

UPDATED TO INCLUDE ETFS, GLOBAL STOCKS, AND THE LATEST DEVELOPMENTS IN INDEXING

STOCKS FOR THE LONG RUN

The Definitive Guide
to Financial Market
Returns & Long Term
Investment Strategies

FOURTH EDITION

JEREMY J. SIEGEL

BUSINESSWEEK CHOICE AS A MUST-READ FOR INVESTORS

STOCKS FOR THE LONG RUN

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F o u r t h E d i t i o n

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The Definitive Guide
to Financial Market
Returns and Long-Term
Investment Strategies

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F O R E W O R D

Some people find the process of assembling data to be a deadly bore. Others view it as a challenge. Jeremy Siegel has turned it into an art form. You can only admire the scope, lucidity, and sheer delight with which Professor Siegel serves up the evidence to support his case for investing in stocks for the long run.

But this book is far more than its title suggests. You will learn a lot of economic theory along the way, garnished with a fascinating history of both the capital markets and the U.S. economy. By using history to maximum effect, Professor Siegel gives the numbers a life and meaning they would never enjoy in a less compelling setting. Moreover, he boldly does battle with all historical episodes that could contradict his thesis and emerges victorious—and this includes the crazy years of the 1990s.

With this fourth edition, Jeremy Siegel has continued on his merry and remarkable way in producing works of great value about how best to invest in the stock market. His additions on behavioral finance, globalization, and exchange-traded funds have enriched the original material with fresh insights into important issues. Revisions throughout the book have added valuable factual material and powerful new arguments to make his case for stocks for the long run. Whether you are a beginner at investing or an old pro, you will learn a lot from reading this book.

Jeremy Siegel is never shy, and his arguments in this new edition demonstrate he is as bold as ever. The most interesting feature of the whole book is his twin conclusions of good news and bad news. First, today's globalized world warrants higher average price-earnings ratios than in the past. But higher P-Es are a mixed blessing, for they would mean average returns in the future are going to be lower than they were in the past.

I am not going to take issue with the forecast embodied in this viewpoint. But similar cases could have been made in other environments of the past, tragic environments as well as happy ones. One of the great lessons of history proclaims that no economic environment survives the long run. We have no sense at all of what kinds of problems or victories lie in the distant future, say, 20 years or more from now, and what influence those forces will have on appropriate price-earnings ratios.

That's all right. Professor Siegel's most important observation about the future goes beyond his controversial forecast of higher aver-

age P-Es and lower realized returns. “Although these returns may be diminished from the past,” he writes, “there is overwhelming reason to believe stocks will remain the best investment for all those seeking steady, long-term gains.”

“[O]verwhelming reason” is an understatement. The risk premium earned by equities over the long run *must* remain intact if the system is going to survive. In the capitalist system, bonds cannot and should not outperform equities over the long run. Bonds are contracts enforceable in courts of law. Equities promise their owners nothing—stocks are risky investments, involving a high degree of faith in the future. Thus, equities are not inherently “better” than bonds, but we demand a higher return from equities to compensate for their greater risk. If the long-run expected return on bonds were to be higher than the long-run expected return on stocks, assets would be priced so that risk would earn no reward. That is an unsustainable condition. Stocks must remain “the best investment for all those seeking steady, long-term gains” or our system will come to an end, and with a bang, not a whimper.

Peter Bernstein

P R E F A C E

I wrote the first edition of *Stocks for the Long Run* with two goals in mind: to document the returns on the major classes of financial assets over the past two centuries and to offer strategies that maximize long-term portfolio growth. My research definitively showed that over long periods of time, the returns on equities not only surpassed those on all other financial assets but were far safer and more predictable than bond returns when inflation was taken into account. I concluded that stocks were clearly the asset of choice for investors seeking long-term growth.

I am both honored and flattered by the tremendous reception that the core ideas of *Stocks for the Long Run* have received. Since the publication of the first edition 13 years ago, I have given hundreds of lectures on the markets and the economy both in the United States and abroad. I have listened closely to the questions that audiences pose, and I have contemplated the many letters, phone calls, and e-mails from readers. My responses have formed the basis of much of the new material that has been added to the fourth edition of *Stocks for the Long Run*.

NEW MATERIAL IN THE FOURTH EDITION

The fourth edition not only updates all the data from the third edition, but it also introduces completely new material on such topics as *which* stocks have done well in the long run and what will be the distribution of world output and equity values in the middle of this century. A whole new chapter has been added on the history of the firms in the S&P 500 Index, which celebrated its fiftieth anniversary in March 2007.

A recurring theme in this edition of *Stocks for the Long Run* is that “growth does not imply return.” This principle can be applied to individual stocks, industries, and even countries. I show the superiority of high-dividend-yield and low-P-E strategies for the stocks in the S&P 500 Index. Sector growth turns out to play only a minor role in determining returns. These findings support the conclusion that value stocks outperform growth stocks in the long run, a phenomenon that has been well documented in the finance literature.

In the preface to the 2002 edition of *Stocks for the Long Run*, I wrote, “Although I still believe that [capitalization-weighted] indexed investments should constitute the core of every investor’s long-term portfolio,

... [s]ome indexes, such as the Standard & Poor's (S&P) 500 Stock Index, have become so popular that entry to the index carries with it a price premium that may reduce future returns."

Further research has supported this contention. The chapter on the history of the S&P 500 Index shows that the new firms added to the index have generally had lower returns than the original firms that were chosen in 1957. In this edition, I introduce the "noisy market hypothesis," an alternative to the efficient market hypothesis that explains why value stocks outperform growth stocks. In Chapter 20, I describe "fundamentally weighted" indexes as an efficient alternative to capitalization-weighted indexes for capturing the value premium.

Any analysis of the stock market today must be international in scope, and in this edition I have greatly expanded the material on international markets. I detail the role of the developing economies in mitigating the aging crisis that will soon envelop the United States, Europe, and Japan as the ranks of retirees swell. I believe that Asia and other developing countries will, by the middle of this century, play a dominant role in the world's economy and capital markets. I conclude that Americans face a crucial choice—allow the influx of foreign capital or face poor financial returns and a far more difficult retirement period.

All this makes investing in international equities not only important but critical to developing a comprehensive investment strategy. The chapter on global economics shows that despite the increased short-term correlation between country returns, global diversification is still an essential part of today's investment strategy. Without doubt, the portion of the world's equity capital that is located outside the United States will grow rapidly in the coming years.

The fourth edition also reevaluates the findings reported in the previous editions. Such topics as calendar anomalies (for example, the January Effect), the impact of Fed interest rate changes on the stock market, and the importance of investor sentiment in predicting future market returns are given a new look. I determine whether there have been any systematic changes in the response to these factors since the first edition of *Stocks for the Long Run* was published in 1994.

There are some surprising results: some of the calendar anomalies hold up very well while others disappear altogether. For example, Fed rate cuts, although having a powerful immediate impact on stock prices, do not have as predictable an intermediate-term impact as they once had. Other topics examined include the "Gordon model" of stock valuation and economic growth, the increasing advantage of exchange-traded funds over mutual funds, momentum investing, and why many "bears"

have misinterpreted historical evidence on dividend growth and corporate profits.

CONCLUDING REMARKS

Since the publication of the first edition of *Stocks for the Long Run*, there have been some extraordinary events in the capital markets. The greatest bull market in the 200-year history of U.S. equities ended in 2000 when the surging technology stocks crashed and U.S. stocks entered a severe bear market. And the terrorist attacks of 9/11 closed the exchange for four days, the longest period since the Great Depression.

Yet the public, once regarded as fickle and quick to abandon stocks in difficult times, stuck with equities. There appeared to be much less public disenchantment with stocks in the last bear market than in previous downturns, and surveys showed that most retained their faith that stocks were still the best long-term investment. If earlier editions of *Stocks for the Long Run* played some small part in stock investors' newfound tenacity, I take great satisfaction.

Nevertheless, all who strive to be successful investors must exercise patience. In 1937, John Maynard Keynes stated in *The General Theory*: "Investment based on genuine long-term expectation is so difficult today as to be scarcely practicable." Seventy years later, long-term investing is as difficult as ever, but with today's growing global economy, there is overwhelming evidence that stocks will remain the best investment for all those seeking long-term gains.

Jeremy J. Siegel

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ACKNOWLEDGMENTS

It is never possible to list all the individuals and organizations that have praised *Stocks for the Long Run* and encouraged me to update and expand past editions. Many who provided me with data for the first three editions of *Stocks for the Long Run* willingly contributed their data again for this fourth edition, including the Vanguard Group, Morgan Stanley, Smithers & Co., and Randell Moore of Blue Chip Economic Indicators.

Jeremy Schwartz, who was my principal researcher for the third edition of *Stocks for the Long Run* as well as for *The Future for Investors*, provided invaluable assistance for the fourth edition. More than a year ago he and I sketched the outline for the new edition, and his participation, despite the heavy demands of his own new career, was essential to this edition's success. As with previous editions, this work would not have been possible without the help of Wharton students. In particular, I wish to thank Winston Liu, Peter Yi Wang, Anthony Massaro, and Adam Freedman for their invaluable help. Adam Freedman especially provided critical research support during the final stages of this manuscript, and without his dedicated work, this edition would not have been completed in a timely manner.

A special thanks goes to the thousands of financial advisors from dozens of financial firms, such as Merrill Lynch and Morgan Stanley, who have provided me with invaluable feedback on earlier editions of *Stocks for the Long Run* in seminars and open forums. As senior investment strategy advisor to WisdomTree Investments, I have been better able to articulate the value-based strategies discussed in this book.

Again, I am honored that Peter Bernstein has written a foreword for this fourth edition. I strive to attain the clarity that he has achieved in his bestselling books about the history and practice of investing.

For a manuscript to become a finished book requires an editor, and I can honestly say that Leah Spiro of McGraw-Hill took over the responsibility from Jeffrey Krames, my editor for the last two editions, with both skill and enthusiasm. Her input helped focus the material, and her encouragement spurred me to meet the tight deadlines. As with the last edition, Jane Palmieri did a superb job as editing manager.

As before, the support of my family was critical in my being able to produce this edition. Now that my sons are grown and out of the house, it was my wife Ellen who had to pay the whole price of the long hours

spent producing this book. She convinced me to completely clear my summer schedule so that I could complete the first draft before the school year—and my extensive lecturing schedule—began. That superb advice enabled us to take a weeklong vacation in Scotland before beginning the demanding job of editing the final drafts of the book. I am hopeful that my efforts will bring us even more time together in the future.

STOCKS FOR THE LONG RUN

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1
PART

THE VERDICT OF HISTORY

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CHAPTER 1

STOCK AND BOND RETURNS SINCE 1802

I know of no way of judging the future but by the past.

PATRICK HENRY, 1775¹

“EVERYBODY OUGHT TO BE RICH”

In the summer of 1929, a journalist named Samuel Crowther interviewed John J. Raskob, a senior financial executive at General Motors, about how the typical individual could build wealth by investing in stocks. In August of that year, Crowther published Raskob’s ideas in a *Ladies’ Home Journal* article with the audacious title “Everybody Ought to Be Rich.”

In the interview, Raskob claimed that America was on the verge of a tremendous industrial expansion. He maintained that by putting just \$15 per month into good common stocks, investors could expect their wealth to grow steadily to \$80,000 over the next 20 years. Such a return—24 percent per year—was unprecedented, but the prospect of effortlessly amassing a great fortune seemed plausible in the atmosphere

¹ Speech in Virginia Convention, March 23, 1775.

of the 1920s bull market. Stocks excited investors, and millions put their savings into the market seeking quick profit.

On September 3, 1929, a few days after Raskob's ideas appeared, the Dow Jones Industrial Average hit a historic high of 381.17. Seven weeks later, stocks crashed. The next 34 months saw the most devastating decline in share values in U.S. history.

On July 8, 1932, when the carnage was finally over, the Dow Industrials stood at 41.22. The market value of the world's greatest corporations had declined an incredible 89 percent. Millions of investors' life savings were wiped out, and thousands of investors who had borrowed money to buy stocks were forced into bankruptcy. America was mired in the deepest economic depression in its history.

