Someone Will Make Money on Your Funds—Why Not You?

A Better Way to Pick Mutual and Exchange-Traded Funds

GARY L. GASTINEAU

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Of course, I accept full responsibility for the book's shortcomings.

One of the most frustrating tasks facing any writer over the past 30 years has been finding a way to deal sensitively with the sex distinctions embedded in English pronouns without calling unwanted attention to the issue with "he/she" or the artificial "one." In this book, I have tried a different approach. I use what I intend as a genderless "he" in most places, but I have given all the portfolio management jobs to "she's." Ideally, the reader will not notice this. If he/she does, this is my explanation.

INTRODUCTION

To make the objective of this book as clear as possible, consider two very different investors, both in their late twenties. The first investor, Joe, subscribes to several financial publications. He spends an hour or two a month working on and thinking about his financial plan and his portfolio. He examines his account statements carefully. He reads the periodic reports from each fund he owns. Joe has also read this book.

After he finished reading, Joe sold several high-cost **equity funds** he had been carrying in his **401(k) plan** account and replaced them with a large position in a low-cost fixed-income fund and a smaller position in a U.S. total market index fund. He used most of the money market balance in his personal brokerage account to buy some tax-efficient equity **exchange-traded funds (ETFs)**. Joe used the free retirement planning software that comes with his 401(k) plan to get a clearer picture of what his financial situation might look like after retirement. He has made an appointment with a financial planner to ask some specific questions. Joe is more comfortable with his financial position and his understanding of his investment risks and opportunities than he has ever been before. He is also convinced that he has improved the annual return on his portfolio by at least 2 percent.

The second investor, Pete, has a few stocks in his personal brokerage account. He bought them on enthusiastic recommendations from friends, but they have performed badly. Most of the assets in his brokerage account are in a low-yielding **money market fund**. When he joined his employer's 401(k) plan, he signed up to put 50 percent of his payroll deductions into an intermediate-term bond fund and 50 percent into a large-cap equity fund. Pete puts his unopened 401(k) statements in a drawer, hoping the fund will grow to take care of him in retirement. He has not taken an inventory of his financial assets and liabilities since he filled out a mortgage application five years ago. He does not know the **expense ratios** or the performance of the funds he owns in his 401(k) account. Pete has not read this book.

Joe and Pete, if they are like most investors, do not realize how great the difference in their respective retirement outlooks has become. Joe is correct in concluding that the changes he has made in his portfolio will

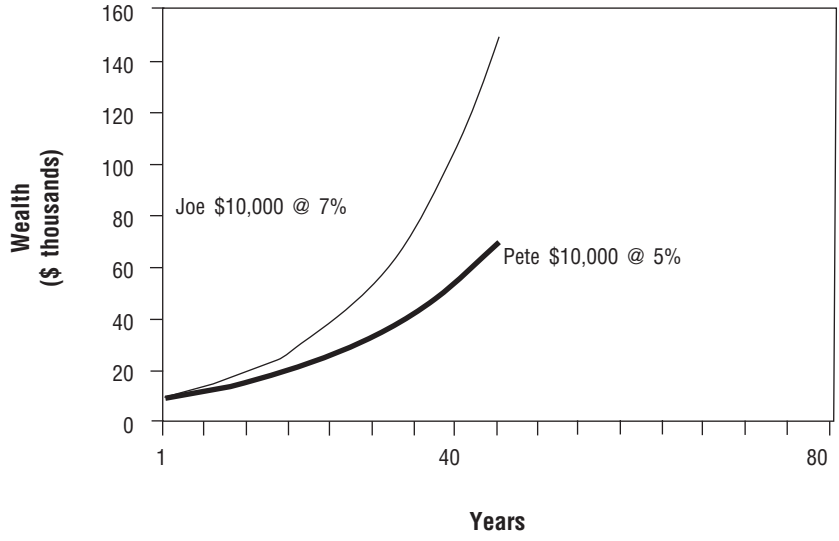
increase his return by at least 2 percent per year. Pete, of course, does not have a clue.

What do Joe's changes mean in terms of the value of the two men's accounts and the amount they can spend each year after retirement? If Joe earns a 7 percent return and Pete stumbles into a 5 percent return, the difference is striking. As Exhibits I.1 and I.2 show, with a single modest investment of $10,000, at a 7 percent return Joe will have $149,745 at the end of 40 years and Pete will have $70,400 if he earns 5 percent—less than half of Joe's total.[1] If, instead of a one-time deposit, each man makes an annual contribution of $2,000 a year beginning in year 0, Joe will have $431,178 after 40 years at 7 percent and Pete will have $256,350 after 40 years at 5 percent.

EXHIBIT I.1 Impact of a 2 Percent Difference in Return

	Joe's 7 Percent Return	Pete's 5 Percent Return
One-Time Investment	$ 10,000	$ 10,000
Value after 40 Years	$149,745	$ 70,400
Annual Contribution	$ 2,000	$ 2,000
Value after 40 Years	$431,178	$256,350
Annual Withdrawal from Year 41	$ 30,000	$ 15,000
Value of the Account after 40 Years of Withdrawals	$467,610	Account Exhausted

EXHIBIT I.2 $10,000 One-Time Investment



In some respects, the most dramatic difference is in what happens to Joe and Pete after retirement (see Exhibit I.3). Based on the $2,000 annual deposit at a 7 percent return and a continuing 7 percent return during 40 years of retirement, Joe will be able to withdraw $30,000 a year from his investment portfolio and the value of the account will still increase slightly over the next 40 years. If Pete withdraws $15,000 a year, the value of his account will be exhausted in the 40th year of his retirement.[2] A few simple changes in his approach to his fund holdings have put Joe on track to significantly greater wealth and higher income for what will probably be more than one-third of his life.

