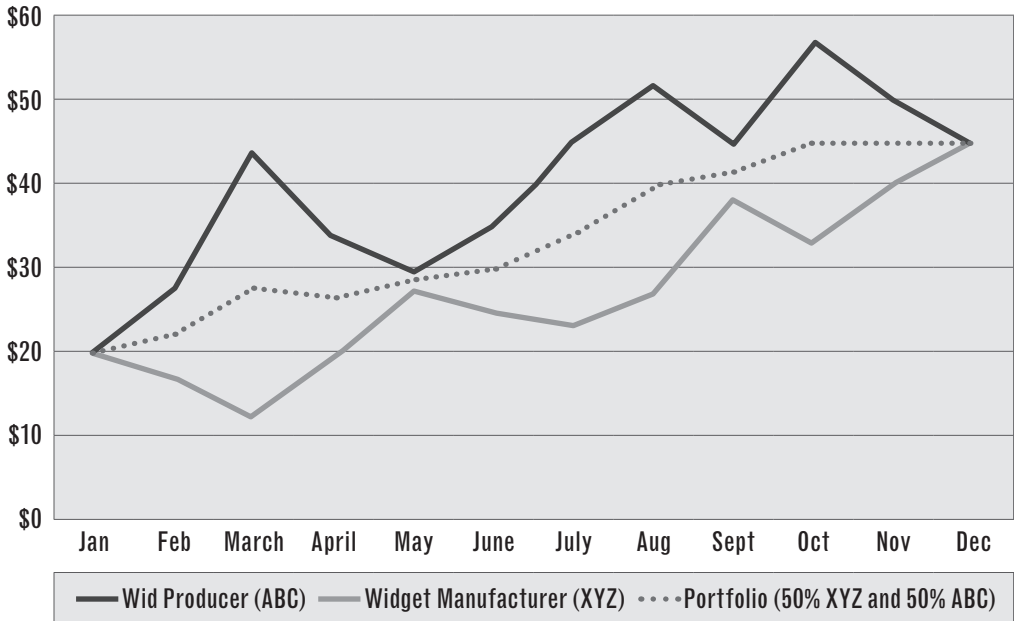**Figure 2.1. Price Trends of a Widget Manufacturer's Stock and a Wid Producer's Stock**

Figure 2.2. Combining a Widget Manufacturer's Stock with a Wid Producer's Stock in a Portfolio

But if we use the *principle of correlation* to diversify, combining zigging assets with zagging assets, we can actually reduce our portfolio's volatility without having to give up much, if any, of our returns. Instead of having to balance risks — reducing one risk to our nest egg by increasing the other risk — we can have our cake and eat it too. *This* is what makes diversification based on the correlation principle such a powerful investment strategy. It is the *only* way we can expect to get around the ironclad rule of investing and reap large returns without taking on large risks.

Applying the Principle of Correlation in Practice

We can now begin to consider how to use the principle of correlation to construct a truly well-diversified portfolio. To do so, we first need to make an assumption — that the core *asset class* composing our portfolio will be the stocks of large companies ("large cap" stocks). We are making this assumption because in most real-world portfolios, stocks — particularly large cap stocks — are the dominant asset class. This reflects the fact that large cap stocks account for 70 percent of the total value of the U.S. stock market. You cannot be truly diversified if such a large segment of the market is not represented in your portfolio. The best way to own large cap stocks is not individually but through a low-cost index mutual fund or exchange traded fund (ETF) that covers a broad swath of the market. There are many such investments, including, for example, funds that are designed to track the S&P 500.

So which characteristics should we look for in *other* asset classes — for example, bonds and other categories of stocks — that will help us to protect, or hedge, our portfolio from suffering massive losses when our core large cap stock fund drops in value? The ideal characteristics of a hedge to large caps are as follows:

- *Low correlation* with large caps

- *Expected returns* similar to those of large caps

- *High volatility* (yes, you read that right!)