Raskob's advice was ridiculed and denounced for years to come. It was said to represent the insanity of those who believed that the market could rise forever and the foolishness of those who ignored the tremendous risks inherent in stocks. Senator Arthur Robinson of Indiana publicly held Raskob responsible for the stock crash by urging common people to buy stock at the market peak.² In 1992, 63 years later, *Forbes* magazine warned investors of the overvaluation of stocks in its issue headlined "Popular Delusions and the Madness of Crowds." In a review of the history of market cycles, *Forbes* fingered Raskob as the "worst offender" of those who viewed the stock market as a guaranteed engine of wealth.³

Conventional wisdom holds that Raskob's foolhardy advice epitomizes the mania that periodically overruns Wall Street. But is that verdict fair? The answer is decidedly no. If you calculate the value of the portfolio of an investor who followed Raskob's advice in 1929, patiently putting \$15 a month into stocks, you find that his accumulation exceeded that of someone who placed the same money in Treasury bills after less than 4 years! By 1949 his stock portfolio would have accumulated almost \$9,000, a return of 7.86 percent, more than double the annual return in bonds. After 30 years the portfolio would have grown to over \$60,000, with an annual return rising to 12.72 percent. Although these returns were not as high as Raskob had projected, the total return of the stock portfolio over 30 years was more than 8 times the accumulation in bonds and more than 9 times that in Treasury bills. Those who never bought stock, citing the Great Crash as the vindication of their

² Irving Fisher, *The Stock Market Crash and After*, New York: Macmillan, 1930, p. xi.

³ "The Crazy Things People Say to Rationalize Stock Prices," *Forbes*, April 27, 1992, p. 150.

caution, eventually found themselves far behind investors who had patiently accumulated equity.⁴

The story of John Raskob's infamous prediction illustrates an important theme in the history of Wall Street. This theme is not the prevalence of foolish optimism at market peaks; rather, it is that over the last century, accumulations in stocks have always outperformed other financial assets for the patient investor. Even such calamitous events as the Great 1929 Stock Crash did not negate the superiority of stocks as long-term investments.

FINANCIAL MARKET RETURNS FROM 1802

This chapter analyzes the returns on stocks and bonds over long periods of time in both the United States and other countries. This two-century history is divided into three subperiods. In the first subperiod, from 1802 through 1870, the United States made a transition from an agrarian to an industrialized economy, comparable to the transition that the "emerging markets" of Latin America and Asia are making today.⁵ In the second subperiod, from 1871 through 1925, the United States became the foremost political and economic power in the world.⁶ The third subperiod, from 1926 to the present, contains the 1929 to 1932 stock collapse, the Great Depression, and the postwar expansion. The data from this period have been analyzed extensively by academics and professional money managers and have served as benchmarks for historical returns.⁷ The story is told in Figure 1-1. It depicts the total return indexes for stocks, long- and short-term bonds, gold, and commodities from 1802 through 2006. *Total return* means that all returns, such as interest and dividends and capital gains, are automatically reinvested in the asset and allowed to accumulate over time.

⁴ Raskob succumbed to investors in the 1920s who wanted to get rich quickly by devising a scheme by which investors borrowed \$300, adding \$200 of personal capital, to invest \$500 in stocks. Although in 1929 this was certainly not as good as putting money gradually in the market, even this plan beat investment in Treasury bills after 20 years.

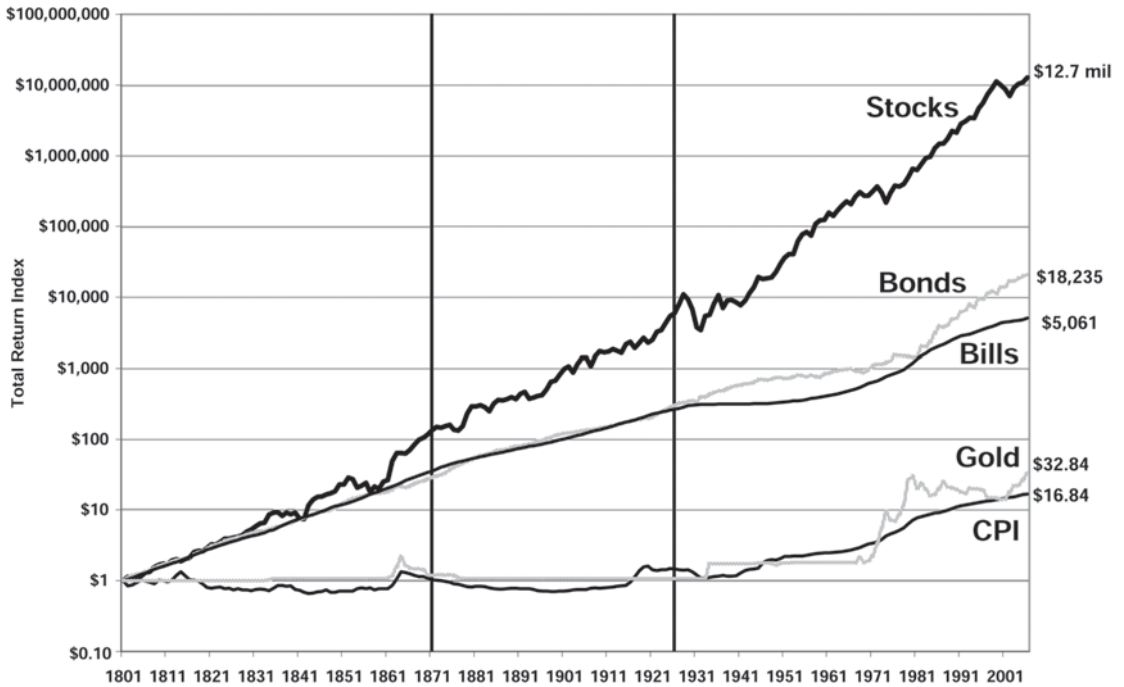
⁵ A brief description of the early stock market is found in Appendix 1 at the end of this chapter. The stock price data during this period are taken from Schwert (1990), and I have added my own dividend series. G. William Schwert, "Indexes of United States Stock Prices from 1802 to 1987," *Journal of Business*, vol. 63 (July 1990), pp. 399–426.

⁶ The stock series used in this period are taken from the Cowles indexes as reprinted in Robert Shiller, *Market Volatility*, Cambridge: MIT Press, 1989. The Cowles indexes are capitalization-weighted indexes of all New York Stock Exchange stocks, and they include dividends.

⁷ The data from the third period are taken from the Center for Research in Security Prices (CRSP) capitalization-weighted indexes of all New York stocks, and starting in 1962, they include American and Nasdaq stocks.

FIGURE 1-1

Total Nominal Return Indexes, 1802 through December 2006



It can be easily seen that the total return on equities dominates all other assets. Even the cataclysmic stock crash of 1929, which caused a generation of investors to shun stocks, appears as a mere blip in the stock return index. Bear markets, which so frighten investors, pale in the context of the upward thrust of total stock returns. One dollar invested and reinvested in stocks since 1802 would have accumulated to over \$12.7 million by the end of 2006. This sum can be realized by an investor holding the broadest possible portfolio of stocks in proportion to their market value and is calculated to include those companies that do not survive.⁸

By extension, the above analysis indicates that \$1 million invested and reinvested during these more than 200 years would have grown to the incredible sum of \$12.7 trillion by the end of 2006, nearly three-quarters the entire capitalization of the U.S. stock market!

One million dollars in 1802 is equivalent to roughly \$16.84 million in today's purchasing power. This was certainly a large, though not

⁸ Analysis of *survivorship bias* issues in computing returns is discussed in Chapter 20.

overwhelming, sum of money to the industrialists and landholders of the early nineteenth century.⁹ But total wealth in the stock market, or in the economy for that matter, does not accumulate as fast as the total return index. This is because investors consume most of their dividends and capital gains, enjoying the fruits of their past saving.

It is rare for anyone to accumulate wealth for long periods of time without consuming part of his or her return. The longest period of time investors typically hold onto assets without touching the principal and income occurs when they are accumulating wealth in pension plans for their retirement or in insurance policies that are passed on to their heirs. Even those who bequeath fortunes untouched during their lifetimes must realize that these accumulations are often dissipated in the next generation or spent by the foundations to which the money is bequeathed.¹⁰ The stock market has the power to turn a single dollar into millions by the forbearance of generations—but few will have the patience or desire to endure the wait.

THE LONG-TERM PERFORMANCE OF BONDS

Bonds are the most important financial assets competing with stocks. Bonds promise fixed monetary payments over time. In contrast to equity, the cash flows from bonds have a maximum monetary value set by the terms of the contract. Except in the case of default, bond returns do not vary with the profitability of the firm.

The bond series shown in Figure 1-1 are based on long- and short-term U.S. Treasury bonds, when available; if they were not available, other highest-grade municipal bonds were chosen. Default premiums were removed from all interest rates in order to obtain a comparable series over the entire period.¹¹

The interest rates on long-term bonds and short-term bonds, called *bills*, over the 200-year period are displayed in Figure 1-2. Interest rate fluctuations during the nineteenth and early twentieth centuries re-

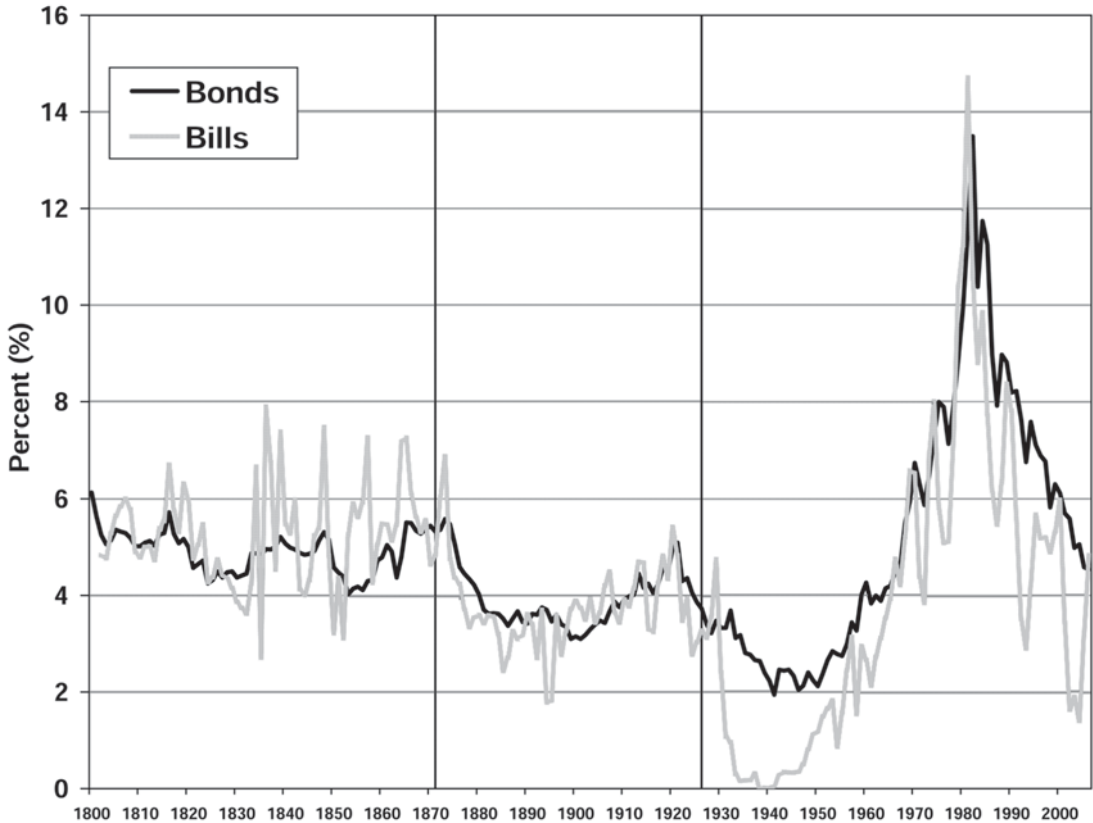
⁹ Blodget, an early-nineteenth-century economist, estimated the wealth of the United States at that time to be nearly \$2.5 billion so that \$1 million would be only about 0.04 percent of the total wealth: S. Blodget, Jr., *Economica, A Statistical Manual for the United States of America*, 1806 edition, p. 68.

¹⁰ One of the world's largest foundations, the Bill and Melinda Gates Foundation to which Warren Buffett has left the bulk of his money, has announced that all of its money must be spent within 50 years of their deaths.

¹¹ See Jeremy Siegel, "The Real Rate of Interest from 1800–1990: A Study of the U.S. and the U.K.," *Journal of Monetary Economics*, vol. 29 (1992), pp. 227–252, for a detailed description of the process by which a historical yield series was constructed.

FIGURE 1-2

U.S. Interest Rates, 1800 through December 2006



mained within a narrow range. But from 1926 to the present, the behavior of both long- and short-term interest rates changed dramatically. During the Great Depression of the 1930s, short-term interest rates fell nearly to zero, and yields on long-term government bonds fell to a record low of 2 percent. In order to finance record wartime borrowings, the government maintained low rates during World War II and the early postwar years. Deposit rates were also kept low by strict limits, known as Regulation Q,¹² imposed by the Federal Reserve on bank deposit rates through the 1950s and 1960s.

¹² Regulation Q was a provision in the Banking Act of 1933 that imposed ceilings on interest rates and time deposits.

The 1970s marked an unprecedented change in interest rate behavior. Inflation reached double-digit levels, and interest rates soared to heights that had not been seen since the debasing of the continental currency in the early years of the republic. Never before had inflation been so high for so long.