EXHIBIT I.3 $2,000 Investment Each Year for 40 Years

This book should help you improve your portfolio's expected performance, as Joe has done. Reading this book will not lead you to the one portfolio manager who outperforms everyone else next year. But you will be able to invest smarter and keep more of what your investments earn. My primary objective is to help you select the best possible funds for your portfolio. The focus is on funds—which ones to use and how and where to hold them—but you also need a basic investment and planning strategy. Because fund selection does not take place in a vacuum, I discuss some important investment and planning issues in the early chapters.

Most **mutual fund** books describe how funds work and discuss performance, basic expenses, sales charges, and the relationship between risk and return. If you are a trusting person and do not want to look under the hood, that may be enough for you. This book is for investors who want to get the most from their fund investment portfolios. They want funds that will give them the best possible performance and they want to understand

why *their* funds *should* do better than other funds. You can achieve that understanding by reading parts of most chapters and learning some simple rules and techniques. The idea that you can improve your investment results by cutting costs is not new, but I apply this principle to specific costs and specific funds in more detail than other fund book authors have done.

This book is about what to look for and how to use what you find to evaluate and compare funds. Each chapter discusses a number of important investment and fund evaluation issues. At the beginning of each chapter, you will find a brief summary of what the chapter covers and, sometimes, how that chapter fits into the investment process. For readers who are not **financial planners** or financial **advisers**, these chapter summaries may give you all the information you need on a particular topic. The summaries describe what is covered in the balance of the chapter and you will be able to decide quickly how much more you need to read in that chapter. If you want to come back and read the balance of the chapter later, the detailed material will be there for you. At the end of most chapters is a brief summary and, in some cases, a list of books or articles for additional reading if you want more information on the topics discussed in the chapter.

Some of the calculations I consider essential for effective fund evaluation are not routinely extracted from fund reports and published by fund data and advisory services. Furthermore, some of the fund services are not as committed to accuracy as they should be. Unless your tax situation is pretty complicated, you will not have to do much detailed work on your own to evaluate a specific fund. That fund's annual report will have the data you need. Unfortunately, comparing more than a few funds can be time-consuming.

Appendix A provides supplementary information, including the web addresses of some useful sites. Some important words are in bold type at least the first time they appear in the text. Those words and a few other fund terms are defined in the Glossary. If you come across a word or phrase in the text or in other reading that does not appear in the Glossary or in an ordinary dictionary, use the online version of the *Dictionary of Financial Risk Management* at www.amex.com/dictionary/frinit.html to look up the word or phrase.

I have tried to make this book as easy to read and understand as I possibly can. To that end, I avoid unnecessarily complex discussions in the beginning of each chapter. Depending on your personal needs, you will find useful details in the body of the chapters and in the notes. Discussions of some special topics are separated from the narrative into topical text boxes. The text boxes are referenced in the text and in the Index. I promise that you will find useful information on topics that are not discussed in any other fund book you have read. I challenge some conventional wisdom, so you will find viewpoints that you have not encountered

before. If you want to learn more about controversial issues, I have provided sources in Appendix A, in the notes, and in the reference list.

Funds Under Fire

People's capitalism—small investors buying shares of funds that offer investment **diversification** at low cost—has been one of the stated objectives of the U.S. mutual fund management industry since it was founded in the 1920s.[3] To date, the creators and managers of funds have not consistently succeeded in meeting this goal. Congressional hearings during the 1930s uncovered abuses from the early years of investment company sales and management. One result of those hearings was the Investment Company Act of 1940, which, with only minor amendments, still serves as the primary basis for fund regulation in the United States.

A more recent series of mutual fund scandals that began to surface in 2003 stimulated new reform efforts. To date, these recent attempts at reform have increased the costs borne by fund shareholders without any meaningful improvement in shareholder protection. Cost-effective regulation by market forces has been rejected in favor of bureaucratic changes expected to improve fund governance. Shareholders also have to pay for a new, but unproven, compliance function.[4] Useful disclosure and improved fund operating rules have been rejected in favor of disclosures that are of little use to investors or fund analysts. The safest and most realistic assumption that fund investors can make is that they have to look out for their own interests, rather than counting on the fund regulatory framework.

Apart from differences in the size of the average transaction, much fund marketing differs little from the sale of soap or breakfast cereal. One of the major marketing innovations of recent years is even called the mutual fund "supermarket" (discussed in Chapter 4). Many fund marketers promote hot managers and hot market segments. Both are easy to sell, even if they are not necessarily the right choice for the investors who buy them. Of course, some fund companies have delivered good performance at reasonable prices and without hype. But the inverse correlation of funds' expense ratios with fund performance—the funds with the highest expenses tend to have the worst performance—suggests that many investors do not have access to information that will help them make higher-quality, lower-cost choices. Some index funds have provided good investment performance, partly as a result of lower expenses and reduced portfolio **turnover**. But the concentration of indexed assets in funds using a small number of popular indexes has hurt index fund performance in recent years. Concentration of indexed assets in funds linked to a few overused indexes continues to increase.