Of the preceding three characteristics, *low correlation* is the most important. Two asset classes can be said to be *positively correlated*, *negatively correlated*, or *uncorrelated* with one another. Correlation is measured by statisticians on a scale of −1 to +1. If one asset always yields below average returns when another asset produces above average returns, and vice versa, then the two assets have perfect negative correlation (a *correlation coefficient* of −1). Two assets that always experience either above average returns or below average returns at the same time have perfect positive correlation (a correlation coefficient of +1). An asset that exhibits no tendency to either underperform or outperform its average when another asset outperforms (or underperforms) is *uncorrelated* to the other asset (correlation coefficient of 0). Correlation

Calm after the Storm. The figure shows how the S&P 500 fared during each of these three periods, compared with one of the three asset classes we mentioned earlier as making for a good hedge—PME. Specifically, the figure shows the average total returns (including dividends as well as capital gains or losses[19]) of PME mutual funds in each of the three periods. In both the Calm before the Storm (October 10, 2007, to July 14, 2008) and the Calm after the Storm (October 25, 2008, to March 9, 2009), PME funds were moving up while the S&P 500 was trending down. It was only during the height of the panic leading up to and including the failure of Lehman Brothers (July 15, 2008, to October 24, 2008), that PME funds reversed course and moved in the same direction as the broad market. Because PME funds participated in only the worst part of the financial crisis, and worked to hedge stocks during the Calms surrounding the Storm, over the entire length of the bear market, the losses these funds suffered (22.6 percent) were less than half the S&P 500's losses (55.3 percent). And though we picked PME funds to illustrate this point, the other two hedges we mentioned earlier (gold and emerging-market bonds) also moved opposite the stock market during at least some portions of the 2007–9 bear market.

The return to low correlations that often occurs during the calmer periods of short-term (or *cyclical*) bear markets has very important implications for long-term (or *secular*) bear markets (like the Lost Decade of 2000–2009). A secular bear market is defined as a prolonged period of abnormally low returns. Typically, a secular bear market lasts a decade or longer. Total cumulative returns may not be negative over such a long period, but they are anemic.

Figure 2.3. Average Returns of PME Funds versus the S&P 500 during the 2007–9 Bear Market
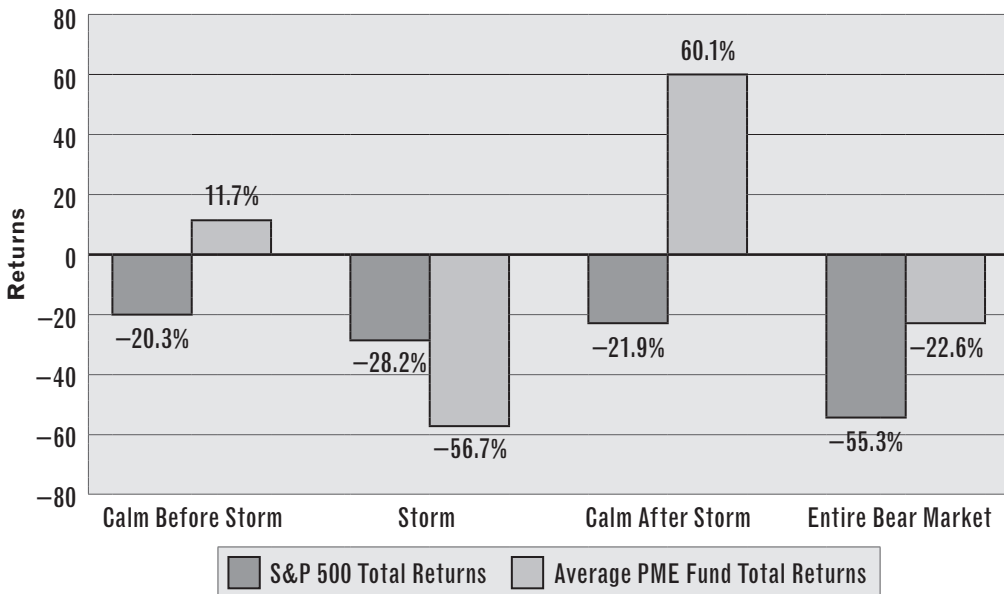
Source: Developed by the author using data from www.morningstar.com.

