PRAISE FOR

THE FOUR PILLARS *of* INVESTING

When it comes to investing, risk control matters far more than chasing returns. In this book Dr. Bill Bernstein will show you that you have probably been worrying about the wrong risks when it comes to your investments. When you understand the theory, history, psychology, and business of investing, you will be far more likely to successfully reach your own financial goals, while taking as little real risk as necessary.

—James M. Dahle, MD
founder of The White Coat Investor

Bill Bernstein possesses a rare combination of gifts: mathematician, historian, statistician, psychologist, econometrician, and wordsmith. These and a profound sense of what financial truths are misunderstood, crucial, and captivating form the foundation for this welcome edition of *The Four Pillars of Investing*" a pillar of my investment strategies course.

—Edward Tower
economics professor, Duke University

Successful investing is a mind game. You win by understanding and controlling risk, not by plunging into the financial jungle in search of a unicorn. Your goal is a comfortable life, a well-funded retirement, and, perhaps, legacies for your children. This valuable book shows you how to keep your eye on the ball—earning capital returns the intelligent way.

—Jane Bryant Quinn
author of *How to Make Your Money Last: The Indispensable Retirement Guide*

In this fully revised investment classic, you can learn the lessons of a lifetime from one of America's most preeminent investment advisors. Writing in an engaging and humorous style, Bernstein teaches us that successful investing involves not only doing the right thing but also avoiding the all-too-common blunders that can ruin any investment plan. Incorporating lessons from investment theory and history and understanding our psychological biases, this wise and entertaining book provides a trusted source of investment advice.

—Burton G. Malkiel
economics professor, Princeton University,
and author of *A Random Walk Down Wall Street,*
50th Anniversary Edition, 2023

Bernstein has brilliantly distilled what is essentially four books into one here in an enlightening tour through investing theory, history, psychology, and business using practical examples, stories, metaphors, math, and a bit of humor. It's full of hard-won investing perspective and sage advice in an easily digestible format—the kind of book you could recommend to someone new to investing and know you did them right.

—Eric Balchunas
analyst, Bloomberg, and author of *The Bogle Effect*

Four Pillars has something for everybody. It's the first investment book you should read, and also the fiftieth. Few investment books appeal to both novices and experts, and even fewer are a joy to read while doing so. It's approachable for novices, a revelation to apprentices, and instructive even for experts.

—John Rekenthaler
director of research, Morningstar

THE FOUR PILLARS *of* INVESTING

THE FOUR PILLARS *of* INVESTING

SECOND EDITION

Lessons for Building a Winning Portfolio

WILLIAM J. BERNSTEIN

McGraw Hill

New York Chicago San Francisco Athens London Madrid
Mexico City Milan New Delhi Singapore Sydney Toronto

Copyright © 2023, 2003 by McGraw Hill. All rights reserved. Printed in the United States of America. Except as permitted under the United States Copyright Act of 1976, no part of this publication may be reproduced or distributed in any form or by any means, or stored in a database or retrieval system, without the prior written permission of the publisher.

1 2 3 4 5 6 7 8 9 LCR 28 27 26 25 24 23

ISBN 978-1-264-71591-6
MHID 1-264-71591-9

e-ISBN 978-1-264-71642-5
e-MHID 1-264-71642-7

This publication is designed to provide accurate and authoritative information in regard to the subject matter covered. It is sold with the understanding that neither the author nor the publisher is engaged in rendering legal, accounting, securities trading, or other professional services. If legal advice or other expert assistance is required, the services of a competent professional person should be sought.

—From a Declaration of Principles Jointly Adopted by a Committee of the American Bar Association and a Committee of Publishers and Associations

Library of Congress Cataloging-in-Publication Data

TK

McGraw Hill books are available at special quantity discounts to use as premiums and sales promotions or for use in corporate training programs. To contact a representative, please visit the Contact Us pages at www.mhprofessional.com.

McGraw Hill is committed to making our products accessible to all learners. To learn more about the available support and accommodations we offer, please contact us at accessibility@mheducation.com. We also participate in the Access Text Network (www.accesstext.org), and ATN members may submit requests through ATN.