In the aftermath of the 2003–2004 scandals, the fund industry is at a crossroads. Most **fund managers** who pursue business as usual will survive, and some of them may continue to prosper. A better strategy for most fund managers will be to develop funds that deliver better value to investors. This book is about finding and selecting better funds. If enough of us are looking for better funds, the incentive for the fund companies to offer them will grow.

Exchange-Traded Funds

Most investors have a reasonably clear understanding of how mutual funds work, but investors can also choose from another important group of funds. A new type of exchange-traded fund (ETF) was introduced in the United States in 1993. The first of these ETF shares were the Standard & Poor's Depositary Receipts (SPDRs, pronounced "spiders"), shares in an S&P 500 index fund. In most respects, ETFs fit into the regulatory and tax pigeonholes long occupied by conventional mutual funds, but the ETFs have some distinguishing features.

The most obvious difference between an exchange-traded fund and a conventional mutual fund is that most investors buy ETFs at a price determined by the interaction of buyers and sellers in the open market. The price at which an ETF share is purchased or sold will usually be close to the per-share value of the underlying fund portfolio at the time of the transaction. However, in contrast to a conventional mutual fund, most investors do not buy ETF shares precisely at **net asset value (NAV)**. The ETF investor will trade at a market-determined price and will usually pay a commission charge and a **bid-asked spread**. Consequently, it costs more to *trade* ETFs than to trade conventional funds.

However, it usually costs more to *hold* conventional funds than to hold ETFs. Expense ratios on indexed ETFs are generally lower than the expense ratios on conventional index mutual funds because of cost savings inherent in the ETF structure. Furthermore, the mutual fund scandals have made it clear that *long-term* mutual fund shareholders often pay dearly for the "zero cost" trading offered by mutual funds. Active traders of mutual fund shares trade without readily measurable cost, but they trade at the expense of the ongoing shareholders in the fund. In an ETF, the traders pay the cost of their entry to and exit from the fund. The ongoing shareholders in the ETF are protected from the trading costs of in-and-out shareholders.

Next to shareholder protection from other investors' fund share trading costs, the most significant advantage of ETFs is their inherent tax efficiency. A well-managed ETF should be able to avoid **capital gains distributions** and defer all capital gains taxation until investors sell their

ETF shares. This feature means that ETFs can offer a significant advantage to all investors who use funds in taxable accounts. While ETFs are often good substitutes for mutual funds in tax-deferred accounts, they are the funds of choice in taxable accounts. It took U.S. ETFs less than 12 years to attract more than $226 billion in assets. Conventional mutual funds needed more than 66 years to accumulate as much.[5] This growth record suggests that many investors have concluded that ETFs are worth a close examination. In Chapter 3, I explain the in-kind creation and **redemption** process for ETFs that is behind both the shareholder protection and the tax efficiency inherent in ETFs. As in other chapters, you can decide how much detail on this topic is important to you.

All currently available ETFs are index funds. Actively managed ETFs are somewhere over the horizon and I have tried to anticipate them where appropriate throughout the book. The introduction of actively managed ETFs is important because conventional actively managed mutual funds cannot compete effectively with index ETFs in taxable accounts.

Fund Information and Analysis

The dominant purpose of this book is to help you pick the best mutual funds and exchange-traded funds from among the thousands of funds that the fund companies offer. If you decide to do your own research, the effort you will have to make to find the best funds is greater than it should be because some of the information that investors need to help them make informed fund selections is hard to find. The information routinely provided to investors in periodic fund reports or on fund and **Securities and Exchange Commission (SEC)** web sites is not as comprehensive or as user-friendly as it should be. Some fund advisory services assemble and organize fund information, but many of these sources do not help investors distinguish between useful and trivial information. Data errors in available fund adviser databases are far too common.

Availability and usefulness are two information problems that regulators and advisory services have not solved. Key information is often missing or distorted. Here are two examples:

1. The most important indicator of the cost of the liquidity that mutual funds offer to traders in their shares, fund share **flow**, is not calculated or reported by any mutual fund or mutual fund service I have examined. See the "Cost of Providing Free Liquidity to Mutual Fund Share Traders" and "Flow" sections in Chapter 5 (pp. 101–110).
2. When regulators require information, or when fund companies, advisory services, and fund sales representatives provide it, a misleading calculation is often chosen over a useful one. Examples include

inappropriate measures of the average expense ratio for a group of funds (see Chapter 5, pp. 92–93), the use of turnover as an indication of a fund's trading activity (see the "Portfolio Composition Changes—Turnover" subsection in Chapter 5, p. 99), and fund rating systems that have little value in helping investors select the best fund for their purposes (see "Fund Ratings" in Chapter 7, p. 155).

Apart from the fact that the data that fund services use are not always accurate or compiled appropriately, the analysis behind recommendations from fund advisory services is often shallow—or even nonexistent. By the time you finish reading this book, you will know what to look for and where to look. I lament the fact that this will be harder than it should be because you may have to dig for useful fund information. If enough investors demand it, fund advisory services may undertake to publish more useful data. The fund industry and its principal regulator, the SEC, need to do a great deal more to assure useful disclosure designed to permit intelligent analysis of each fund and meaningful comparative evaluation of competitive funds.