The public clamored for government action to slow rising prices. Finally, by 1982, the restrictive monetary policy of Paul Volcker, chairman of the Federal Reserve System since 1979, brought inflation and interest rates down to more moderate levels. One can see that the level of interest rates is closely tied to the level of inflation. Understanding the returns on fixed-income assets therefore requires knowledge of how inflation is determined.

THE END OF THE GOLD STANDARD AND PRICE STABILITY

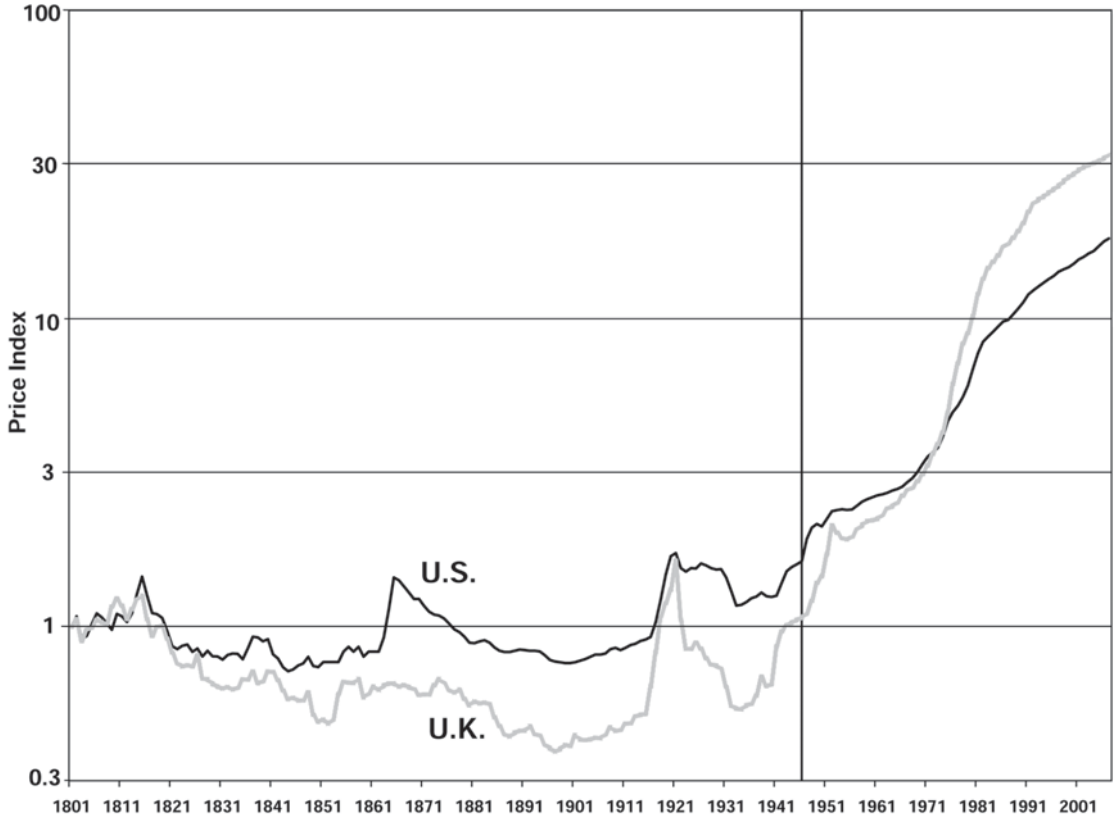
Consumer prices in the United States and the United Kingdom over the past 200 years are depicted in Figure 1-3. In each country, the price level at the end of World War II was essentially the same as it was 150 years earlier. But after World War II, the nature of inflation changed dramatically. The price level rose almost continuously during that 60-year period, often gradually, but sometimes at double-digit rates as in the 1970s. Excluding wartime, the 1970s witnessed the first rapid and sustained inflation ever experienced in U.S. history.

The dramatic changes in the recent inflationary trend can be easily explained. During the nineteenth and early twentieth centuries, the United States, United Kingdom, and the rest of the industrialized world were on a gold standard. As described in detail in Chapter 11, a gold standard restricts the supply of money and hence the inflation rate. But from the Great Depression through World War II, the world shifted to a paper money standard. Under a paper money standard there is no legal constraint on the issuance of money, so inflation is subject to political as well as economic forces. Price stability depends on the ability of the central banks to limit the growth of the supply of money in order to counteract deficit spending and other inflationary policies implemented by the federal government.

The chronic inflation that the United States and other developed economies have experienced since World War II does not mean that the gold standard was superior to the current paper money standard. The gold standard was abandoned because of its inflexibility in the face of economic crises, particularly during the banking collapse of the 1930s. The paper money standard, if properly administered, can prevent the

FIGURE 1-3

U.S. and U.K. Price Indexes, 1800 through December 2006 (1800 = \$1)



banking panics and severe depressions that plagued the gold standard and still bring inflation down to very moderate levels, as we have seen in the last two decades.

It is not surprising that the price of gold has closely followed the trend of overall inflation over the past two centuries. Its price soared to \$850 per ounce in January 1980, following the rapid inflation of the preceding decade. When inflation was brought under control, its price fell. One dollar of gold bullion purchased in 1802 was worth \$32.84 at the end of 2006. In the long run, gold offers investors protection against inflation, but little else. Whatever hedging property precious metals possess, holding these assets will exert a considerable drag on the return of a long-term investor's portfolio.¹³

TOTAL REAL RETURNS

The focus of every long-term investor should be the growth of purchasing power—that is, monetary wealth adjusted for the effect of inflation. Figure 1-4 shows the growth of purchasing power, or total real returns, in the same assets that were graphed in Figure 1-1: stocks, bonds, bills, and gold. These data are constructed by taking the dollar returns and correcting them by the changes in the price level shown in Figure 1-3.¹⁴

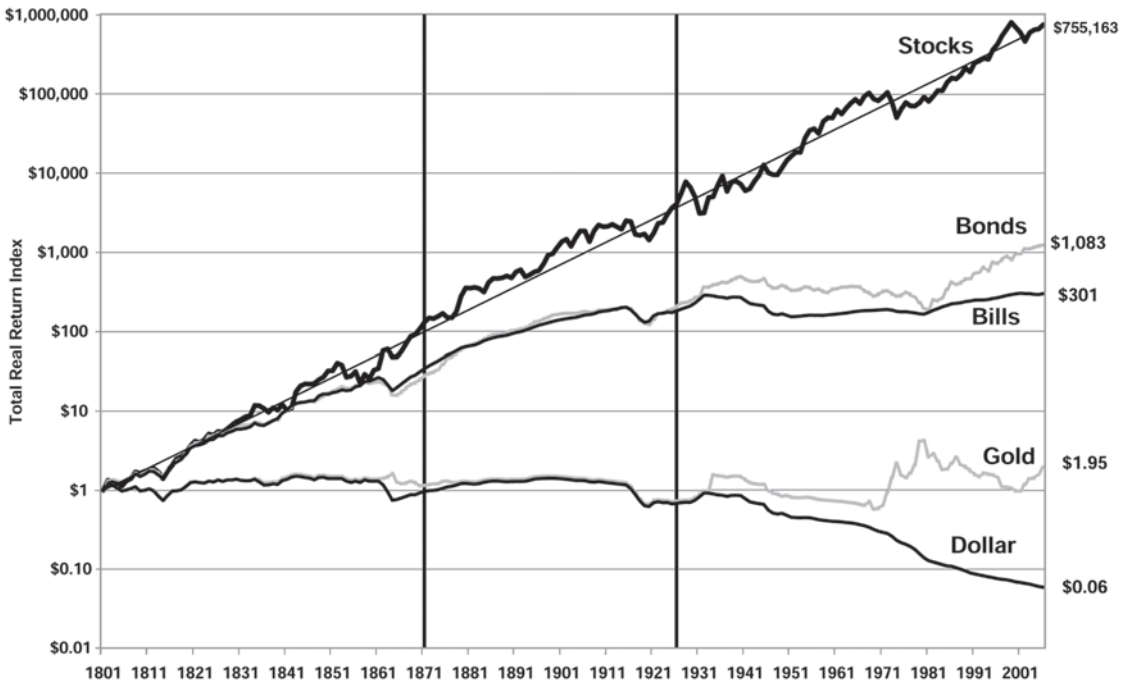
The growth of purchasing power in equities not only dominates all other assets but also shows remarkable long-term stability. Despite ex-

¹³ Ironically, despite the inflationary bias of a paper money system, well-preserved paper money from the early nineteenth century is worth many times its face value on the collectors' market, far surpassing gold bullion as a long-term investment. An old mattress found containing nineteenth-century paper money is a better find for an antiquarian than an equivalent sum hoarded in gold bars!

¹⁴ Total returns are graphed on a ratio, or logarithmic scale. Economists use this scale to graph virtually all long-term data since equal vertical distances anywhere in the chart represent equal percentage changes in return. As a result, a constant slope represents a constant after-inflation rate of return.

FIGURE 1-4

Total Real Return Indexes, 1802 through December 2006



traordinary changes in the economic, social, and political environment over the past two centuries, stocks have yielded between 6.6 and 7.0 percent per year after inflation in all major subperiods.

The wiggles on the stock return line represent the bull and bear markets that equities have suffered throughout history. The long-term perspective radically changes one's view of the risk of stocks. The short-term fluctuations in the stock market, which loom so large to investors when they occur, are insignificant when compared to the upward movement of equity values over time.

In contrast to the remarkable stability of stock returns, real returns on fixed-income assets have declined markedly over time. In the first and even second subperiods, the annual returns on bonds and bills, although less than those on equities, were significantly positive. But since 1926, and especially since World War II, fixed-income assets have returned little after inflation.

INTERPRETATION OF RETURNS

Long-Term Returns

The annual returns on U.S. stocks over the past two centuries are summarized in Table 1-1.¹⁵ The shaded column represents the real after-inflation, compound annual rate of return on stocks. The real return on equities has averaged 6.8 percent per year over the past 204 years. This means that purchasing power has, on average, doubled in the stock market about every 10 years. If past trends persist—that is, if inflation averages 2½ percent per year and equities offer a 6½ percent forward-looking annual real return—this increase in purchasing power would translate into about a 9 percent per year nominal or money return on stocks.

Note the extraordinary stability of the real return on stocks over all major subperiods: 7.0 percent per year from 1802 through 1870, 6.6 percent from 1871 through 1925, and 6.8 percent per year since 1926. Even since World War II, during which all the inflation that the United States has experienced over the past 200 years occurred, the average real rate of

¹⁵ The dividend yield for the first subperiod has been estimated by statistically fitting the relation of long-term interest rates to dividend yields in the second subperiod, yielding results that are closer to other information we have about dividends during the period. See Walter Werner and Steven Smith, *Wall Street*, New York: Columbia University Press, 1991, for a description of some early dividend yields. See also a recent paper by William Goetzmann and Phillippe Jorion, "A Longer Look at Dividend Yields," *Journal of Business*, vol. 68, no. 4 (1995), pp. 483–508, and William Goetzmann, "Patterns in Three Centuries of Stock Market Prices," *Journal of Business*, vol. 66, no. 2 (1993), pp. 249–270.

TABLE 1-1

Annual Stock Market Returns, 1802 through December 2006

Comp = compound annual return
 Arith = arithmetic average of annual returns
 Risk = standard deviation of arithmetic returns
 All Data in Percent (%)

		Total Nominal Return			Nominal Capital Appreciation			Div Yld	Total Real Return			Real Capital Appreciation			Real Gold Retn	Consumer Price Inflation
		Comp	Arith	Risk	Comp	Arith	Risk		Comp	Arith	Risk	Comp	Arith	Risk		
Periods	1802-2006	8.3	9.7	17.5	2.9	4.3	17.4	5.1	6.8	8.4	18.1	1.5	3.0	17.8	0.3	1.4
	1871-2006	8.9	10.5	18.5	4.2	5.8	18.3	4.5	6.7	8.4	18.8	2.1	3.9	18.5	0.4	2.0
Major Subperiods	I 1802-1870	7.1	8.1	15.5	0.3	1.3	15.4	6.4	7.0	8.3	16.9	0.1	1.4	16.4	0.2	0.1
	II 1871-1925	7.2	8.4	15.7	1.9	3.1	16.1	5.2	6.6	7.9	16.8	1.3	2.7	17.1	-0.8	0.6
	III 1926-2006	10.1	12.0	20.1	5.8	7.7	19.5	4.0	6.8	8.8	20.1	2.7	4.6	19.5	1.2	3.0
Postwar Period	1946-2006	11.2	12.5	16.9	7.4	8.6	16.3	3.6	6.9	8.4	17.4	3.2	4.6	16.8	0.5	4.0
	1946-1965	13.1	14.3	19.5	8.2	9.2	18.7	4.6	10.0	11.4	18.7	5.2	6.5	18.1	-2.7	2.8
	1966-1981	6.6	8.3	17.2	2.6	4.3	16.6	3.9	-0.4	1.4	17.1	-4.1	-2.4	16.7	8.8	7.0
	1982-1999	17.3	18.0	12.5	13.8	14.5	12.4	3.1	13.6	14.3	12.6	10.2	10.9	12.6	-4.9	3.3
	1985-2006	12.4	13.6	15.6	9.8	11.0	15.1	2.4	8.4	10.3	15.4	6.6	7.7	14.9	0.3	3.0

return on stocks has been 6.9 percent per year. This is virtually identical to the previous 125 years, which saw no overall inflation. This remarkable stability is called the *mean reversion* of equity returns, which means that returns can be very unstable in the short run but very stable in the long run.