BUILDING YOUR PORTFOLIO: THE ASSET CLASSES

U.S. AND INTERNATIONAL LARGE CAP STOCKS: THE MEAT OF YOUR PORTFOLIO

Large cap stocks are the stocks of large companies. The term *cap* is shorthand for "market capitalization." Market capitalization is the total value of a company's stock shares. For example, a company with a stock that sells for $20 and that has 10 million shares available has a market capitalization of $200 million. The Morningstar website defines large cap stocks as the 70 percent of all publicly traded stocks with the largest market capitalizations. Hence, by definition, large cap stocks compose 70 percent of the total stock market.

U.S. Large Caps

Most of the companies you've probably heard of—GE, McDonald's, ExxonMobil, Wal-Mart—are large cap stocks. The Dow Jones Industrial Average is the most famous index tracking the ups and downs of large caps. But the Dow includes only thirty of the biggest of the large caps. A much better measure of the performance of large caps is provided by the S&P 500, comprising 500 stocks selected by Standard & Poors. We will be using the S&P 500, not the Dow Jones, in this book.

You cannot be effectively diversified if 70 percent of the stock market is not well represented in your portfolio. In fact, given that large caps compose the bulk of the entire value of the stock market, they are typically the core holdings of many, if not most, portfolios. This is not always the case. Individuals who are particularly risk averse, or who are wealthy enough to be able to get by on low returns, might construct their portfolios around a core consisting of bonds. But even if bonds are going to be your core holding, you should still include a good helping of large caps in your

portfolio. A small allocation to stocks will not have a major impact on your portfolio's volatility, and it could spell the difference between staying ahead of inflation or watching your nest egg get slowly eaten away by the night thief's machinations. Just ask Joe Bondsman.

So regardless of whether they will form the meaty core or a tasty side dish, large cap stocks belong in your portfolio. A good, low-cost way to own U.S. large caps is through a mutual fund that tracks the S&P 500 index. There are many such index funds available. But before you buy one, you should have a clear idea of what you are getting yourself into in terms of the risks (volatility) and the potential rewards (returns).

U.S. Large Cap Returns

I occasionally come across articles complaining that the market and the mutual fund industry are rigged against the small investor, who cannot hope to make money in stocks. Nonsense! Between 1966 and 2013, the annualized return of U.S. large cap blend mutual funds averaged 8.8 percent. A $10,000 investment in the average large cap fund on January 1, 1966, would have grown to $584,925 by December 31, 2013[20] — and this is after taking into account mutual fund fees and expenses. Not bad for a market and industry supposedly rigged against the small investor. Simply buying and holding an average large cap mutual fund would have produced these results—no attempt to diversify using the principles of correlation or compromise, no superior fund selection, no attempt to "time" the market, and no work trying to outthink the stock manipulators, inside traders, con artist stockbrokers, and fee-greedy mutual fund management companies (all of whom really do exist) required. Stocks—particularly the stocks of large U.S. companies—have proven themselves to be excellent money generators for investors large and small with the patience and self-discipline necessary to follow a buy-and-hold approach.

U.S. Large Cap Volatility

But as you know, with high returns comes high volatility. There have been sixteen bear markets since 1929. A bear market is defined as a decline of at least 20 percent, but that's just the minimum loss. The *average* bear market has seen a whopping decline of 40 percent and has lasted nineteen months. The stock market has been in bear territory for twenty-four of the last eighty-one years—30 percent of the time. Since 1970, we have seen four major bear markets, which, listed in order starting with the worst, were as follows:

1. October 9, 2007, to March 9, 2009 (housing bubble bursts, financial crisis): S&P 500 down 55.3 percent

2. March 24, 2000, to October 9, 2002 (Internet stock bubble bursts, 9/11): S&P 500 down 47.4 percent[21]

3. January 11, 1973, to October 3, 1974 (Arab oil embargo, high inflation): S&P 500 down 44.8 percent

4. August 25, 1987, to December 4, 1987 (October 87 market crash): S&P 500 down 32.9 percent

A young person can withstand losses of 30, 40, or even 50 percent of her portfolio because she has plenty of time to recover. (That said, she would probably prefer *not* to experience these kinds of losses, and for this reason, she should keep reading!) But for a retiree depending on his investment returns to help meet his living expenses, such huge losses can lead to financial ruin. It is events like those listed that necessitate the use of both low-volatility and high-volatility assets to hedge a core investment in large cap stocks. In the next two chapters, we will turn to these hedges. But first, let's consider adding some international large cap stocks to our core holding of U.S. large caps.

International Large Caps

Globalization means that national boundaries matter less and less to communications, trade, and the free flow of capital and people. Boundaries no longer pose a hindrance to investors either. It is just as easy to buy a mutual fund investing in international stocks as it is to purchase a domestic U.S. stock fund. And there are benefits to be gained by adding international stocks to your portfolio. The United States accounts for less than half of the total market capitalization of all publicly traded stocks across the world. In a global economy, you cannot be truly diversified if you limit your portfolio to stocks of a single country representing less than half of the universe of investable equities.

That said, we shouldn't overestimate the diversification benefits of international stocks. At one time, correlations between the U.S. and foreign stock markets were relatively low, but this is no longer the case. With globalization, correlations have increased dramatically. These high correlations are reflected in the performance of international stocks during the two big bear markets of the last decade. Table 3.1 shows average returns for mutual funds investing in the large cap stocks of Europe, Japan, and emerging markets. In both bear markets, these international funds followed the U.S. stock market down the tubes. In fact, in most cases, they did even worse than the S&P 500. Unlike the asset classes we will be discussing in the next two chapters, international stocks offered investors no shelter from the major market storms of the last decade.

Figure 5.1. Years 1973–82: Rising Interest Rates Cause Long-Term Bond Prices to Plunge More Sharply Than Short-Term Bond Prices

Interest Rates   Inflation   Long-Term Bond   Short-Term Bond
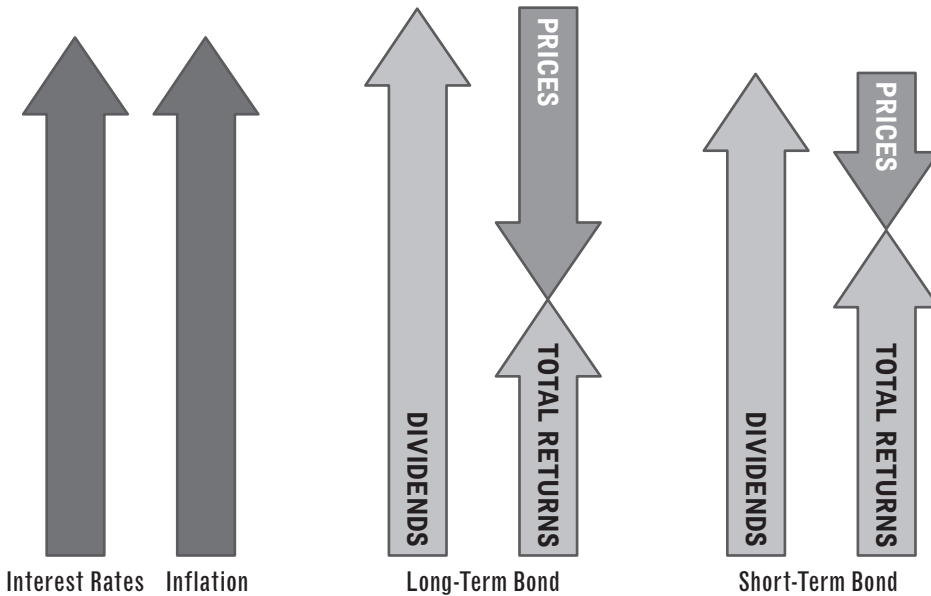
As the example of 1946–81 illustrates, long-term bonds are much more sensitive than shorter-duration bonds to the risk posed by high unexpected inflation. The inability of long-term Treasuries to keep pace with inflation over a *thirty-five-year* period indicates that, far from protecting a portfolio against the ravages of inflation, long-term bonds increase a portfolio's exposure to the risk of not earning enough returns to outpace inflation. And they do so during precisely those times when inflation exceeds expectations and poses an elevated risk to your nest egg. We will return to the question of what types of bonds you *should* include in your portfolio later, but for now we'll conclude that you should not rely on long-term bonds.