Market forces are by far the best regulators, but they cannot do their job if accurate information is not easy for market participants to get. One would expect accurate, meaningful fund comparisons to be the staple product of advisory services. In fact, there is no useful, accurate, comprehensive, and affordable fund database available to investment advisers or small investors either directly or through public libraries. Advisory services seem to go out of their way to avoid comparisons among competitive funds that go much deeper than historic returns and expense ratios. Some risk-adjusted return information is available, but marketers are free to emphasize comparisons that favor the product that pays them best. Any data underlying recommendations are often not available, not relevant, or not reliable.

Mutual funds and exchange-traded funds are increasingly the individual investor's preferred vehicles for investing financial assets. But the choices offered an investor are often limited by a 401(k) provider to include just one fund in each category, or by a salesperson from whom one fund or one family of funds is offered to fit all needs. These limited choices are justified only if the choices are based on an intelligent analysis of the best interest of the investor. Some employers try to provide a desirable fund selection in 401(k) and similar plans, but you cannot count on that.

Getting the Most from Your Fund Investments

I am often puzzled by the contrast between how much effort individuals make to earn or keep more income from their primary occupation and

how little attention they give to improving investment decisions in small ways that could double or triple their net worth over a period far shorter than their expected remaining lifetimes.

Useful techniques for improving mutual fund or exchange-traded fund selections rely on an analysis of probabilities. By this, I mean that the search is not for *certainty* of performance improvement, but for *probable* better performance. The expected degree of performance improvement along any single path will be small and uncertain, but the cumulative return improvement from improvement in the fund selection process along several dimensions can be substantial and virtually certain. Correspondingly, over a short time period, the expected value of a small performance improvement will not be great. However, as the comparison of the prospects for Joe's and Pete's portfolios illustrates, the expected value of a number of small performance improvements combined and compounded over many years can have a dramatic effect on terminal wealth or on the annual income an investor will have available after retirement. A small performance improvement can have a large enough impact on an investor's standard of living to justify far more effort than following my suggestions requires.

If you doubt that there are substantial opportunities to add value through fund selection, I offer a glaring example based on S&P 500 index funds. Many investors are aware that there are substantial differences across fund groups in the quality of their index fund management. An astute index fund manager who transacts at a time other than the moment of the official index composition change can often add substantial value for the fund's investors. For the S&P 500, the annual value added by the best managers has been about 25 **basis points (bps)** or 0.25 percent. More dramatic evidence of the magnitude of differences in index fund performance has come from Elton, Gruber, and Busse (2004). They compared the expenses and performance of *all* the Standard & Poor's 500 index mutual funds offered in the United States from the beginning of 1996 through the end of 2001. There were 52 open-end S&P 500 index funds available over the entire six-year period. The best of these 52 funds outperformed the worst fund by an average of 209 basis points (2.09 percent) per year over the six-year period. This study demonstrates that index funds are clearly not as commoditized as many investors have believed. It also suggests that there is even more scope for adding value through fund selection when the entire fund universe is available to you. Most importantly, it raises the question, "If the difference between the best and worst S&P 500 index fund was this great, why didn't SEC-mandated disclosures and fund advisory services get that information to us clearly and promptly?" I will take the argument one step further in Chapter 6 by arguing that you should avoid S&P 500 index funds entirely. The S&P 500 index is inefficient as a fund template.

Any serious attempt to help investors improve their fund selections must include an examination of relevant academic literature on fund performance, like the Elton, Gruber and Busse paper. I have tried to discuss appropriate academic studies in as reader-friendly a way as possible, extracting relevant findings and using them to offer realistic suggestions for achieving better investment results. These papers are cited in the text with full publication details in the References. Most readers will not want to read the original studies, but improved library services and the Internet make these papers widely available.

There are a number of reasons why the amount and type of mutual fund information available to investors is far less extensive and less usefully organized than we would like. Mandatory disclosure by funds is neither as extensive nor as standardized as it should be. The formal reporting process discourages funds from offering additional information that might help investors. The commitment to data integrity and timeliness varies greatly among fund advisory services and database managers. It is not clear that willingness to pay for an extensive fund database with a high level of integrity is great enough among individual investors and independent fund advisers to support even one high-quality investor service, let alone several effective competitors. I try to point out how the conscientious investor can find and extract useful information from the sea of data, but this problem needs formal SEC or fund industry attention.

The next few years will see some significant changes in fund reporting. Barring a significant change in focus by the SEC, however, these changes will increase the usefulness of available disclosure only marginally. For the astute investor there is a bright side to this sad state of affairs. The more difficult it is to analyze and evaluate funds, the greater the payoff will be for the small number of investors who make the effort to improve their fund selection process. You can be one of that number.

CHAPTER 1

A Framework for Saving and Investing

This book is not primarily about the "why" of investing, but about the "how." Our principal topic is the process of putting your savings and investment flow to work to earn the best return possible at an acceptable level of risk. In that context, this chapter and Chapter 2 are big picture chapters. In these two chapters, I am concerned not just with the risks of losing money on a specific investment, but with the risks of failing to meet a specific **investment objective**—the risk of being unable to cover a specific future need or obligation. More generally, I am concerned with investment choice—the task of selecting effectively and efficiently from a large menu of investment offerings to implement an investment plan. To understand the significance and interaction of risks and investment choices adequately, it is useful to look broadly at risks and investment returns—and at the reasons for saving and investing. Joe, the astute investor mentioned in the Introduction, found these chapters helpful in developing a perspective on his investment program and the motivation to create a plan.