Mean reversion can also be seen by noting how the total real return in stocks “cling” to the statistical trend line fitted through the 204 years of stock market data in Figure 1-4. When the total real return on stocks was substantially above the trend line, such as during the late 1960s and 1990s, the market was at risk for a correction, as forces of mean reversion eventually worked to bring total returns down. Similarly, periods during which the market fell below the trend line, such as during the early 1980s, pointed to promising future returns.

The long-term stability of stock returns is all the more surprising when one reflects on the dramatic changes that have taken place in our society during the last two centuries. The United States evolved from an agricultural to an industrial economy and then to the postindustrial, service- and technology-oriented economy it is today. The world shifted from a gold-based standard to a paper money standard. And information, which once took weeks to cross the country, can now be instantana-

neously transmitted and simultaneously broadcast around the world. Yet despite mammoth changes in the basic factors generating wealth for shareholders, equity returns have shown an astounding stability.

Short-Term Returns and Volatility

The bull market from 1982 through 1999 gave investors an extraordinary after-inflation return of 13.6 percent per year, which is double the historical average. This constituted the greatest bull market in U.S. stock market history. The superior equity returns over this period followed the dreadful stock returns realized in the previous 15 years, from 1966 through 1981, when the real rate of return was -0.4 percent. Nevertheless, this bull market carried stocks too high, as total real returns in Figure 1-4 reached 81 percent above the trend line. The subsequent bear market and recovery have brought stocks, as of the end of 2006, near their long-term trends.

REAL RETURNS ON FIXED-INCOME ASSETS

As stable as the long-term real returns have been for equities, the same cannot be said of fixed-income assets. The nominal and real returns on both short-term and long-term bonds are reported in Table 1-2 covering the same time periods as in Table 1-1. The real return on bills has dropped precipitously from 5.1 percent in the early part of the nineteenth century to a bare 0.7 percent since 1926, a return only slightly above inflation.

The real return on long-term bonds has shown a similar pattern. Bond returns fell from a generous 4.8 percent in the first subperiod to 3.7 percent in the second, and then to only 2.4 percent in the third. If the returns from the last 80 years were projected into the future, it would take 32 years to double one's purchasing power in bonds and nearly 100 years to do so in Treasury bills. In contrast, it takes about 10 years to double purchasing power in stocks.

The decline in the average real return on fixed-income securities is striking. In any 30-year period beginning with 1889, the average real rate of return on short-term government securities has exceeded 2 percent only three times. Since the late nineteenth century, the real return on bonds and bills over any 30-year horizon has seldom matched the average return of 4.5 to 5 percent reached during the first 70 years of our sample. From 1880, the real return on long-term bonds over every 30-year period has never reached 4 percent, and it has exceeded 3 percent during only 22 such periods.

TABLE 1-2

Fixed-Income Returns, 1802 through December 2006

Comp = compound annual return
 Arith = arithmetic average of annual returns
 Risk = standard deviation of arithmetic returns
 All Data in Percent (%)

		<i>Long-Term Governments</i>							<i>Short-Term Governments</i>			
		Coupon Rate	Nominal Return			Real Return			Nominal Rate	Real Return		
			Comp	Arith	Risk	Comp	Arith	Risk		Comp	Arith	Risk
Periods	1802-2006	4.8	5.0	5.1	6.2	3.5	3.9	8.8	4.3	2.8	3.0	6.0
	1871-2006	4.7	5.0	5.3	7.4	2.9	3.3	8.9	3.8	1.7	1.8	4.5
Major Subperiods	I 1802-1870	4.9	4.9	4.9	2.8	4.8	5.1	8.3	5.2	5.1	5.4	7.7
	II 1871-1925	4.0	4.3	4.4	3.0	3.7	3.9	6.4	3.8	3.2	3.3	4.8
	III 1926-2006	5.2	5.5	5.8	9.2	2.4	2.9	10.3	3.8	0.7	0.8	4.0
Postwar Periods	1946-2006	6.0	5.7	6.2	10.2	1.6	2.2	10.9	4.7	0.6	0.6	3.2
	1946-1965	3.1	1.6	1.7	7.1	-1.2	-1.0	8.1	2.0	-0.8	-0.7	2.1
	1966-1981	7.2	2.5	2.8	12.0	-4.2	-3.9	12.9	6.9	-0.2	-0.1	2.4
	1982-1999	8.5	12.1	12.9	13.8	8.5	9.3	13.6	6.3	2.9	2.9	1.8
	1985-2006	7.0	10.4	11.0	12.3	7.2	7.7	12.0	4.9	1.7	1.8	2.1

You have to go back more than 1½ centuries to the period from 1831 through 1861 to find any 30-year period during which the return on either long- or short-term bonds exceeded that on equities. The dominance of stocks over fixed-income securities is overwhelming for investors with long horizons.

THE FALL IN FIXED-INCOME RETURNS

Although the returns on equities have fully compensated stock investors for the increased inflation since World War II, the returns on fixed-income securities have not. The change in the monetary standard from gold to paper had a far greater impact on the returns of fixed-income assets than on stocks. It is clear that the buyers of long-term bonds in the 1940s, 1950s, and early 1960s did not recognize the inflationary consequences of the change in monetary regime. How else can you explain

why investors voluntarily purchased 30-year bonds with 3 and 4 percent coupons ignoring a government policy that favored inflation?

But there must have been other reasons for the decline in real returns on fixed-income assets. Theoretically, the unanticipated inflation of the postwar period should have had a significantly smaller effect on the real return of short-term bonds, such as Treasury bills. This is because short-term rates may be reset frequently to capture expected inflation. But, as noted previously, the decline in the real return on short-term bonds actually exceeded the decline in the real return on long-term bonds.

Another explanation for the fall in bond returns is investors' reaction to the financial turmoil of the Great Depression. The stock collapse of the early 1930s caused a whole generation of investors to shun equities and invest in government bonds and newly insured bank deposits, driving bond returns downward. Finally, many investors bought bonds because of the widespread but incorrect predictions that another depression would follow the war.

But it was not just the risk preferences of investors that kept fixed rates low. The Federal Reserve actively supported the bond market through much of the 1940s to keep the government's interest expense low. This support policy was abandoned in 1951 because it led to interest rates that were inconsistent with one of its primary goals of maintaining low inflation.

And finally, one should not ignore the transformation of a highly segmented market for short-term instruments in the nineteenth century into one of the world's most liquid markets today. Treasury bills satisfy certain fiduciary and legal requirements that no other asset can match. But the premium paid for these services has translated into a meager return for investors, who have paid a high price for gaining *short-term* stability of their assets.

THE EQUITY PREMIUM

Whatever the reasons for the decline in the real return on fixed-income assets over the past century, it is very likely that the real returns on bonds will be higher on average in the future than they have been since the end of World War II. As a result of the inflation shock of the 1970s, bondholders have incorporated an inflation premium in the coupon on long-term bonds. In most major industrialized nations, if inflation does not increase appreciably from current levels (2 to 3 percent), real returns of about 2 percent will be realized from government bonds whose nom-

inal rate is between 4 and 5 percent. These projected real returns are lower than the 3½ percent average compound real return on U.S. long-term government bonds over the past 205 years, but they are not as low as they were during the postwar period.

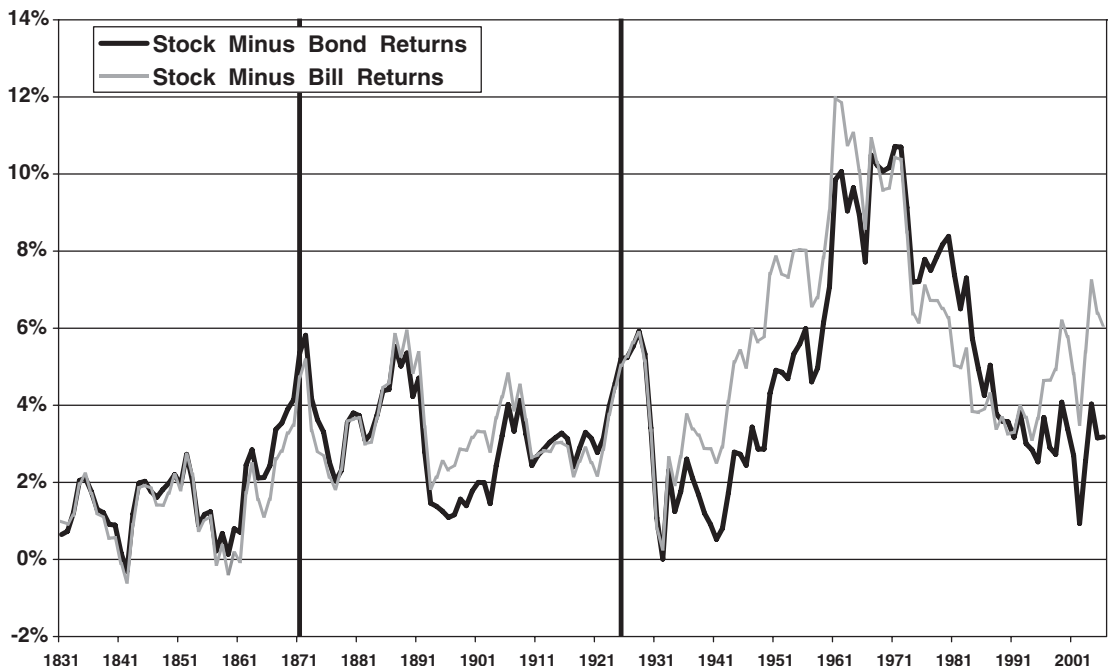
The excess return for holding equities over short-term bonds is plotted in Figure 1-5, and it is referred to as the *equity risk premium*, or simply the *equity premium*.¹⁶ The equity premium, calculated as the difference in 30-year compound annual real returns on stocks and bills, averaged 1.4 percent in the first subperiod, 3.4 percent in the second subperiod, and 5.9 percent since 1926.

The abnormally high equity premium since 1926 is certainly not sustainable. It is not a coincidence that the highest 30-year average eq-

¹⁶ For a rigorous analysis of the equity premium, see Jeremy Siegel and Richard Thaler, "The Equity Premium Puzzle," *Journal of Economic Perspectives*, vol. 11, no. 1 (Winter 1997), pp. 191–200, and more recently, "Perspectives on the Equity Risk Premium," *Financial Analysts Journal*, vol. 61, no. 1 (November/December 2005), pp. 61–73, reprinted in Rodney N. Sullivan, *Bold Thinking on Investment Management*, CFA Institute, 2005, pp. 202–217.

FIGURE 1-5

Equity Risk Premium (30-Year Compound Annual Moving Average, 1831 through December 2006)



uity return occurred in a period marked by very low real returns on bonds. Since firms finance a large part of their capital investment with bonds, the low cost of obtaining such funds increased returns to shareholders. The period of the 1930s and 1940s marked an extremely undervalued period for equities and overvalued period for government bonds, leading to unusually high returns for stocks and low returns for bonds. As stocks and bonds become more correctly priced, the equity premium will certainly shrink. Chapter 8 will further discuss the equity premium and its implications for future returns.

WORLDWIDE EQUITY AND BOND RETURNS: GLOBAL STOCKS FOR THE LONG RUN

When I published *Stocks for the Long Run* in 1994, some economists questioned whether my conclusions, drawn from data from the United States, might overstate equity returns measured on a worldwide basis.

Several economists emphasized the existence of a *survivorship bias* in international returns, a bias caused by the fact that long-term returns are intensively studied in successful equity markets, such as the United States, but ignored in countries, such as Russia or Argentina, where stocks have faltered or disappeared outright.¹⁷ This bias suggested that stock returns in the United States, a country that over the last 200 years has been transformed from a small British colony into the world's greatest economic power, are unique and historical equity returns in other countries would be lower.

Three U.K. economists subsequently examined the historical stock and bond returns from 16 countries over the past century and put to bed concerns about survivorship bias. Elroy Dimson and Paul Marsh, professors at the London Business School, and Mike Staunton, director of the London Share Price Database, published their research in a book entitled *Triumph of the Optimists: 101 Years of Global Investment Returns*. This book provides a rigorous yet readable account of worldwide financial market returns in 16 separate countries.