CONTENTS

Foreword by Jonathan Clements ix

Acknowledgments xiii

INTRODUCTION
The Highway of Riches 1

PILLAR ONE
The Theory of Investing

CHAPTER 1
No Balls, No Blue Chips 13

CHAPTER 2
Odds and Ends 39

CHAPTER 3
The Recent History of Randomovia 55

CHAPTER 4
The Perfect Portfolio 79

CHAPTER 5
Asset Allocation for Investing Adults, Part 1 95

CHAPTER 6
Asset Allocation for Investing Adults, Part 2 101

CHAPTER 7
Asset Allocation for Investing Adults, Part 3 119

PILLAR TWO

The History of Investing

CHAPTER 8
A Brief History of Financial Time 133

CHAPTER 9
Tops 143

CHAPTER 10
Bottoms 161

PILLAR THREE

The Psychology of Investing

CHAPTER 11
Misbehavior 181

CHAPTER 12
Dealing with the Shakespeare 203

PILLAR FOUR

The Business of Investing

CHAPTER 13
Your Broker (Sorry, "Investment Advisor")
Is Not Your Buddy 215

CHAPTER 14
The Improving Mutual Fund Scene 225

CHAPTER 15
Investment Pornography and You 239

INVESTMENT STRATEGY
Assembling the Four Pillars

CHAPTER 16
How Much Do You Need to Retire? 251

CHAPTER 17
Building It, Maintaining It, and Spending It 257

CHAPTER 18
Nuts and Bolts 273

CHAPTER 19
A Final Word 303

Notes 307

Index 323

FOREWORD

By Jonathan Clements

Risk Is a Many-Splendored Thing wasn't a 1955 hit song by the Four Aces or an award-winning movie starring William Holden and Jennifer Jones. Which is a shame.

Bill's book, on the other hand, is indeed about risk in all its many facets. "What," you cry, "are you telling me the pages ahead won't show me how to pick investments that'll make me Rockefeller rich?"

Rockefeller rich might be overpromising, but rich is certainly a possibility. Here's the thing that every investor needs to grasp: the road to investment wealth isn't a direct one. We won't get there by scanning the shelves of Wall Street merchandise and asking the obvious question, "Which of these turkeys is going to fly?"

This, of course, is the question we all ask when we first start investing. We scour lists of hot mutual funds and sizzling stocks. We study market trends and try to divine which will be our friend. We use every trick in the book to find investments that'll make us obscenely wealthy. Along the way, mostly what we find is that we're embarrassingly clueless.

Many folks, alas, never learn the error of their ways, instead spending their financial life bouncing from one failed investment scheme to the next. But thoughtful investors eventually realize that they need to give up chasing performance and start managing risk—and that, ironically, is when their investment results get a whole lot better.

But which risks should we manage? This, I believe, is the true genius of Bill's book, which was first published two decades ago and is now widely considered to be an investment classic. In words any educated adult can understand, Bill describes the potholes that can derail our financial journey.

Those potholes include—and this is only a partial list—such things as deflation, buying investments with borrowed money, miserably low long-run stock and bond returns, confiscation of assets, chasing past performance,

overestimating our risk tolerance, vicious stock market declines, stockbrokers, skewness, our own gross overconfidence, rotten investment results early in retirement, soaring inflation, and watching cable financial news.

Sound like a treacherous world? It is—and it isn't. There are countless ways to lose great gobs of money in the financial markets. But, as Bill explains in the pages ahead, these losses can typically be sidestepped or made bearable with the right mix of discipline and knowledge. That discipline and knowledge can be obtained by studying Bill's four pillars of money-management wisdom: investment theory, financial history, investment psychology, and the business of investing.

Looking to launch a prudent investment life or double-check you're still on the right track? You'd be hard-pressed to find a financial guide that's wiser and more entertaining than Bill's *The Four Pillars of Investing*. But before I step out of the way so you can delight in the pages that follow, let me highlight a few ideas that both Bill and I embrace. As you think about the risks you're taking with your portfolio—and, indeed, with your broader financial life—I'd encourage you to pay particular attention to two key notions.