The founders of political economy—the eighteenth- and nineteenth-century name for economics—felt they needed to explain the motivations behind saving and investment. Some of their explanations were relatively complex and, even by today's standards, sophisticated. An important element in nearly all of their explanations for saving was the idea of putting something aside today to finance future consumption.

We save and invest to cover our future needs and obligations. Most savers and investors have relatively clear objectives. These are often formal and specific: to accumulate enough money to buy a new car without borrowing, to pay for children's education, or to provide for a variety of

lifestyle choices when the saver/investors reduce their participation in the workforce.

In this chapter, I offer an eclectic personal perspective on some of the financial planning and investment implementation issues that every investor must deal with. My perspective reflects my perception that many investors embark upon investment choices without understanding what is possible and what is not, and without understanding the magnitude and nature of some kinds of risk. Of course, the essence of risk is that it makes outcomes uncertain.

Most investors who buy a book about selecting mutual funds and exchange-traded funds have very specific expectations. I intend to meet those expectations fully. However, to put the fund selection objective in focus, I will devote a few pages to discussing some aspects of wealth management—investment planning, risk evaluation, and risk management—that are often overlooked. One purpose of what may seem a digression to some readers is to amplify the Introduction's demonstration of the importance of improving an investor's fund selection by even a small margin. If your plan is clear and you appreciate the importance of small performance improvements, do not hesitate to scan the section headings and exhibits in the balance of this chapter and in Chapter 2. If nothing in between grabs your attention, go on to Chapter 3.

A Life-Cycle Approach to Investment Planning

Many of the people and organizations that offer investment advice to individual investors emphasize the importance of taking a long-term—even a life-cycle—approach to financial planning and investing. These recommendations are certainly appropriate, but the way they are often stated fails to consider some important realities that affect an investor's ability to implement the advice.

A young family unit typically has relatively few liquid assets to invest. The principals are paying off student loans, incurring mortgage debt, and spending most of their income (which does not yet reflect their peak earning capabilities) on goods and services. Any inheritances from their parents' generation usually lie in the future, and retirement and college tuition bills for their children seem years off, relative to the resources the young family can commit immediately to a saving and investment program. The adults in such families should certainly begin to learn about financial planning and investments. But it is not realistic to expect a young family to cut back sharply on current consumption to increase their savings rate or to adopt a sophisticated portfolio management process to handle a small portfolio. Subject to some minor qualifications, young adults should invest as much as they can in various tax-sheltered retirement funds, such as

401(k)s, 403(b)s, and individual retirement accounts (IRAs). Their initial portfolios should probably be relatively aggressive. Their human capital will be largely converted to financial assets in their remaining years in the workforce. Most investors do not have enough financial assets before age 45 to worry excessively about **asset allocation** or aggregate portfolio risk. Nonetheless, the example of Joe and Pete in the Introduction demonstrates the importance of starting early and earning a good return to take advantage of the power of compounding returns.

By the time the earning members of the household reach their high earning and asset accumulation years—typically mid-forties through mid-sixties—financial planning should become a high priority. Commitments and requirements for family education expenses, lifestyle choices, and retirement objectives should become clearer during that period.

One of the secondary objectives of this book is to help readers reach appropriate "make-or-buy" decisions at various stages in the financial planning and implementation process. In this case, "make-or-buy" means—at the extremes—do-it-yourself or pay one or more advisers to do the work for you. Most individuals who like the idea of understanding and controlling every aspect of their financial lives can certainly learn enough to do an adequate job of basic personal financial planning and they can implement the plan in an intelligent way. However, a full understanding of all possibilities and pitfalls is beyond the scope of most do-it-yourself efforts. The greatest mistake most investors make is failing to obtain necessary information and advice from professional advisers. The second greatest mistake is to accept bad advice. You cannot count on avoiding either of these mistakes if you do not have some personal understanding of investment and financial planning principles.

A financially sophisticated individual can certainly take on most aspects of a financial plan and its implementation. In general, the quality of the result the individual achieves will be, at least in part, a function of the time and effort committed to the process. Not every intelligent and financially sophisticated person will be prepared to make the commitment necessary for a total do-it-yourself approach. In fact, the more sophisticated do-it-yourselfers are, the more likely they will recognize what they do not know. A discussion with a tax planner or investment manager who has a complementary skill set to your own will help ensure that major issues have not been overlooked.

At several points in later chapters, the need to monitor your investment portfolio will become apparent. Hiring a planner or other adviser is not a substitute for watching your own nest egg. For most family breadwinners who have reached the age of 60, their investment portfolio and vested benefits will affect their living standard for the remainder of their lives far more than current or future employment income. The time they devote to their portfolio rarely reflects this fact.

The Trade-Off between Risk and Reward Works Only within Limits

One of the axioms of a beginning course in finance is quickly understood by virtually every student: Within the range of investment choices where most investors operate, an investor can usually expect a higher return for a given period in exchange for willingness to accept a somewhat greater risk. This relationship and the range of probable return variations are illustrated in Exhibit 1.1.

Historic data on performance of various categories of investments can give an indication of the nature of the risk/return trade-off, but it is the essence of risk that future returns cannot be known in advance. For a specific period or for a sequence of periods, the effect of accepting greater risk will be greater dispersion in returns. The cumulative return for a risky investment policy over a long period may be higher or lower than the return from a lower-risk investment.