Despite the major disasters visited on many of these countries, such as war, hyperinflation, and depressions, all 16 countries offered substantially positive, after-inflation stock returns. Furthermore, fixed-income returns in countries that experienced major wartime dislocations, such as Italy, Germany, and Japan, were decidedly negative, so that the supe-

¹⁷ See Stephen J. Brown, William N. Goetzmann, and Stephen A. Ross, "Survival," *Journal of Finance*, vol. 50 (1995), p. 853–873.

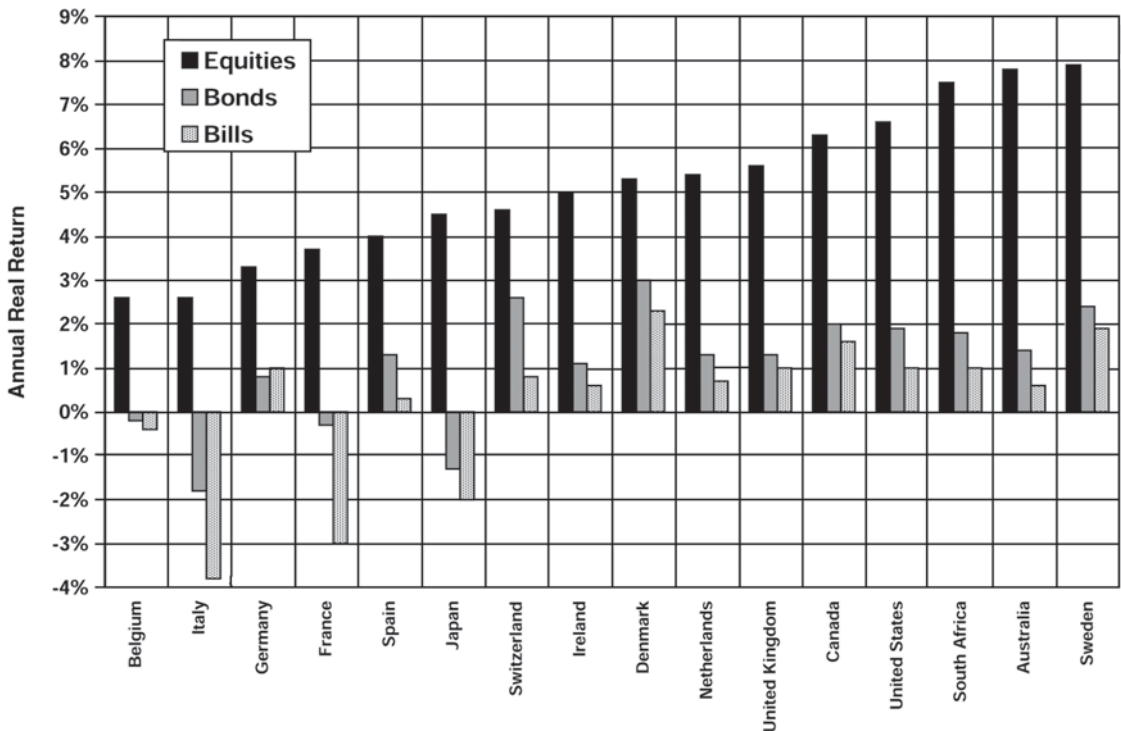
riority of equities relative to other financial assets was decisive in all countries.

The average annual real stock, bond, and bill returns of the 16 countries analyzed from 1900 through 2006 are shown in Figure 1-6.¹⁸ Real equity returns ranged from a low of 2.7 percent in Belgium to a high of almost 8 percent in Sweden and Australia. Stock returns in the United States, although quite good, were not exceptional. U.S. stock returns were exceeded by the returns in Sweden, Australia, and South Africa. And the average real-world return on stocks is not far from the U.S. return.

¹⁸ Elroy Dimson, Paul Marsh, and Mike Staunton, "Global Investment Returns Yearbook 2007," ABN-AMRO Bank NV, February 2007.

FIGURE 1-6

Average Annual Real Stock, Bond, and Bill Returns of the 16 Countries Analyzed from 1900 through December 2006



SOURCE: Based on information from Elroy Dimson, Paul Marsh, and Michael Staunton, *Triumph of the Optimists: 101 Years of Global Investment Returns*, (Princeton, N.J.: Princeton University Press, 2002).

When all the information was analyzed, the *Triumph of the Optimists* concluded “that the US experience of equities outperforming bonds and bills has been mirrored in all sixteen countries examined. . . . Every country achieved equity performance that was better than that of bonds. Over the 101 years as a whole, there were only two bond markets and just one bill market that provided a better return than our *worst* performing equity market.”

Furthermore, “While the US and the UK have indeed performed well, . . . there is no indication that they are hugely out of line with other countries. . . . Concerns about success and survivorship bias, while legitimate, may therefore have been somewhat overstated [and] investors may have not been materially misled by a focus on the US.”^{19,20}

This last statement is significant. More studies have been made of the U.S. equity markets than the equity markets of any other country in the world. Dimson, Marsh, and Staunton are saying that the results found in the United States have relevance to all investors in all countries. The superior performance of U.S. equities over the past two centuries is not a special case. Stocks have outperformed fixed-income assets in every country examined and often by an overwhelming margin. International studies have reinforced, not diminished, the case for equities.

CONCLUSION: STOCKS FOR THE LONG RUN

Over the past 200 years the compound annual real return on a diversified portfolio of common stock is nearly 7 percent in the United States, and it has displayed a remarkable constancy over time. The reasons for the persistence and long-term stability of stock returns are not well understood. Certainly the returns on stocks are dependent on the quantity and quality of capital, productivity, and the return to risk taking. But the ability to create value also springs from skillful management, a stable political system that respects property rights, and the capacity to provide value to consumers in a competitive environment. Swings in investor sentiment resulting from political or economic crises can throw stocks off their long-term path, but the fundamental forces producing economic growth enable equities to regain their long-term trend. Perhaps that is why long-

¹⁹ Elroy Dimson, Paul Marsh, and Michael Staunton, *Triumph of the Optimists: 101 Years of Global Investment Returns*, Princeton, N.J.: Princeton University Press, 2002, pp. 52–53 and 175.

²⁰ In fact, *Triumph of the Optimists* may have actually *understated* long-term international stock returns. The U.S. stocks markets and other world markets for which we have data did very well in the 30 years prior to 1900, when their study begins. U.S. returns measured from 1871 outperform those returns taken from 1900 by 32 basis points. Data from the United Kingdom show a very similar pattern.

term stock returns have displayed such stability despite the radical political, economic, and social changes that have impacted the world over the past two centuries.

Yet one must be aware of the political and legal framework in which these returns were generated. The superior returns to equity over the past two centuries might be explained by the growing dominance of nations committed to free-market economics. Who might have expected the triumph of market-oriented economies during the Great Depression of the 1930s and the tumult following World War II? The robustness of world equity prices in recent decades might reflect the emergence of the golden age of capitalism—a system in ascendancy today but whose fortunes could decline in the future. Yet even if capitalism declines, it is unclear which assets, if any, will retain value. In fact, if history is any guide, government bonds in our paper money world may fare far worse than stocks in any political or economic upheaval. As the next chapter shows, the risks in bonds actually outweigh those in stocks over long horizons.

APPENDIX 1: STOCKS FROM 1802 TO 1870

The first actively traded U.S. stocks, floated in 1791, were issued by two banks: the Bank of New York and the Bank of the United States.²¹ Both offerings were enormously successful and were quickly bid to a premium. But they collapsed the following year when Alexander Hamilton's assistant at the Treasury, William Duer, attempted to manipulate the market and precipitated a crash. It was from this crisis that the antecedents of the New York Stock Exchange were born on May 17, 1792.

Joseph David, an expert on the eighteenth-century corporation, claimed that equity capital was readily forthcoming not only for every undertaking likely to be profitable but also, in his words, "for innumerable undertakings in which the risk was very great and the chances of success were remote."²² Although over 300 business corporations were chartered by the states before 1801, fewer than 10 had securities that traded on a regular basis. Two-thirds of those chartered before 1801 were

²¹ Until recently, the oldest continuously operating firm was Dexter Corp., founded in 1767, a Connecticut maker of special materials that was purchased in September 2000 by Invitrogen Corp. The current oldest is Bowne & Co. (1775), which specializes in printing; the second is Wachovia Bank, which acquired First Union, the successor of the First National Bank of Pennsylvania founded in 1782; and the third is the Bank of New York Corp., founded in 1784, which was involved in the successful 1791 stock offering with the Bank of the United States that was eventually involved in the crash of 1792.

²² Werner and Smith, *Wall Street*, p. 82.

connected with transportation: wharves, canals, turnpikes, and bridges. But the important stocks of the early nineteenth century were financial institutions: banks and, later, insurance companies. Banks and insurance companies held loans and equity in many of the manufacturing firms that, at that time, did not have the financial standing to issue equity. The fluctuations in the stock prices of financial firms in the nineteenth century reflected the health of the general economy and the profitability of the firms to whom they lent. The first large nonfinancial venture was the Delaware and Hudson Canal, issued in 1825, which also became an original member of the Dow Jones Industrial Average 60 years later. In 1830, the first railroad, the Mohawk and Hudson, was listed, and for the next 50 years railroads dominated trading on the major exchanges.

APPENDIX 2: ARITHMETIC AND GEOMETRIC RETURNS

The average arithmetic return r_A is the average of each yearly return. If r_1 to r_n are the n yearly returns, $r_A = (r_1 + r_2 + \dots + r_n)/n$. The average geometric, or compound, return r_G is the n th root of the product of one-year total returns minus 1. Mathematically this is expressed as $r_G = [(1 + r_1)(1 + r_2) \dots (1 + r_n)]^{1/n} - 1$. An asset that achieves a geometric return of r_G will accumulate to $(1 + r_G)^n$ times the initial investment over n years. The geometric return is approximately equal to the arithmetic return minus one-half the variance σ^2 of yearly returns, or $r_G \approx r_A - \frac{1}{2}\sigma^2$.

Investors can be expected to realize geometric returns only over long periods of time. The average geometric return is always less than the average arithmetic return except when all yearly returns are exactly equal. This difference is related to the volatility of yearly returns.

A simple example demonstrates the difference. If a portfolio falls by 50 percent in the first year and then doubles (up 100 percent) in the second year, “buy-and-hold” investors are back to where they started, with a total return of zero. The compound or geometric return r_G , defined above as $(1 - 0.5)(1 + 1) - 1$, accurately indicates the zero total return of this investment over the two years.

The average annual arithmetic return r_A is +25 percent = $(-50 \text{ percent} + 100 \text{ percent})/2$. Over two years, this average return can be turned into a compound or total return only by successfully “timing” the market, specifically increasing the funds invested in the second year, hoping for a recovery in stock prices. Had the market dropped again in the second year, this strategy would have been unsuccessful and resulted in lower total returns than achieved by the buy-and-hold investor.

CHAPTER 2

RISK, RETURN, AND PORTFOLIO ALLOCATION

Why Stocks Are Less Risky Than Bonds in the Long Run

As a matter of fact, what investment can we find which offers real fixity or certainty income? . . . As every reader of this book will clearly see, the man or woman who invests in bonds is speculating in the general level of prices, or the purchasing power of money.

IRVING FISHER, 1912¹

MEASURING RISK AND RETURN

Risk and return are the building blocks of finance and portfolio management. Once the risk and expected return of each asset are specified, modern financial theory can help investors determine the best portfolios. But

¹ Irving Fisher et al., *How to Invest When Prices Are Rising*, Scranton, Pa.: G. Lynn Sumner & Co., 1912, p. 6.

the risk and return on stocks and bonds are not physical constants, like the speed of light or gravitational force, waiting to be discovered in the natural world. Despite the overwhelming quantity of historical data, one can never be certain that the underlying factors that generate asset prices have remained unchanged. One cannot, as in the physical sciences, run repeated controlled experiments, holding all other factors constant while estimating the value of the parameter in question. As Nobel laureate Paul Samuelson is fond of saying, “We have but one sample of history.”

Yet one must start by analyzing the past in order to understand the future. The first chapter showed that not only have fixed-income returns lagged substantially behind those on equities but, because of the uncertainty of inflation, bonds can be quite risky for long-term investors. In this chapter one shall see that because of the changing nature of risk over time, portfolio allocations depend crucially on the investor’s planning horizon.

RISK AND HOLDING PERIOD

For many investors, the most meaningful way to describe risk is by portraying a “worst-case scenario.” The best and worst after-inflation returns for stocks, bonds, and bills from 1802 over holding periods ranging from 1 to 30 years are displayed in Figure 2-1. Here stock returns are measured by dividends plus capital gains or losses available on a broad capitalization-weighted index of U.S. small and large stocks.