Duration and maturity are key determinants of a bond's risk–reward profile. Now we turn to another critical determinant: credit quality.

Credit Quality

A bond's credit quality is simply an assessment of the likelihood that the bond will default. The various bond rating agencies (including Standard & Poor's and Moody's) have come up with an alphabet soup of different grades to assess the risk of a bond's default, but we are going to keep this simple and consider only two classes of bonds: investment grade versus junk. An investment-grade bond is a bond with a low risk of default. A junk bond has an elevated default risk. Junk bonds are sometimes referred to as high-yield bonds, but the moniker "junk" may be more accurate, for reasons that will become apparent shortly.

Table 5.5 shows us how investment-grade and junk bond funds fared over past bear markets and market corrections. Let's take a look at the last column, showing junk bond returns.

Table 5.5. Average Returns of Investment-Grade and Junk Bond Mutual Funds during Past Bear Markets and Market Corrections

Time Period	S&P 500 Total Returns	Average Investment-Grade (Intermediate-Term) Bond Fund Returns	Average Junk Bond Fund Returns
Bear Markets:			
Oct 2007–Mar 2009	−55.3%	−5.4%	−29.8%
Mar 2000–Oct 2002[a]	−47.4%	+22.7%	−13.6%
Jan 1973–Oct 1974	−44.8%[b]	−14.3%	−28.1%
Aug 1987–Dec 1987	−32.9%[b]	+1.1%	−4.7%
Corrections:			
Nov 1980–Aug 1982[c]	−20.0%[b]	+19.7%	+19.9%
Jul 1990–Oct 1990	−19.2%	−0.4%	−10.4%
Jul 1998–Aug 1998	−19.2%	+1.2%	−7.2%
Apr 2011–Oct 2011	−18.6%	+2.3%	−8.3%

[a] Combines the 2000–2001 and 2002 bear markets.
[b] Estimated for partial months based on monthly return data.
[c] Officially a bear market.
Source: Developed by the author using data from www.morningstar.com.

Yikes! Junk bond funds managed to generate positive returns in only one of the last eight bear markets or market corrections. They did worse—and usually much worse—than investment-grade bonds in every stock market downturn except the 1980–82 correction. And even then, they only barely beat out investment-grade bonds.

What's going on here? Junk bonds are issued by companies that are in a weak financial condition. During normal times, these companies may do all right. But as soon as the economy tanks and the stock market plummets, these fragile companies are the first to fail. They default on their debt, and these defaults are reflected in the negative returns junk bond funds produce during market downturns.

When the stock market declines, junk bonds follow stocks downward. In other words, high-yield bonds are highly correlated with the stock market. Remember, the key characteristic of a good hedge is *low* correlation with the stock market. Junk bonds are *not* a good hedge, and they do *not* have a place in a well-diversified portfolio. As we discussed in the preceding chapter, the way to get high-yielding bonds into your portfolio is to buy an emerging-market bond fund. Avoid junk bonds. They are aptly named.

Exhibit 17.2. Example Checklist for the Six-Step Process

<div style="border">

6-STEP PROCESS CHECKLIST

Instructions: Place a check next to each step as you complete it. For Steps 1, 3, 4, and 5, document the specific actions you have taken to complete each step. For Steps 2 and 6, document the decisions that you made.