The fact that a specific outcome is not favorable does not invalidate the general association of higher risks with higher returns. An unfavorable outcome does highlight several important effects of risk on long-term results. First, the result of a sequence of risk/return choices may give results that are substantially better or worse than the investor anticipated at the time each of the choices was made. Second, a principal characteristic of risk is that it increases the range of possible returns on both the upside and the downside. The range of return variations over a 5th to 95th percentile range illustrated in Exhibit 1.1 is wide even for a single period as risk increases. A single high-risk investment, particularly if taken on a

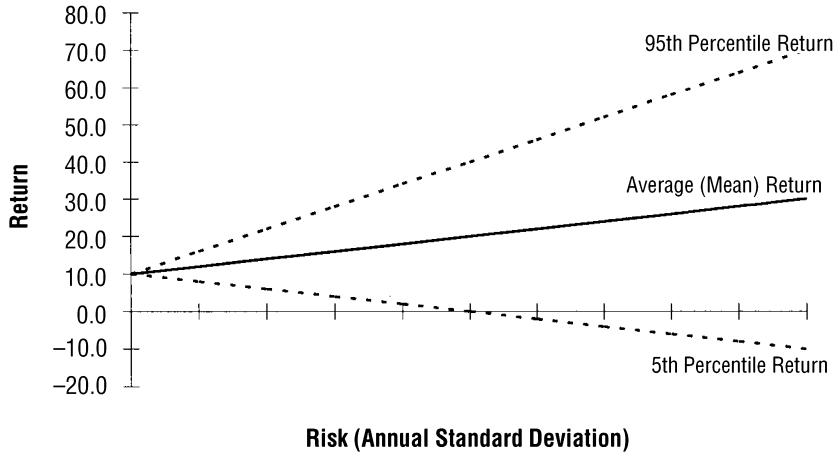


EXHIBIT 1.1 Expected Return Increases with the Acceptance of Greater Risk

leveraged basis, can wipe out an investor's financial assets. It may be impossible to play again in a subsequent period. The dramatic effect of high-risk investment on cumulative returns is best illustrated by the effect of risk (volatility of return) on the compound return expected from a portfolio in Exhibit 1.2.

The graph of results expected from compounding 12 percent and 20 percent arithmetic or simple returns at various standard deviation (risk or volatility) levels illustrates the possible effect of return volatility on long-term investment results.

Annual volatility in the range of 30 to 50 percent has been common in recent years for some undiversified equity investments. When volatility gets this high, the risk increases that substantial losses cannot be recouped even in the long run. As the right-hand side of the graph shows, the compound expected return at high levels of volatility drops sharply. The 20 percent average return provides a compound expected return of about 12 percent at a 50 percent volatility level and the 12 percent average return gives a compound expected return of less than 3 percent at a 50 percent volatility level. Volatilities of individual stocks and portfolios of stocks with similar risk characteristics often measure over 50 percent. The technology-stock-heavy Nasdaq-100 index and the QQQQ exchange-traded fund (ETF) based on it traded at 50 percent volatility levels for long stretches around the turn of the millennium. At a given average return, this high risk

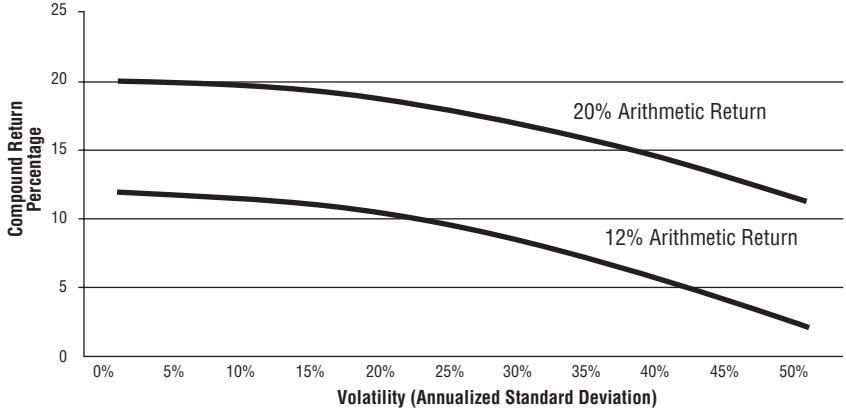


EXHIBIT 1.2 Effect of Volatility (Greater Risk) on the Compound Return of a Portfolio
Assumption: Arithmetic or simple return is compounded annually for 40 years. Results are not very sensitive to use of a shorter period or a higher compounding frequency.
Source: Richard Michaud.

level reduces longer-term expected returns. The risk is greatest with single stocks or baskets of highly correlated stocks like the portfolio of the QQQQs. A catastrophic loss can nearly eliminate the chance to recover in the long run.

The point of this graph is that at a reasonable *average* return, leverage and volatility can *reduce* the compound return to the vanishing point. This graph is based on the return pattern of an equity portfolio. Single stocks, like some of the dot-coms, had recorded volatilities off the right side of the graph in the run-up to the peak of the technology bubble in 2000—and in the subsequent run-down. The prices of some of these stocks dropped so far that recovery was/is hard to imagine. Simple tools to measure diversification—and, hence, the concentration of risk—can improve long-term return expectations and reduce risk.[1]

Most of the risks reflected in the risk/return trade-offs illustrated in Exhibits 1.1 and 1.2 and the most common types of risks examined and evaluated by investors are market risks. There are, however, a number of risks that are best examined and evaluated outside the relatively simple framework of securities market risks.