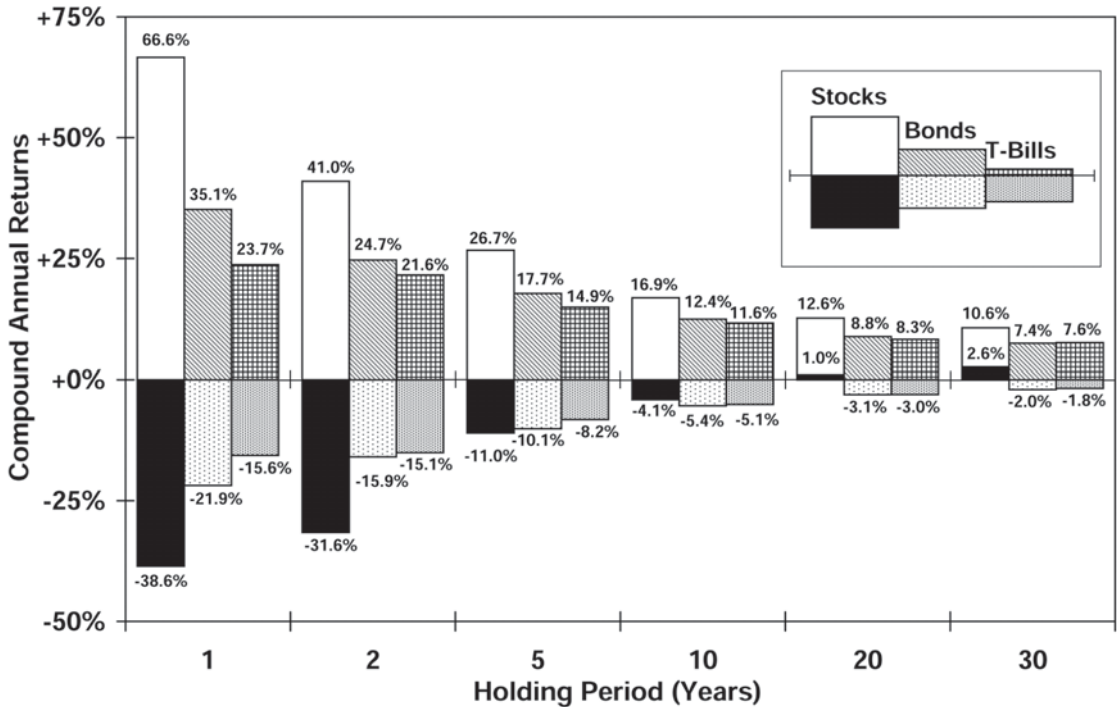
Note that the height of the bars, which measures the difference between best and worst returns, declines far more rapidly for equities than for fixed-income securities as the holding period increases.

Stocks are unquestionably riskier than bonds or Treasury bills over one- and two-year periods. However, in every five-year period since 1802, the worst performance in stocks, at –11 percent per year, has been only slightly worse than the worst performance in bonds or bills. And for 10-year holding periods, the worst stock performance has actually been *better* than that for bonds or bills.

For 20-year holding periods, stock returns have never fallen below inflation, while returns for bonds and bills once fell as much as 3 percent per year below the inflation rate for two decades. This wiped out almost one-half the purchasing power of a bond portfolio. For 30-year periods, the worst returns for stocks remained comfortably ahead of inflation by 2.6 percent per year, a return that is not far from the *average* return on fixed-income assets.

FIGURE 2-1

Maximum and Minimum Real Holding Period Returns, 1802 through December 2006



It is very significant that stocks, in contrast to bonds or bills, have never delivered to investors a negative real return over periods of 17 years or more. Although it might appear to be riskier to accumulate wealth in stocks rather than in bonds over long periods of time, precisely the opposite is true: the safest long-term investment for the preservation of purchasing power has clearly been a diversified portfolio of equities.

Some investors question whether holding periods of 10 or 20 or more years are relevant to their planning horizon. But one of the greatest mistakes that investors make is to underestimate their holding period. This is because many investors think about the holding periods of a particular stock, bond, or mutual fund. But the holding period that is relevant for portfolio allocation is the length of time the investors hold *any* stocks or bonds, no matter how many changes are made among the individual issues in their portfolio.

The percentage of times that stock returns outperform bond or bill returns over various holding periods is shown in Table 2-1. As the hold-

TABLE 2-1

Holding Period Comparisons: Percentage of Periods When Stocks Outperform Bonds and Bills

Holding Period	Time Period	Stocks Outperform Bonds	Stocks Outperform T-Bills
1 Year	1802-2006	61.0	62.0
	1871-2006	60.3	64.7
2 Year	1802-2006	65.2	65.7
	1871-2006	65.4	69.9
3 Year	1802-2006	67.2	70.2
	1871-2006	68.7	73.3
5 Year	1802-2006	69.2	72.6
	1871-2006	71.3	75.0
10 Year	1802-2006	80.1	80.6
	1871-2006	82.4	85.3
20 Year	1802-2006	91.9	94.6
	1871-2006	95.6	99.3
30 Year	1802-2006	99.4	97.2
	1871-2006	100.0	100.0

ing period increases, the probability that stocks will outperform fixed-income assets increases dramatically. For 10-year horizons, stocks beat bonds and bills about 80 percent of the time; for 20-year horizons, it is over 90 percent of the time; and over 30-year horizons, it is virtually 100 percent of the time.

As noted in the last chapter, the last 30-year period in which bonds beat stocks ended in 1861, at the onset of the U.S. Civil War. This is a point worth remembering: never in any of the past 175 years would a buyer of newly issued 30-year government bonds (had they been issued on an annual basis) have outperformed an investor in a diversified portfolio of common stocks held over the same period.

Although the dominance of stocks over bonds is readily apparent in the long run, it is also important to note that over one- and even two-year periods, stocks outperform bonds or bills only about three out of every five years. This means that nearly two out of every five years a

stockholder's return will fall behind the return he or she would get on Treasury bills or bank certificates. The high probability that bonds and even bank accounts will outperform stocks in the short run is the primary reason why it is so hard for many investors to stay in stocks.²

INVESTOR RETURNS FROM MARKET PEAKS

Many investors, although convinced of the long-term superiority of equity, believe that they should not invest in stocks when stock prices appear high. But this is not true for the long-term investor. The after-inflation total return over 10-, 20-, and 30-year holding periods after the eight major stock market peaks of the last century is shown in Figure 2-2.

Even from major stock market peaks, the wealth accumulated in stocks is more than four times that in bonds and more than five times that in Treasury bills if the holding period is 30 years. If the holding period is 20 years, stock accumulations beat those in bonds by about two-to-one. Even 10 years after market peaks, stocks still have an advantage over fixed-income assets. Unless investors believe there is a high probability that they will need to liquidate their savings over the next 5 to 10 years to maintain their living standard, history has shown that there is no compelling reason for long-term investors to abandon stocks no matter how high the market may seem.

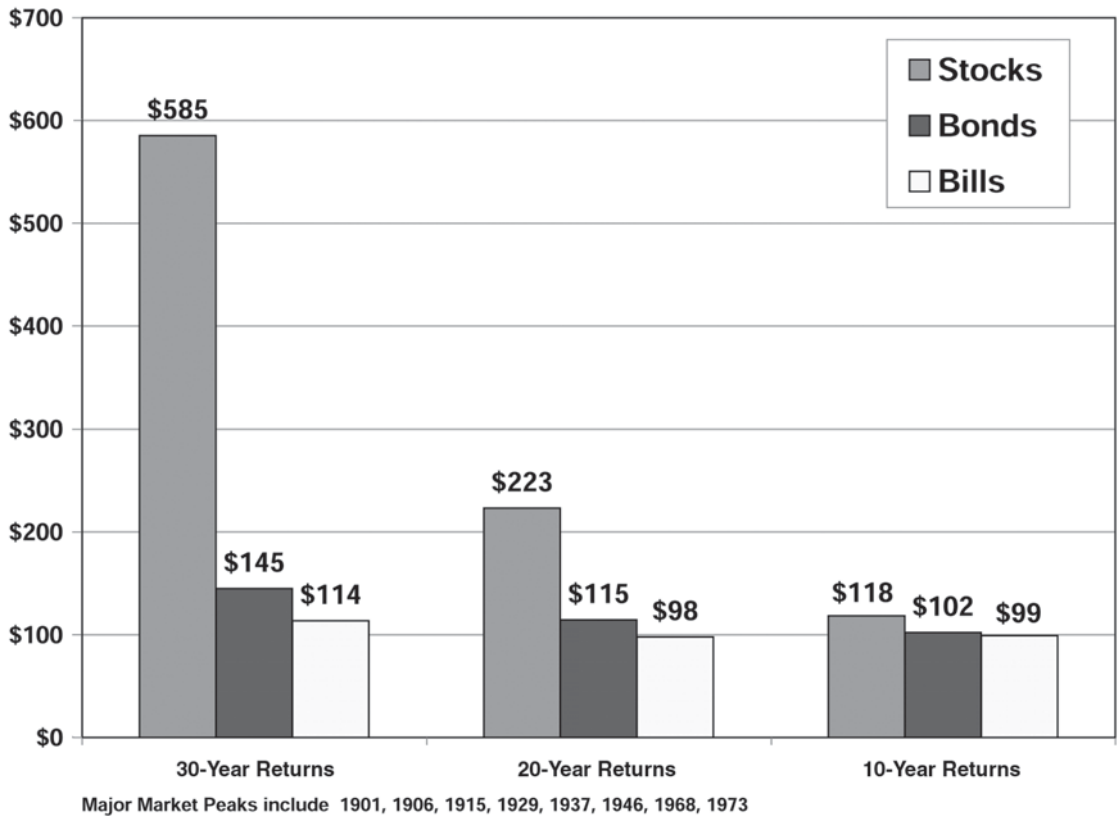
Of course, if investors can identify peaks and troughs in the market, they can outperform the buy-and-hold strategy that is advocated in this book. But, needless to say, few investors can do this. And even if an investor sells stocks at the peak, this does not guarantee superior returns. As difficult as it is to sell when stock prices are high and everyone is optimistic, it is more difficult to buy at market bottoms when pessimism is widespread and few have the confidence to venture back into stocks.

A number of "market timers" have boasted that they yanked all their money out of stocks before the 1987 stock crash or the 2000 bear market. But in 1987 many did not get back into the market until it had already passed its previous highs. And many of the bears of the most recent decline are still out of the market, despite the fact that most market averages have hit all-time highs. In the long run, getting out of the market at the peak does not guarantee that you will beat the buy-and-hold investor.

² Chapter 19 on behavioral economics analyzes how investors' aversion to taking losses, no matter how small, affects portfolio performance.

FIGURE 2-2

Average Total Real Returns after Major Twentieth-Century Market Peaks (\$100 Initial Investment)



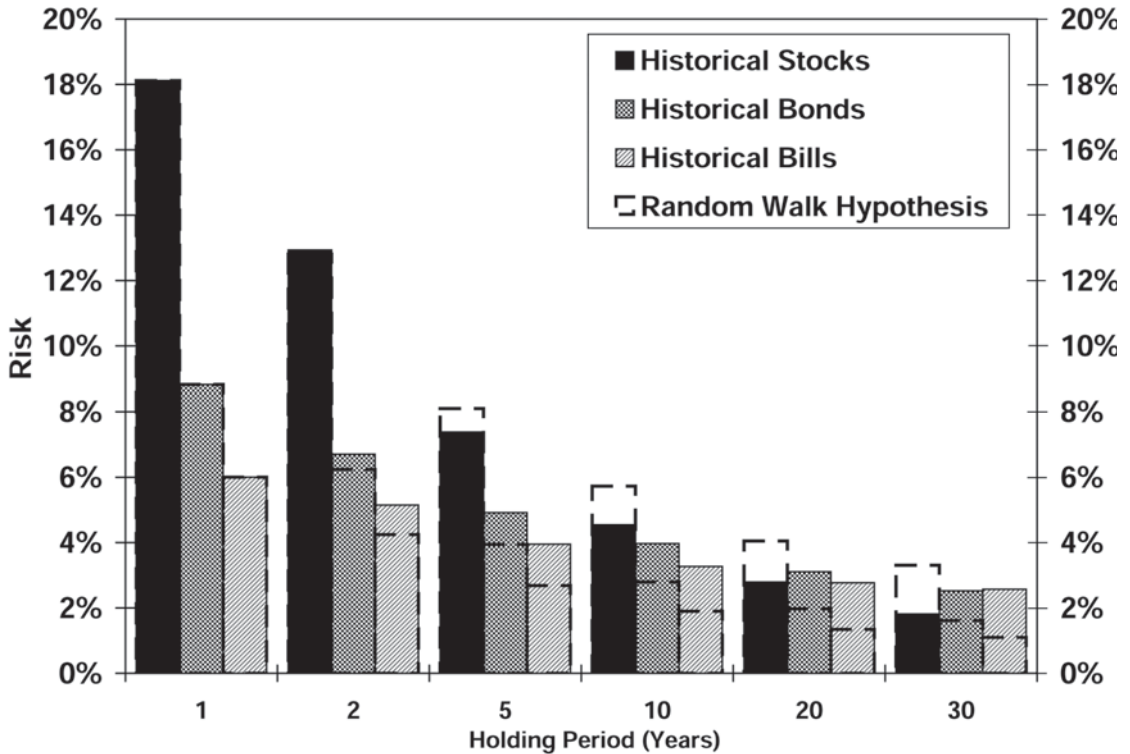
STANDARD MEASURES OF RISK

The risk—defined as the standard deviation of average real annual returns—for stocks, bonds, and bills based on the historical sample of over 200 years is displayed in Figure 2-3. Standard deviation is the measure of risk used in portfolio theory and asset allocation models.