First, more things can happen than will happen. We all know the future is uncertain. But to preserve our sanity and avoid sleepless nights, we tend to downplay how much uncertainty exists. We assume that next year will look a lot like this year, that we'll go to bed in the same house, that our spouse will still be there next to us, snoring merrily, and that we'll get up in the morning and head to the same job. Similarly, we assume that today's dominant trends in the economy and the financial markets will continue to prevail.

A brief tour through economic and market history, coupled with a quick review of past turmoil in our own lives, suggests that such assumptions are questionable at best. I'm not advocating that we spend our days on pins and needles, braced for the next round of chaos. But at the same time, we shouldn't be too bold in our financial decisions, because such overconfidence can come back to haunt us. Yes, by all means, maintain an unwavering commitment to core financial principles—saving diligently, managing risk, holding down investment costs, limiting taxes, and so on. But when it comes to our assumptions about the financial future, we should think like a serial philanderer and never grow too attached to any of them.

Second, we get just one shot at making the financial journey from here to retirement—and we can't afford to fail. The implication: we need to think hard about potential financial consequences. All this can be captured by one simple question: What if I'm wrong?

For instance, what if I stick solely with US stocks, and they endure a three-plus-decade bear market, just like Japan? What if I put off saving for retirement

until my final 20 years in the workforce, and those years are marked by layoffs and long periods of unemployment? What if my retirement doesn't last the 30 years that I'm expecting, but rather 40 or 50 years?

Managing risk can be tricky, not least because we're human. We struggle to imagine all the bad things that can happen, and we imagine that we know things about the future that simply can't be known. With every fiber of our being, we resist accepting uncertainty and our own lack of prescience.

But if we do indeed accept those two realities, the benefits for our investment performance—and our own sense of well-being—can be remarkable. Instead of thrashing around, with our investments and our mental state constantly whipsawed by the financial markets, we can design a portfolio that should fare reasonably well, no matter what the future throws at us. We can save and invest in such a way that we know we'll survive financially—and hopefully thrive—in almost any economic environment. Trust me: the sense of financial security and serenity that comes with that knowledge will leave you happier than almost anything else that money can buy.

ACKNOWLEDGMENTS

This book covers too many areas—financial theory, financial history, psychology, and the nuts and bolts of the investment business—for anyone's expertise to fully cover the ground.

I'd like to thank the following individuals for their expert help: Amy Arnott for fund flow and returns data, Christine Benz on target-date funds, Jane Bryant Quinn on financial journalism, Ilia Dichev on the "other side" of the dollar/time-weighted gap, Martin Fridson on high-yield bond defaults, Paul Hyams and Jane Lockshin for background on the remarkable story of Sylvia Bloom, Antti Ilmanen on (low) expected returns, Mike Nolan on aggregate fund data, Wade Pfau on annuities and the life cycle, Craig Rowland on foreign asset custody, Denise Schmandt-Besserat for image help, Dan Solin on brokerage practices, Richard Sylla on the concept of "unimpaired capital," and Greg Zuckerman on D. E. Shaw and James Simons.

Mike Piper provided invaluable assistance on deferred annuities, Rick Ferri helped me sort out multiple issues regarding ETFs, and Allan Roth responded to my nearly incessant pestering about both these areas. Special thanks goes to Jason Zweig, who has over the years taught me much about market history and neuropsychology.

Jim Dahle, John Rekenthaler, Jonathan Clements, and my estimable business partner, Susan Sharin, provided me with the benefit of their aggregate century's experience in the investment world and reviewed both the content and style of this manuscript. I'll happily take full credit for any remaining errors.

Thanks go to Steve Straus, Maki Wiering, Ingrid Case, and Pattie Amoroso for deftly guiding the book's production through to completion, and particularly to Judith Newlin, who was not only involved in the project from the first drafts to the final galleys, but who also graciously responded to a near continuous stream of questions and issues from me.