Thinking About the Big Risks

In the early years of the twenty-first century, most American investors take comfort in the relative stability that the U.S. economic system has enjoyed since the Great Depression of the 1930s. The United States has been an example of a stable social environment for an even longer period, dating back at least to the end of the Civil War in the 1860s. The absence of foreign armies in the settled portions of the United States since Revolutionary War times supports the belief that direct involvement in armed conflict is improbable for most U.S. citizens. Events since September 11, 2001, have shaken public confidence, but most Americans view risk in a very different way from investors who live in many other countries.

Citizens of Western Europe have seen their immediate environment in turmoil as recently as World War II. Citizens of the Middle East, Eastern Europe, Asia, and many parts of Africa have witnessed great social, political, and economic changes and military activity even more recently. On a global basis, the American experience of long-term political and economic stability is almost unique. Only in Britain and the United States have securities markets operated relatively continuously since the end of the eighteenth century, and even the London and New York markets closed for several months during World War I (Brown, Goetzmann, and Ross 1995).

Addressing the global fragility of social stability and financial continuity is not to suggest that buying a mountain cabin and stocking it with several years' supply of freeze-dried food and some heavy weaponry is an appropriate part of any American's retirement strategy. However, anyone making a financial plan should consider the possibility of major structural change in the social and economic environment that will affect the value of investments and the range of lifestyle choices available. On a historical, global basis, these changes have been more frequent and more profound than the North American experience implies.

Most financial plans do not look beyond normal market risk—a level of return volatility substantially less than that experienced in the United States in the 1930s or around the turn of the millennium. Little or no attention is paid to hard-to-anticipate systemic risks—risks that the economic system could have a very different appearance and function in the time period that is relevant to an adult with a remaining life of 50 years or more.

During the cold war, military planners had a phrase for such hard-to-anticipate risks. They called them "unk unk" risks, short for unknown unknown risks. It is impossible to know what you do not know that should worry you, especially over a long time horizon. There are, of course, some major known risks that can be appraised. Looking at known risks will sometimes provide a degree of perspective on systemic risks and unk unk risks. Among the known risks are the risks of inflation and of extreme longevity and the peculiar risk of relying on what is sometimes called "time diversification" to help a risky investment policy meet retirement savings objectives. So-called fat-tailed risks even challenge the analytical framework typically used to evaluate risk.

Inflation

Exhibit 1.3 shows the average annual rate of inflation by decade in the United States from World War I through the more recent period of relatively modest inflation.

Overall, the United States has a good record of controlling inflation. By way of contrast, Exhibit 1.4 and Exhibit 1.5 show two examples of hyperinflation from the twentieth century.

During the Weimar Republic hyperinflation in Germany (1920–1923), the value of the reichsmark declined by a factor of 100 billion to 1 relative to the British pound. By the end of this episode, the money needed to buy a sausage weighed more than a dozen hogs. More recently, Brazil experienced inflation rates averaging more than 25 percent per month from 1988 through 1994.

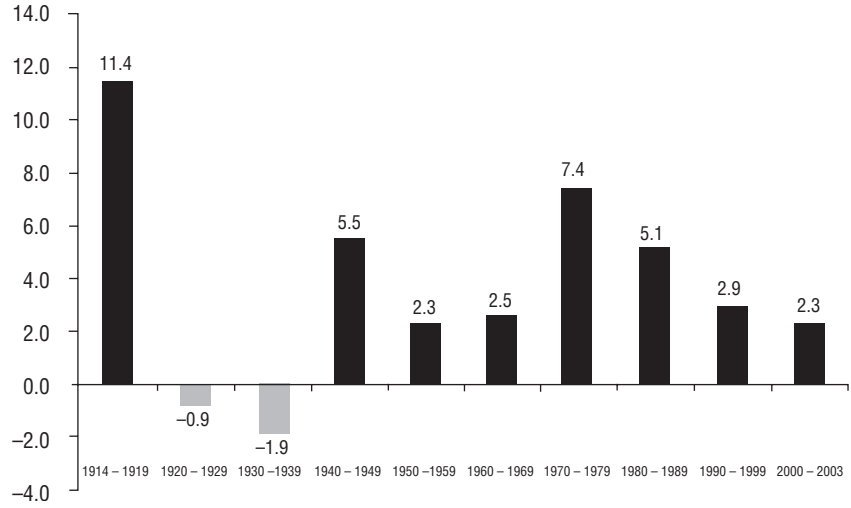


EXHIBIT 1.3 Average Annual U.S. Inflation by Decade
Source: U.S. Department of Labor, Bureau of Labor Statistics.

Any investor dependent on a long-term fixed flow of income—whether from a long-term bond or from a fixed annuity—is subject to significant inflation risk. Social Security payments are theoretically indexed for inflation, but this protection is not an absolute. There is a high probability of change in the inflation protection now built into Social Security. The age at which an individual can begin to receive Social Security payments has changed and will surely change again. More subtly, the way Social Security distributions to retirees might be taxed, particularly if the retiree has other sources of income, may erode the value of the inflation protection in Social Security payments.