Although the standard deviation of stock returns is higher than for bond returns over short-term holding periods, once the holding period increases to between 15 and 20 years, stocks become less risky than bonds. Over 30-year periods, the standard deviation of a portfolio of equities falls to less than three-fourths that of bonds or bills. The standard deviation of average stock returns falls nearly twice as fast as for fixed-income assets as the holding period increases.

FIGURE 2-3

Risk for Average Real Return over Various Holding Periods, 1802 through December 2006 (Historical Risk versus Risk Based on Random Walk Hypothesis)



Theoretically the standard deviation of average annual returns is inversely proportional to the holding period if asset returns follow a random walk.³ A *random walk* is a process whereby future returns are considered completely independent of past returns. The dashed bars in Figure 2-3 show the decline in risk predicted under the random walk assumption.

But the historical data show that the random walk hypothesis cannot be maintained for equities. This is because the actual risk of stocks declines far faster than the predicted rate, indicated by the dashed bars. This occurs because of the mean reversion of equity returns that I described in Chapter 1.

³ In particular, the standard deviation of average returns falls as the square root of the length of the holding period.

The standard deviation of returns for fixed-income assets, on the other hand, does not fall as fast as the random walk theory predicts. This is a manifestation of mean aversion of bond returns. *Mean aversion* means that once an asset's return deviates from its long-run average, there is an increased chance that it will deviate further, rather than return to more normal levels. Mean aversion of bond returns is especially characteristic of hyperinflations, such as those that impacted Japanese and German bonds, but it is also present in the more moderate inflations that have hit the United States and the United Kingdom. Once inflation begins to accelerate, the inflationary process becomes cumulative and bondholders have virtually no chance of making up losses to their purchasing power. In contrast, stockholders who hold claims on real assets rarely suffer a permanent loss due to inflation.

VARYING CORRELATION BETWEEN STOCK AND BOND RETURNS

Even though the returns on bonds fall short of that on stocks, bonds may still serve to diversify a portfolio and lower overall risk. This will be true if bond and stock returns are *negatively correlated*, which means that bond yields and stock prices move in opposite directions. The diversifying strength of an asset is measured by the correlation coefficient. The *correlation coefficient*, which theoretically ranges between -1 and $+1$, measures the correlation between an asset's return and the return of the rest of the portfolio. The lower the correlation coefficient, the better the asset serves as a portfolio diversifier. Assets with negative correlations are particularly good diversifiers. As the correlation coefficient between the asset and portfolio returns increases, the diversifying quality of the asset declines.

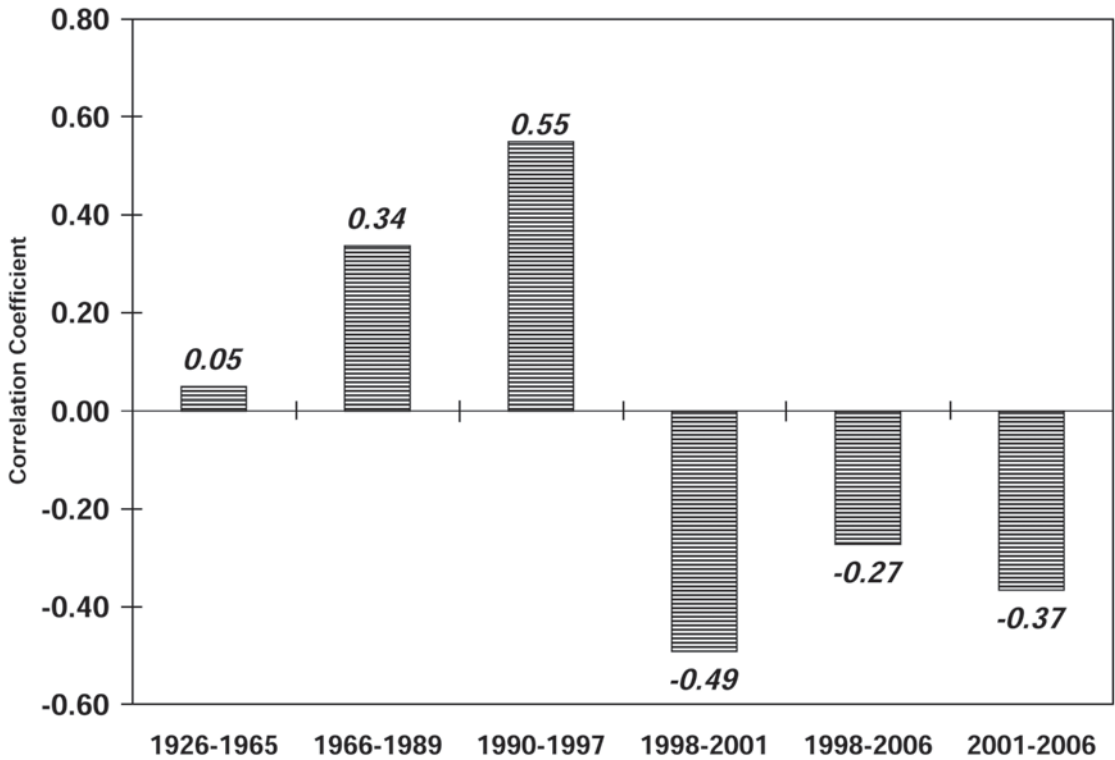
The correlation coefficient between *annual* stock and bond returns for six subperiods between 1926 and 2006 is shown in Figure 2-4. From 1926 through 1965 the correlation was only slightly positive, indicating that bonds were fairly good diversifiers for stocks. From 1966 through 1989 the correlation coefficient jumped to $+0.34$, and from 1990 through 1997 the correlation increased further to $+0.55$. This means that the diversifying quality of bonds diminished markedly from 1926 to 1997.

There are good reasons why the correlation became more positive during this period. Under the gold-based monetary standard of the 1920s and early 1930s, bad economic times were associated with falling commodity prices; when the real economy was sinking, stocks declined and the real value of government bonds rose.

Under a paper money standard, bad economic times are more likely to be associated with *inflation*, not deflation, as the government at-

FIGURE 2-4

Correlation Coefficient between Monthly Stock and Bond Returns



tempts to offset economic downturns with expansionary monetary policy. This inflationary policy accompanies a weak real economy, such as occurred during the 1970s. The negative short-term effects of inflation on equity returns are detailed in Chapter 11.

But this has changed in recent years. Since 1998 there has been a dramatic reversal in the short-term correlation between stock and bond prices, as shown in Figure 2-4. Over the past decade stock prices have been *negatively* correlated with government bond prices. From 1997 through 2001 the world markets were roiled by economic and currency upheavals in Asia, the deflationary economy in Japan, and then the events of September 11.⁴ The collapsing currency markets, combined with falling commodity prices, had an eerie resemblance to the 1930s,

⁴ The causes and consequences of these events are discussed in Chapter 10.

when deflation ruled and government bonds were the only appreciating assets. As a result international investors fled to the U.S. government security market when turmoil hit equities and other currencies. Long-term U.S. government bonds became “safe havens” for investors fearing a meltdown in the stock market.⁵

This tendency for investors to hide in long-term U.S. Treasury issues when equities experienced sudden declines persisted, despite the Asian recovery and the improving Japanese economy. As central banks have held firm against inflation, government bonds can be an island of stability when there is financial stress.

But it is an open question whether bonds will be good *long-term* diversifiers, especially if the specter of inflation looms once again. Nevertheless, the premium now enjoyed by Treasury issues generated by investors seeking *short-term* safe havens means that the return on government bonds will be low and they will become less desirable to long-term investors.

EFFICIENT FRONTIERS⁶

Modern portfolio theory describes how investors may alter the risk and return of a portfolio by changing the mix between assets. Figure 2-5, based on the 200-year history of stock and bond returns, displays the risks and returns that result from varying the proportion of stocks and bonds in a portfolio over various holding periods ranging from 1 to 30 years.

The square at the bottom of each curve represents the risk and return of an all-bond portfolio, while the cross at the top of the curve represents the risk and return of an all-stock portfolio. The circle falling somewhere on the curve indicates the minimum risk achievable by combining stocks and bonds. The curve that connects these points represents the risk and return of all blends of portfolios from 100 percent bonds to 100 percent stocks. This curve, called the *efficient frontier*, is the heart of modern portfolio analysis and is the foundation of asset allocation models.

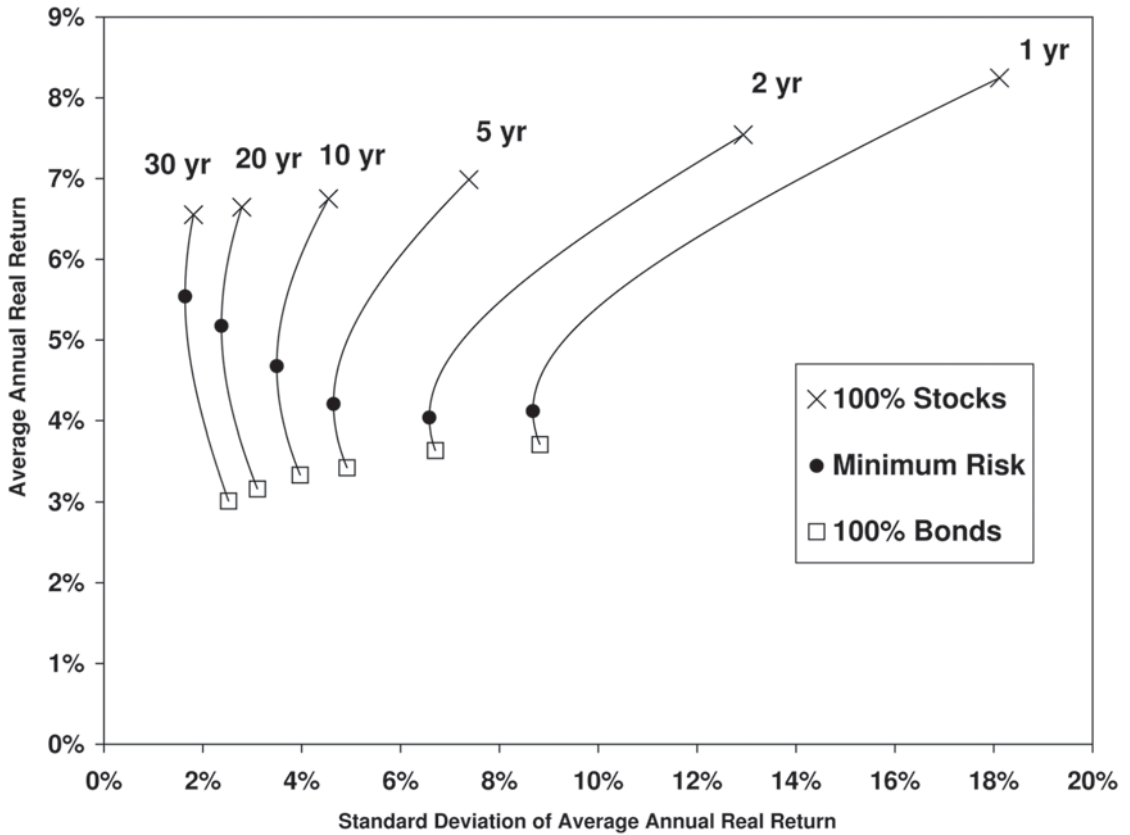
Investors can achieve any combination of risk and return along the curve by changing the proportion of stocks and bonds. Moving up the

⁵ Short-term Treasury securities such as bills have often enjoyed safe-haven status. Rising bond prices in a tumultuous equity market also occurred during the October 19, 1987, stock market crash, but much of the rise then was predicated on the (correct) belief that the Fed would lower short-term rates.

⁶ This section, which contains some advanced material, can be skipped without loss of continuity.

FIGURE 2-5

Risk-Return Trade-Offs for Various Holding Periods, 1802 through December 2006



curve means increasing the proportion in stocks and correspondingly reducing the proportion in bonds. As stocks are added to the all-bond portfolio, expected returns increase and risk decreases, a very desirable combination for investors. But after the minimum risk point is reached, increasing stocks will increase the return of the portfolio but only with extra risk.