Finally, as always, the alchemical literary skills of my dear wife, Jane, turned the unformed blob of my rough prose, sentence by sentence, into copy that I could unashamedly show to others. I would be lost without her.

INTRODUCTION

THE HIGHWAY OF RICHES

The year 1998 saw one of the most spectacular falls from grace in the long and sordid history of high finance: the failure of Long-Term Capital Management (LTCM).

The hedge fund, founded four years prior by legendary Salomon Brothers executive John Meriwether, featured Wall Street's best and brightest. Heading the list were two Nobel Prize winners: Myron Scholes and Robert C. Merton, the inventors of a groundbreaking theory of option pricing.

In the late 1990s, the firm enacted a financial tragedy worthy of Icarus. LTCM's blindingly complex derivatives-based trading strategy was leveraged 25 to 1 with borrowed funds; it quadrupled investors' money over a four-year period before it imploded.[1]

Over a much longer time span, an unassuming legal secretary named Sylvia Bloom succeeded where LTCM had failed. She began her working life at a New York law firm in 1947 and stayed there until 2014—an astounding 67 years. She died a few years later, just shy of her ninety-ninth birthday.

The executor of Bloom's estate, her niece Jane Lockshin, could not believe her eyes: its assets were worth more than $9 million, consisting mainly of common stocks. Two-thirds went to the Henry Street Settlement, the largest bequest the storied Lower East Side social service charity had ever received. No one, not even her late husband, a retired firefighter, was aware of her wealth.

Ms. Lockshin regularly took her aunt out to lunch and, as one does for an elderly relative, always paid the bill.

How had a secretary succeeded where the luminaries at LTCM had failed? Bloom did so for three reasons. First, she did not invest with borrowed money—that is, she did not employ leverage, let alone at LTCM's stratospheric 25:1 ratio. At that level, a mere 4% fall in asset prices would bankrupt the fund. The firm's mathematical models, based on historical data, told LTCM that the value of their holdings would never fall this much. The models could not have been more wrong. The most brilliant minds in finance forgot the bald fact that with alarming frequency the markets go barking mad and obliterate previously well-established relationships among asset prices.

Second, Bloom had time on her side—decade upon decade of it. An apocryphal quote often attributed to Albert Einstein has it that "Compound interest is the eighth wonder of the world. He who understands it, earns it. He who doesn't, pays it." Sylvia Bloom had it, in spades.

Unlike the geniuses at LTCM, she wasn't trying to get rich quick, but rather to get rich slow—a much safer bet. Bloom could turn a secretary's stream of savings into millions because her strategy allowed the magic of compound interest to motor away for 67 long years; LTCM's lasted barely 4 years. If compounding is indeed the eighth wonder of the world, then the worst thing one can do is to cut it short with dumb stuff: leverage, chasing star money managers, overestimating risk tolerance, and watching financial cable shows, to name just a few things.

Ms. Bloom's third advantage was her frugality. She certainly didn't deprive herself; she dressed well, occasionally sported a fur coat, and traveled frequently with her husband. But when the Twin Towers came down on 9/11, the 84-year-old secretary walked across the Brooklyn Bridge and took the bus home. Just before she retired, a coworker and close friend, Paul Hyams, spied her climbing out of the subway during a blinding snowstorm and asked her what she was doing there, to which she replied, "Why, where should I be?"[2] Had she lived more lavishly, she wouldn't have left such a large estate. One saves in order to spend later—in Bloom's case, on charity, not on herself.

Investing, distilled to its essence, is the conveyance of assets from your present self to your future self. Alas, the financial highway between those two different people is strewn with black ice and massive potholes. At the risk of further torturing the highway metaphor, the average portfolio's lifetime route also winds through two or three of the financial world's versions of treacherous mountain passes with no guardrails—the brutal bear markets that accompany financial panics.

Manifestly, the more slowly you drive, the more likely your assets are to arrive safely at your destination. This is what Bloom did with her money;

LTCM's principals, to their and their investors' detriment, put the pedal to the metal. Warren Buffett, as he so often does, put it most succinctly: "To make money they didn't have and didn't need, they risked what they did have and did need."[3]

Simply put, Bloom succeeded because her strategy survived, and LTCM's didn't because their strategy "risked out." Finance professionals and academics often deem a portfolio that's light on stocks suboptimal, but a "suboptimal" strategy that survives fear and panic, or better yet, doesn't produce it, is preferable to an optimal one that takes on unnecessary risk.