In the long run, the only thing that seems relatively certain, assuming reasonable political and economic stability, is that low-income retirees will continue to receive Social Security payments and that there will be a degree of inflation protection embedded in those payments. Anyone who expects to enjoy retirement living above a subsistence level will have to obtain some protection from inflation independent of Social Security cost-of-living adjustments. With the exception of the popular Treasury inflation-protected securities (TIPS) issued by the U.S. Treasury, most inflation protection available to investors lacks an irrevocable guarantee. Even the TIPS version of inflation protection may become subject to punitive taxation.

EXHIBIT 1.4 The Rising Circulation of Reichsbank Notes Issued and Their Equivalent Sterling Values

Date	Paper Marks (Billions)	Rate of Exchange (Marks for Pounds)	Sterling Value of Notes in Circulation (Millions of Pounds)
Dec. 31, 1919	35.7	184.8	193.2
Dec. 31, 1920	68.8	258.0	255.5
Dec. 31, 1921	113.6	771.0	147.3
Dec. 31, 1922	1,280.1	34,000.0	34.4
Jan. 31, 1922	1,984.5	227,500.0	8.7
Feb. 28, 1923	3,512.8	106,750.0	33.0
Mar. 29, 1923	5,517.9	98,500.0	56.0
May 29, 1923	8,563.7	320,000.0	26.8
June 30, 1923	17,291.1	710,000.0	24.3
July 7, 1923	20,341.8	800,000.0	25.4
July 14, 1923	25,491.7	900,000.0	28.3
July 23, 1923	31,824.8	1,600,000.0	20.0
July 31, 1923	43,594.7	5,000,000.0	8.7
Aug. 7, 1923	62,326.7	15,000,000.0	4.1
Aug. 15, 1923	116,402.5	12,400,000.0	8.9
Aug. 23, 1923	273,905.4	23,000,000.0	11.9
Sept. 15, 1923	3,183,681.2	410,000,000.0	7.8
Oct. 15, 1923	123,349,786.7	18,500,000,000.0	6.8
Nov. 15, 1923	82,844,720,743.0	11,000,000,000,000.0	8.4
Nov. 20, 1923	180,000,000,000.0	18,000,000,000,000.0	10.0

Source: www.gold-eagle.com/editorials_02/phillips121302pv.html.

EXHIBIT 1.5 Brazil—Inflation Measures 1987–1995 (Percentage Change over a 12-Month Period)

Year	Consumer Price Index[a]	Wholesale Price Index[b]
1987	367.1%	400.7%
1988	891.7	1,055.4
1989	1,635.9	1,732.4
1990	1,639.1	1,425.3
1991	458.6	471.9
1992	1,129.5	1,160.9
1993	2,491.0	2,635.7
1994	941.3	1,031.4
1995	23.2	6.6

Source: Boletim do Banco Central do Brasil (BCB) 32, no. 3 (March 1996).

[a]IPC-Fipe.

[b]Total wholesale price index.

Longevity

Exhibit 1.6 shows the increase in female life expectancy. Starting about 160 years ago, female life expectancy began to increase by one-quarter of a year for each year that passed. Men have not done quite as well. The researchers who assembled these life expectancy data characterize them as the "most remarkable regularity of mass endeavor ever observed," and "an extraordinary constancy of human achievement" (Oeppen and Vaupel 2002). Even if the increase in life expectancy slows or stops, most of today's retirees are financially unprepared for 30 years or more in retirement. This increase in life expectancy has changed the work and retirement dynamic throughout the world.

Improvements in nutrition and medical treatment have extended the period the average individual can expect to enjoy good health and the ability to cope physically with a diverse environment. Neither extrapolating the trend reflected in Exhibit 1.6 to greater longevity nor predicting an abrupt end to the trend is necessarily the appropriate way to plan for longevity. The growth in the number of retirees already has been so great that the active workforce will not be large enough to provide goods and services to maintain current lifestyles.

A generation or two ago, in an environment where life expectancy for an adult was not many years beyond the normal retirement age and the number of healthy centenarians was small, the extreme longevity of a few

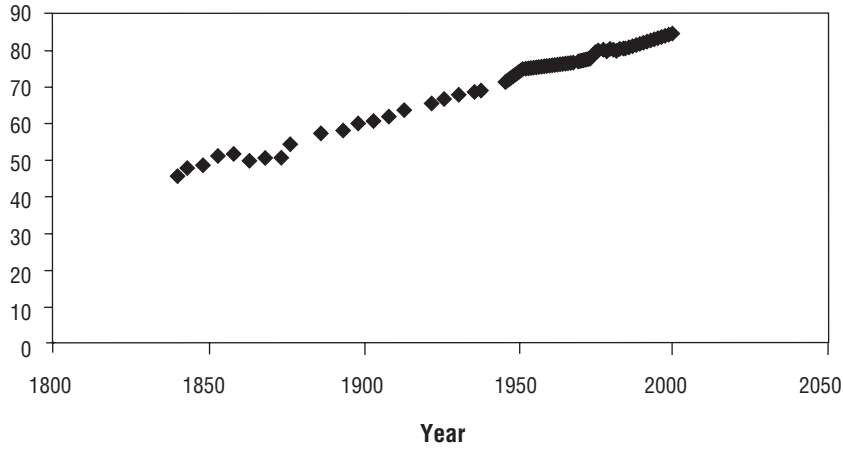


EXHIBIT 1.6 Female Life Expectancy Has Been Increasing by One Quarter of a Year per Year for 160 Years

Data source: Jim Oeppen and James W. Vaupel, "Broken Limits to Life Expectancy," *Science* 296, issue 5570 (May 10): 1029–1031.