❏ **Step 1: Stop! (and calm yourself)**

    Describe the specific actions you took to calm yourself that helped you to continue holding: _____

❏ **Step 2: Check Your Portfolio's Health**

    Check the Step 2 decision you reached on the list below, and the reason(s) for that decision:

    ❏ Continue to hold, since my (our) portfolio did not experience any investment losses (bull market)
    ❏ Continue to hold, since I am (we are) not yet retired or near retirement (hence my/our withdrawal rate is zero and safe)
    ❏ Continue to hold, since my (our) current withdrawal rate of ____% is less than my (our) Maximum Actionable Withdrawal Rate (MAWR) of ____% specified in my (our) Investment Plan
    ❏ Continue to hold, because although my (our) current withdrawal rate of ____% has risen to the MAWR of ____%, I (we) have taken steps to reduce my (our) withdrawal rate by reducing expenses or increasing non-investment income
    ❏ Sell my (our) stock mutual funds and ETFs because my (our) current withdrawal rate of ____% has risen to the MAWR of ____%
    ❏ Other (explain): _____

❏ **Step 3: Motivate Yourself**

    Describe the actions you've taken to complete Step 3:

    ❏ Re-read my (our) Rational Decision-Making Pledge
    ❏ Thought through potential impacts to family members of failing to hold
    ❏ Other (describe): _____

</div>

**Table 18.4. Portfolio Survival Rates for Fifteen-Year Retirements
Following Historic Market Bottoms (1926–2012)** *(continued)*

Withdrawal Rate (%)	Stock/Bond Mix				
	100% Stock	80/20	60/40	40/60	20/80
16.2	13%	4%	0%	0%	0%
16.4	13%	4%	0%	0%	0%
16.6	9%	4%	0%	0%	0%
16.8	9%	4%	0%	0%	0%
17.0	9%	4%	0%	0%	0%
17.2	9%	4%	0%	0%	0%
17.4	9%	4%	0%	0%	0%
17.6	9%	4%	0%	0%	0%
17.8	9%	4%	0%	0%	0%
18.0 to 19.8	4%	0%	0%	0%	0%
Greater than 19.8	0%	0%	0%	0%	0%

Source: Developed by the author using historical stock and bond total returns data from *2013 Ibbotson*® *Stocks, Bonds, Bills, and Inflation*® *(SBBI*®*) Classic Yearbook*, Morningstar, Inc., 2013, pages 220–21 and 232–33, and historical CPI-U (inflation) data published by the Bureau of Labor Statistics, U.S. Department of Labor, www.bls.gov/cpi/#tables.

**Table 18.5. Portfolio Survival Rates for Ten-Year Retirements
Following Historic Market Bottoms (1926–2012)**

Withdrawal Rate (%)	Stock/Bond Mix				
	100% Stock	80/20	60/40	40/60	20/80
Less than 9.4	100%	100%	100%	100%	100%
9.4	100%	100%	100%	100%	96%
9.6	100%	100%	100%	100%	96%
9.8	100%	100%	100%	100%	96%
10.0	100%	100%	100%	96%	91%
10.2	100%	100%	100%	96%	83%
10.4	100%	100%	96%	91%	78%
10.6	96%	96%	91%	87%	65%
10.8	96%	96%	91%	83%	61%
11.0	96%	91%	83%	83%	61%
11.2	91%	87%	83%	74%	52%
11.4	83%	83%	83%	74%	52%
11.6	83%	83%	83%	74%	43%

NOTES

Introduction

1   Annualized returns are defined as the rate of return earned per year, averaged over a period longer or shorter than a year. Annualized returns take into account compound growth, and in this book, unless stated otherwise, all annualized return figures represent total returns, including re-investment of dividends.

2   According to investment growth data on Morningstar's website.

3   Bernard Condon, "Families Hoard Cash 5 Years after Crisis," October 7, 2013, http://money.msn.com/business-news/article.aspx?feed=AP&date=20131007&id=16970156.