Speaking about geopolitics, author and historian Robert Kaplan observed that "half of everything is geography; the other half is Shakespeare." In the same way, one can say that investing is half math and half Shakespeare. There's the essential but dry, Mr. Spock/mathematical part of finance, but also its human half: the abject fear that suffuses bear markets, our empathy and tendency to imitate and channel the fear and greed of others, and to privilege narratives over data and facts. Often, investing's math and Shakespeare are diametrically opposed, and if you don't master the Shakespeare, all the math in the world isn't going to help you. In other words, the Shakespeare is not the art and poetry of investing, but rather its Hamlet, Lear, and Macbeth—the all too human irrationality as expressed in human endeavor and by the cruel mistress of history.[4]

How, then, does the individual investor master both the math and Shakespeare of the craft and avoid the dumb stuff that will send their magically compounding investment vehicle skidding off the highway of riches? By mastering the Four Pillars of Investing.

PILLAR ONE: INVESTMENT THEORY

If you learn nothing else from this book, it should be this: risk and return go hand in hand. Do not expect high returns without experiencing occasional bone-crushing losses. As too many learned to their chagrin during the internet bubble of the late 1990s, a stock that increases by 900% one year can just as easily fall 90% the next. There is no way of avoiding the risks that come with common stocks, and as we'll soon see, there is no market timing fairy who can reliably tell you when to get out of the stock market. At any given moment, market Cassandras abound, and in every crash, purely by chance, one or two will time that call perfectly. But almost like clockwork, the subsequent predictions of these geniuses fare worse than a coin flip. And even if you manage to sell at just the right time, you still have to guess right a second time about

when to get back in. Consider: from the market peak in late 2007 until its low in early March 2009, an investment in the S&P 500 fell by 55.2% (including dividends). By the end of 2022, it had gained 644% from that low point.[5]

Such losses are the ticket price for the theater of stock market returns. John Maynard Keynes put it best when he opined:

> I do not think it is the business, far less the duty, of an institutional or any other serious investor to be constantly considering whether he should cut and run on a falling market, or to feel himself open to blame if shares depreciate on his hands. I would go much further than that. *I should say that it is from time to time the duty of the serious investor to accept the depreciation of his holdings with equanimity and without reproaching himself.*[6] (italics added)

The key word in the preceding quote is "equanimity": the ability to bear losses calmly and as an ordinary matter of course. One of this book's most important investment secrets is that the most potent elixir of financial equanimity is a large pile of safe assets—in the case of the US investor, dull, low-yielding Treasury securities, which allow you to hold on when things look the darkest. They are, in this sense, in fact the highest-returning asset in your portfolio, a secret ignored by LTCM's principals.

Over the past two decades my thoughts about life-cycle investing, particularly pertaining to the potentially devastating combined effects of low future stock and bond returns and sequence-of-returns risk—the possibility of an adverse initial returns draw early in retirement—have evolved. I've come to realize that the major determinants of stock risk are in fact the age of the investor and her "burn rate": how much of her portfolio gets spent each year. Consequently, I've shifted the discussion of how to vary asset allocation throughout the life cycle toward the end of the "theory" section in Chapter 6.

PILLAR TWO: INVESTMENT HISTORY

Viewed over the decades and centuries, the capital markets seem as neat and tidy as an English aristocrat's rose garden: stocks return more than bonds, which in turn return more than cash, all in an approximately predictable manner. But over periods as long as several years, the financial markets can go off the rails, as they did during the late 1990s, when companies needed only eyeballs and clicks—forget earnings and dividends—to command ionospheric prices, or the

early 1930s, when the shares of some companies sold, incredibly, for less than the value of their cash on hand.

If you've seen the movie before, you'll know how it ends. Were you transported back in time to a dinner party in 1999, topic A would have been the stupendous amounts of money being made by tech investors, and the easiest way to pick out who did and who didn't get snookered would have been to administer a brief quiz on the 1929 crash: How was Goldman Sachs involved? Just who was Samuel Insull?

Finance is not a hard science like physics or engineering; rather, it's a social science. The difference is this: a bridge, electrical circuit, or aircraft will always respond in exactly the same way to a given set of circumstances, while the financial markets do not, a hard fact that brought LTCM's principals and clients to grief. The physician, physicist, or chemist who is unaware of their discipline's history does not suffer greatly from the lack thereof; the investor who is unaware of financial history is irretrievably handicapped.

The successful investor needs familiarity with two historical concepts:

1. The long-term returns and short-term volatilities of various asset classes
2. How Mr. Market, as the legendary Benjamin Graham referred to the pullulating mass of investors, suffers from severe bipolar disorder, periodically swinging between extremes of euphoria and depression

PILLAR THREE: INVESTMENT PSYCHOLOGY

Our late-Pleistocene ancestors lived in a world where hair-trigger reactions to a dangerous environment meant life or death. Over at least the previous hundreds of thousands of years, our species evolved lightning-fast behaviors exquisitely adapted to that environment.

Just 300 generations after the end of the last ice age, we live in a financial world whose risk horizon is measured in decades, not seconds. Consequently, the investor's greatest enemy is the Stone Age face staring back in the mirror.

Consider the skunk. Over millions of years, it evolved an effective strategy for dealing with large predators with sharp teeth: turn 180 degrees and spray. This response, alas, does not work as well for its modern descendants in a semi-urban environment, where the biggest threat is a multiton hunk of metal moving at 60 miles per hour.

Humans, then, are the investing equivalents of the modern skunk. Behavioral finance has received a lot of attention—perhaps a little too much—of late, but it still can teach us. The successful investor learns how to avoid the most common behavioral mistakes and to confront their own dysfunctional investment behavior. We'll find that unsuccessful investors:

- Are grossly overconfident, not only about their ability to pick stocks and successful asset managers, but even worse, about their risk tolerance.
- Overpay for certain classes of stocks.
- Trade too much, at great cost.
- Seek out financial choices that carry low probabilities of high payoffs, but have low long-term returns, such as IPOs and lottery tickets. One of the quickest ways to the poorhouse is to make finding the next Amazon.com your primary investing goal.

Learning how to deal with these foibles, among many others, pays a generous stream of dividends.

PILLAR FOUR: THE BUSINESS OF INVESTMENT

The prudent traveler stays away from war zones. It's the same in finance. In fact, you won't go far wrong by treating the entire financial services industry as a battlefield—certainly any stockbroker or full-service brokerage firm, any newsletter, any advisor who purchases individual securities, and any hedge fund. It's not too much of an exaggeration to say that the average stockbroker services his clients in the same way that Baby Face Nelson serviced banks.

Many financial advisors and brokers, for example, are shockingly ignorant of the fundamentals of investment theory. The reason for this sorry state of affairs is simple: neither the industry nor the government imposes any educational requirements on brokers or financial advisors, or even on the managers of hedge, pension, or mutual funds, and the industry observes a moral code that would give the tobacco industry a run for its money.

In short, you are locked in a constant zero-sum battle with this behemoth. The good news is that with each passing year it becomes easier to tame the beast. When I published this book's first edition two decades ago, there was only one safe place to shelter from it, and that was the Vanguard Group's

family of low-cost mutual funds. In the interim, several other major investment firms, having had their collective lunches eaten by Vanguard, decided that if they couldn't beat it, they would join it. They began to offer a wide range of inexpensive mutual funds and ETFs, even Vanguard's, on their own platforms. Meanwhile, Vanguard has become the victim of its own success and has poorly handled the flood of new customers well. It remains a viable choice, but certainly now not the only one.