4   Karen Aho, "Why Older People Work: For Money," April 2, 2013, http://money.msn.com/retirement/why-older-people-work-for-money.

5   A. Barry Rand, "Retirement at Risk," *AARP Bulletin* 54, no. 2 (March 2013): 30.

6   Blake Ellis, "More Americans Delaying Retirement until Their 80s," *CNN Money*, October 23, 2012, http://money.cnn.com/2012/10/23/retirement/delaying-retirement/index.html/.

7   Mebane T. Faber and Eric W. Richardson, *The Ivy League Portfolio* (Hoboken, NJ: John Wiley & Sons, Inc. 2009), 3.

8   Over the last five years, the returns earned by the Yale and Harvard endowments have trailed the S&P 500 by a significant margin. The endowments rely heavily on alternative investments such as hedge funds and private equity to implement MPT, and it appears that these alternatives have dragged down the endowments' overall returns. It is possible that the recent poor performance of hedge funds and other alternatives is a temporary phenomenon, but some have argued

that the rising popularity of hedge funds in particular has put a squeeze on the opportunities for outperformance available to hedge fund managers. In any event, in this book, we will be avoiding alternative investments (many of which can be accessed only by the wealthy) and will instead rely on standard investments (accessible to all investors) to implement the principle of correlation.

9   At www.morningstar.com. For those readers who may be interested, Appendix A explains how the Morningstar historical mutual fund returns data can be accessed.

Chapter 1

10   Noelle E. Fox, "Comparing a Bucket Strategy and a Systematic Withdrawal Strategy," *The American Association of Individual Investors Journal*, April 2012.

11   Maury Klein, *Rainbow's End: The Crash of 1929* (New York: Oxford University Press, 2001), 28.

12   John Kenneth Galbraith, *The Great Crash 1929* (New York: Mariner Books/ Houghton Mifflin Harcourt, 1954), 52.

13   Ibid., 99.

14   Ibid., 99–100.

15   Calculated by the author from the Social Security Administration's 2009 Actuarial Life Table, www.ssa.gov/oact/STATS/table4c6.html.

16   For the mathematically inclined, the chances that at least one spouse will make it to age eighty-seven is equal to 100 percent minus the chance that *both* spouses will die before age eighty-seven, or $[1 - (1 - 0.33) \times (1 - 0.46)] \times 100\% = 64\%$.

Chapter 2

17   According to historical return data from Morningstar's website.

18   Please don't get me wrong and conclude that ETFs are to be avoided. As we shall see in Part IV, ETFs are a great investment product. I use them extensively in my own portfolio. They just happen to have an unfortunate side effect.

19   Unless otherwise noted, all mutual fund and S&P 500 index return data presented in this book represent total returns, including reinvested dividends as well as capital gains.

Chapter 3

20   According to investment growth data on Morningstar's website.

21   The 2000–2002 downturn actually consisted of two bear markets separated by a short-lived (three-and-a-half-month) bull market rally, but for simplicity, we will treat it as a single bear market in this book.

22   As calculated by the author using data from Morningstar's website.

23   Joseph H. Davies, Roger Aliaga-Diaz, C. William Cole, and Julieann Shanahan, *Investing in Emerging Markets: Evaluating the Allure of Rapid Economic Growth*, (Valley Forge, PA, The Vanguard Group Inc., 2010).

24 Wade D. Pfau, "An International Perspective on Safe Withdrawal Rates from Retirement Savings: The Demise of the 4% Rule?," Discussion Paper 10-12, GRIPS Research Center, 3.

25 Just as a U.S. investor's returns on Japanese stocks are adjusted downward when the yen declines relative to the dollar, a foreign investor's returns on U.S. bonds are adjusted downward when the dollar declines.

26 As calculated by the author using data from Morningstar's website.

Chapter 4

27 Quoted in William L. Silber, *Volcker* (New York: Bloomsbury Press, 2012), 42.

28 Timothy Knight, "Peculiar Facts from 500 Years of Finance," *American Association of Individual Investors (AAII) Journal* 36, no. 5 (2014): 28.

29 World Gold Council, "Gold Demand Trends, First Quarter 2009," May 2009, www.gold.org/investment/research/regular_reports/gold_demand_trends/.

30 These funds may include investments in other precious metals mining companies, such as silver mining companies; however, gold companies comprise the vast majority of the investments in most precious metals funds.

31 During this forty-year period, six stock market downturns have officially qualified as S&P 500 bear markets—defined as a price loss of at least 20 percent. However, because two of these downturns (in 2000–2001 and 2002) were separated by a mere three-and-a-half months, for simplicity, we have grouped them together as a single bear market (running from March 24, 2000, to October 9, 2002). Also, we treat the 1980–82 bear market as a market correction. As the table shows, the S&P 500's total returns (dividends plus capital gains) were negative 19.7 percent during the 1980–82 downturn. These losses are much closer to the losses for the three worst market corrections post-1970 than to the losses incurred during the four bear markets (a market correction is defined as a loss of 10 to 20 percent). Therefore we refer to the 1980–82 downturn as a market correction throughout this book.

32 American investors would not have been able to benefit directly from gold's rise in 1973–74, as it was illegal for U.S. citizens to own gold prior to 1975. However, they could have benefited indirectly by investing in the stocks of gold mining companies.

33 It is possible that we have not yet emerged from this secular bear market (only time will tell), but for our purposes, we will treat it as the nine years stretching from the market top reached on March 24, 2000, to the most recent bottom of March 9, 2009.

34 It took the dividend-adjusted version of the Wilshire 5000 Index (the index that best represents the entire U.S. stock market) only four-and-a-half years to fully recover from the 2007–9 bear market. And while the Dow Jones Industrial Average didn't fully recover from the 1929 Crash until 1954, the Dow provides a very

Appendix C

153   Morningstar, *2013 Ibbotson® Stocks, Bonds, Bills, and Inflation® (SBBI®) Classic Yearbook*, Table B-1, 220–21.

154   The value of the large cap index at these new bottoms in all cases exceeds the value of the index in June 1932; hence June 1932 is not a false bottom.

155   Cooley et al., "Portfolio Success Rates," Table 2.

156   Morningstar, *2013 Ibbotson® Stocks, Bonds, Bills, and Inflation® (SBBI®) Classic Yearbook*, Tables B-1 and B-7, 220–21, 232–33.

157   Bureau of Labor Statistics, www.bls.gov/cpi/#tables.

158   To test whether this conclusion might be limited to the 1926–2002 time period, a second test, using data for January 2003 through December 2012, was performed. A total of seventy-nine months were characterized by positive large cap returns during this ten-year period; these seventy-nine returns averaged 3.0 percent. Three months met the definition of a market bottom during this time period: February 2009, June 2010, and September 2011. Large cap returns averaged 8.9 percent during the first month following these three bottoms. None of one thousand three-month samples selected randomly from the seventy-nine positive-return months produced average returns equal to or greater than 8.9 percent. The largest average return for the one thousand samples was 8.4 percent — a half percentage point less than the average returns during the first month of recovery rallies. It appears, based on this second out-of-sample test, that the unusually high returns associated with the early stage of recovery rallies is not an artifact of history; rather, similarly high rally returns are observed for more recent times as well.

159   Cooley et al., "Portfolio Success Rates," Table 2.

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*Page numbers in bold indicate figures or tables

ABOUT THE AUTHOR

Chris Minnucci is an early retiree and self-taught investor, living in southeastern Pennsylvania. Chris was formerly a mining engineer at a large consulting company. In addition to *The Death of Buy and Hold*, he writes a blog to help early retirees maximize their healthcare benefits and minimize their costs under the Affordable Care Act (Obamacare). His website is at www.ChrisMinnucci.com.