USING THE FOUR PILLARS

The book's last section will translate the four pillars into the mechanics of designing and maintaining an efficient investment portfolio:

- Choosing which mutual funds and securities to employ
- Getting off dead center and building your portfolio
- Maintaining and adjusting your portfolio over the long haul

* * *

I've been writing about finance for the past quarter century, and I've learned a few things along the way. I initially approached the subject as a mathematical exercise: collect return series on various broad classes of stocks and bonds, select the mix that optimizes the trade-off between risk and return, then figure out how to deploy that mix through the selection of commercially available vehicles.

My first effort, *The Intelligent Asset Allocator*, initially published electronically in 1995, then later in hard copy by McGraw Hill, was mathematically dense—enough so that it appealed mainly to scientists and engineers, but not to many other readers. In the words of one of my friends, it was a "successful failure." A few years later, I attempted to broaden my audience with the first edition of *The Four Pillars of Investing*, but only partially succeeded. My medical colleagues—certainly a well-educated and quantitatively competent bunch—still got cross-eyed from all the math.

Since I wrote this book's last edition in 2002, a few things have changed. The most spectacular was the biggest financial crisis since the Great Depression, which roiled the world's financial markets in 2007–2009, then echoed through Europe a few years later, followed by a global pandemic. Ironically, the remarkable decline in interest rates and resultant ballooning of stock markets that followed presented investors at the end of 2021 with one of the most daunting

challenges in the history of finance: bloated asset prices with low expected returns, a phenomenon that was only partially attenuated by 2022's carnage in both stocks and bonds.

Over a quarter century of writing about finance and history, I've learned that readers greatly prefer compelling narratives to data and math. With luck, this book's critically important data can be cut up into easily digested morsels embedded within the book's stories. The math cannot be so effortlessly processed, but fortunately the book can be understood without it. In order to avoid disappointing the minority of readers who actually *enjoy* all the numbers, I've segregated them into "math boxes" that the general reader can ignore.

Finally, my journey through finance in the two decades since this book's first edition has taught me more than a few things:

- If you can't save, it doesn't matter how well you invest, and an understanding of money's true utility determines how well you're able to accumulate it. If you think that money's purpose is to buy stuff, you are doomed to fail, since you'll quickly find yourself trapped on the "hedonic treadmill," the insidious evolving hunger for a yet more expensive car, a yet fancier house, or a yet more swish vacation. The best money in the world, if you'll allow me the book's only F-bomb, is "fuck-you money": that used to buy time and autonomy.
- What one might call "The Treasury Bill Theory of Investing Equanimity": Your ability to stay the course is directly proportional to the amount of short-term safe assets in your portfolio, denominated in years of living expenses. By far the biggest determinant of your investment success is how well you respond to the worst few percent of times, when the world around you and many of the things you had previously taken for granted melt before your eyes. You will experience such moments at least a few times in your investment career, and nothing will see you through them as well as your T-bills and CDs, no matter how low their yield.
- When you've won the retirement game, stop playing with the money you need to pay the rent and groceries. I suggest at least 10 years' worth of basic expenses; 20 years or 25 years is even better. Take whatever risk you like with what assets you have beyond this, whether they're to buy the odd business-class ticket and the beamer you've always wanted, or to bequeath to your heirs, to your charities, and to Uncle Sam, to whom you owe a debt of gratitude for the institutions that made the nation and you along with it wealthy.

- Volatility, most commonly measured as standard deviation (SD), is a pretty good measure of an asset's risk, but it lacks a significant dimemsion: *when* its losses occur. A classic example is corporate bonds, particularly lower-rated, high-yield ("junk") bonds. A given Treasury security and a given corporate security may have the same SD, but the corporate is a whole lot riskier, since in a financial crisis, you'll be aching for liquidity to purchase stocks at the fire sale or merely to put food on the table. At such times, corporates will get clobbered, while Treasuries will likely rise in price.
- The essence of investing is not maximizing returns, but rather maximizing the odds of success, defined as funding retirement, educational expenses, a house down payment, or endowing charities and heirs. Maximizing returns and maximizing the odds of success are two entirely different animals. In other words, more Sylvia Bloom, less Merton and Scholes.

The first stop along that road to maximizing your odds of success is to plumb financial theory for clues on how to do so.