The slope of any point on the efficient frontier indicates the risk-return trade-off for that allocation. By finding the points on the longer-term efficient frontiers that have a slope equal to the slope on the one-year frontier, one can determine the allocations that represent the same risk-return trade-offs for all holding periods.

RECOMMENDED PORTFOLIO ALLOCATIONS

What percentage of an investor's portfolio should be invested in stocks? The answer can be seen in Table 2-2, which is based on standard portfolio models incorporating both the risk tolerance and the holding period of the investor.⁷ Four classes of investors are analyzed: the ultraconservative investor who demands maximum safety no matter the return, the conservative investor who accepts small risks to achieve extra return, the moderate-risk-taking investor, and the aggressive investor who is willing to accept substantial risks in search of extra returns.

The recommended equity allocation increases dramatically as the holding period lengthens. Based on the 200 years of historical returns on stocks and bonds, ultraconservative investors should hold nearly three-quarters of their portfolio in stocks over 30-year holding periods. This allocation is justified since stocks are safer than bonds in terms of purchasing power over long periods of time. The historical data suggest that even conservative investors should hold nearly 90 percent of their portfolio in stocks for these long horizons, while the analysis indicates moderate and aggressive investors should have over 100 percent in equity. Borrowing or leveraging an all-stock portfolio can achieve this allocation, although if such borrowing is not desired, investors with these preferences would do quite well to hold 100 percent of their long-term portfolio in stocks.

Given these striking results, it might seem puzzling that the holding period has almost never been considered in portfolio theory. This is

⁷ The one-year proportions (except minimum risk point) are arbitrary and are used as benchmarks for other holding periods. Choosing different proportions as benchmarks does not qualitatively change the analysis.

TABLE 2-2

Portfolio Allocation: Percentage of Portfolio Recommended in Stocks Based on All Historical Data

Risk Tolerance	Holding Period			
	1 Year	5 Years	10 Years	30 Years
Ultraconservative (Minimum Risk)	9.0%	22.0%	39.3%	71.4%
Conservative	25.0%	38.7%	59.6%	89.5%
Moderate	50.0%	61.6%	88.0%	116.2%
Aggressive Risk Taker	75.0%	78.5%	110.1%	139.1%

because modern portfolio theory was established when the academic profession believed in the random walk theory of security prices. As noted earlier, under a random walk, the *relative* risk of various securities does not change for different holding periods, so portfolio allocations do not depend on how long one holds the asset. The holding period becomes a crucial issue in portfolio theory when the data reveal the mean reversion of stock returns.⁸

INFLATION-INDEXED BONDS

Until the last decade, there was no U.S. government bond whose return was guaranteed against changes in the price level. But in January 1997, the U.S. Treasury issued the first government-guaranteed inflation-indexed bond. The coupons and principal repayment of this inflation-protected bond are automatically increased when the price level rises, so bondholders suffer no loss of purchasing power when they receive the coupons or final principal. Since any and all inflation is compensated, the interest rate on this bond is a *real*, or inflation-adjusted, interest rate.

When these bonds were first issued, their real yields were about 3½ percent, and they rose to over 4 percent at the height of the 2000 bull market. However, these yields have declined markedly since 2001, and at the end of 2006, their real yields fell to about 2 percent, less than one-third the historical return on equity. Nevertheless, these bonds may be an attractive alternative for investors who do not want to assume the short-term risks of stocks but fear loss of purchasing power in bonds. In 20 percent of all 10-year periods from 1926, stocks have fallen short of a 2.0 percent real return. For most long-term investors, inflation-indexed bonds should dominate nominal bonds in a portfolio.

⁸ For an excellent review of this literature see Luis M. Viceira and John Y. Campbell, *Strategic Asset Allocation: Portfolio Choice for Long-Term Investors*, New York: Oxford University Press, 2002. Also see Nicholas Barberis, "Investing for the Long Run When Returns Are Predictable," *Journal of Finance*, vol. 55 (2000), pp. 225–264. Paul Samuelson has shown that mean reversion will increase equity holdings if investors have a risk aversion coefficient greater than unity, which most researchers find is the case. See Paul Samuelson, "Long-Run Risk Tolerance When Equity Returns Are Mean Regressing: Pseudoparadoxes and Vindications of 'Businessmen's Risk'" in W. C. Brainard, W. D. Nordhaus, and H. W. Watts, eds., *Money, Macroeconomics, and Public Policy*, Cambridge: MIT Press, 1991, pp. 181–200. See also Zvi Bodie, Robert Merton, and William Samuelson, "Labor Supply Flexibility and Portfolio Choice in a Lifecycle Model," *Journal of Economic Dynamics and Control*, vol. 16, no. 3 (July–October 1992), pp. 427–450. Bodie, Merton, and Samuelson have shown that equity holdings can vary with age because stock returns can be correlated with labor income.

CONCLUSION

No one denies that in the short run stocks are riskier than fixed-income assets. But in the long run, history has shown that stocks are actually less risky investments than bonds. The inflation uncertainty that is inherent in the paper money standard that the United States and the rest of the world have adopted indicates that “fixed income” does not mean “fixed purchasing power.” Despite the dramatic gains in price stability seen over the past decade, there is still much uncertainty about what a dollar will be worth two or three decades from now. Historical evidence indicates that we can be more certain of the purchasing power of a diversified portfolio of common stocks 30 years in the future than the principal on a 30-year U.S. government bond.

CHAPTER 3

STOCK INDEXES

Proxies for the Market

It has been said that figures rule the world.

JOHANN WOLFGANG GOETHE, 1830

MARKET AVERAGES

“How’s the market doing?” one stock investor asks another.

“It’s having a good day—it’s up over 70 points.”

For most of the past century, no one would ask, “What’s up 70 points?” Everyone knew the answer: the Dow Jones Industrial Average, the most quoted stock average in the world. This index, popularly called the Dow, was so renowned that the news media often called the Dow “the stock market.” No matter how imperfectly the index describes the movement of share prices—and virtually no money manager pegs his or her performance to it—the Dow was the way virtually all investors thought of the stock market.

But today the Dow does not go unchallenged as an indicator of market prices. The S&P 500, first published by Standard & Poor’s, now a division of The McGraw-Hill Companies, in March 1957, has become the uncontested benchmark index for large U.S. stocks. And the Nasdaq,

an automated electronic market that began in 1971, has become the exchange of choice for technology companies. The Nasdaq index measures the performance of such large technology firms as Microsoft, Intel, Cisco Systems, Google, and Apple.

The rise of the Nasdaq did not go unnoticed at Dow Jones. In 1999, for the first time in over 100 years, Dow Jones ventured off the Big Board, as the New York exchange is called, and selected two Nasdaq stocks—Microsoft and Intel—to join its venerable list. Here's the story of these three very different indexes with three unique reflections of the stock market.

THE DOW JONES AVERAGES

Charles Dow, one of the founders of Dow Jones & Co. that also publishes the *Wall Street Journal*, created the Dow Jones averages in the late nineteenth century. On February 16, 1885, he began publishing a daily average of 12 stocks (10 railroads and 2 industrials) that represented active and highly capitalized stocks. Four years later, Dow published a daily average based on 20 stocks—18 railroads and 2 industrials.

As industrial and manufacturing firms succeeded railroads in importance, the Dow Jones Industrial Average was created on May 26, 1896, from the 12 stocks shown in Table 3-1. The old index created in 1889 was reconstituted and renamed the Rail Average on October 26, 1896. In 1916, the Industrial Average was increased to 20 stocks, and in 1928 the number was expanded to 30. The Rail Average, whose name was changed in 1970 to the Transportation Average, is composed of 20 stocks, as it has been for over a century.

The early Dow stocks were centered on commodities: cotton, sugar, tobacco, lead, leather, rubber, and so on. Six of the 12 companies have survived in much the same form, but only one—General Electric, which in the summer of 2007 boasted the second-highest market value on U.S. exchanges—has retained both its membership in the Dow Industrials and its original name.¹

Almost all of the original Dow stocks thrived as large and successful firms, even if they did not remain in the index (see the chapter appendix for details). The only exception was U.S. Leather Corp., which was liquidated in the 1950s. Shareholders received \$1.50 plus one share of Keta Oil & Gas, a firm acquired earlier. But in 1955, the president, Lowell Birrell, who later fled to Brazil to escape U.S. authorities, looted

¹ Chicago Gas Company, an original member of the 12 Dow stocks, became Peoples Energy, Inc., and was a member of the Dow Utilities Average until May 1997.

TABLE 3-1

Firms in the Dow Jones Industrial Average

1896	1916	1928	1965	2007
American Cotton Oil	American Beet Sugar	Allied Chemical	Allied Chemical	3M
	American Can	American Can	Aluminum Company of America	Alcoa Inc
American Sugar	American Car & Foundry	American Smelting	American Can	Altria Group Inc
	American Locomotive	American Sugar	American Tel. & Tel.	American Express
American Tobacco	American Smelting	American Tobacco	American Tobacco	American International Group
	American Sugar	Atlantic Refining	Anaconda Copper	AT&T Inc
Chicago Gas	American Tel & Tel	Bethlehem Steel	Bethlehem Steel	Boeing Co
	Anaconda Copper	Chrysler	Chrysler	Caterpillar Inc
Distilling & Cattle Feeding	Baldwin Locomotive	General Electric	DuPont	Citigroup Inc
	Goodrich	General Motors	Eastman Kodak	Coca-Cola
General Electric	International Harvester	General Railway Signal	General Electric	DuPont
	International Nickel	Goodrich	General Foods	Exxon Mobil
Laclede Gas	Central Leather	International Harvester	General Motors	General Electric
	General Electric	GoodYear	International Harvester	General Motors
National Lead	Republic Iron & Steel	International Nickel	International Nickel	Hewlett-Packard
	Studebaker	Mack Trucks	International Paper Company	Home Depot
North American	Texas Co.	Nash Motors	Johns-Manville	Honeywell Int'l
	U.S. Rubber	North American	Owens-Illinois Glass	Intel
Tennessee Coal & Iron	U.S. Steel	Paramount Publix	Procter & Gamble	IBM
	Utah Copper	Postum, Inc.	Sears, Roebuck	Johnson & Johnson
U.S. Leather Pfd.	Westinghouse	Radio Corp.	Sears, Roebuck	JPMorgan Chase
	Western Union	Sears, Roebuck	Standard Oil of California	McDonald's Corp
U.S. Rubber		Standard Oil (N.J.)	Standard Oil (N.J.)	Merck
		Texas Corp.	Swift & Company	Microsoft Corp
		Texas Gulf Sulphur	Texaco Incorporated	Pfizer
		Union Carbide	Union Carbide	Procter & Gamble
		U.S. Steel	United Aircraft	United Technologies
		Victor Talking Machine	U.S. Steel	Verizon Communications
		Westinghouse Electric	Westinghouse Electric	Wal-Mart Stores
		Woolworth	Woolworth	Walt Disney Co
		Wright Aeronautical		

Keta's assets. Shares in U.S. Leather, which in 1909 was the seventh-largest corporation in the United States, became worthless.

Computation of the Dow Index

The original Dow Jones averages were simply the sum of the prices of the component shares divided by the number of stocks in the index. However, this divisor had to be adjusted over time to prevent jumps in the index when there were changes in the companies that constituted the average and stock splits. In December 2006, the divisor was about 0.1248, so that a 1-point rise in any Dow stock caused the average to increase about 8 points.²

² The procedure for computing the Dow Jones averages when a new (or split) stock is substituted is as follows: the component stock prices are added up before and after the change, and a new divisor is determined that yields the same average as before the change. Because of stock splits, the divisor generally moves downward over time, but the divisor could increase if a higher-priced stock is substituted for a lower-priced one in the average.

The Dow Industrials is a *price-weighted index*, which means that the prices of the component stocks are added together and then divided by the number of firms in the index. As a result, proportional movements of high-priced stocks in the Dow averages have a much greater impact than movements of lower-priced stocks, regardless of the size of the company. A price-weighted index has the property that when a component stock splits, the split stock has a reduced impact on the average, and all the other stocks a slightly increased impact.³

Price-weighted indexes are unusual since the impact of the firm's price on the index has nothing to do with the relative size of the company. This is in stark contrast to a capitalization-weighted index, such as Standard & Poor's 500 Index, which is described later in the chapter. As of December 2006, the 30 Dow stocks were valued at \$4.2 trillion, which is about 25 percent of the capitalization of the entire U.S. market. Out of the 10 largest U.S.-based capitalization stocks, all but Bank of America are in the Dow Industrials. But not all the Dow stocks are large. Two Dow stocks are not even in the top 100: Alcoa and General Motors. And the smallest, General Motors, is ranked below 200 and has about 4 percent of the market value of Exxon Mobil, which is the largest component.

Long-Term Trends in the Dow Jones

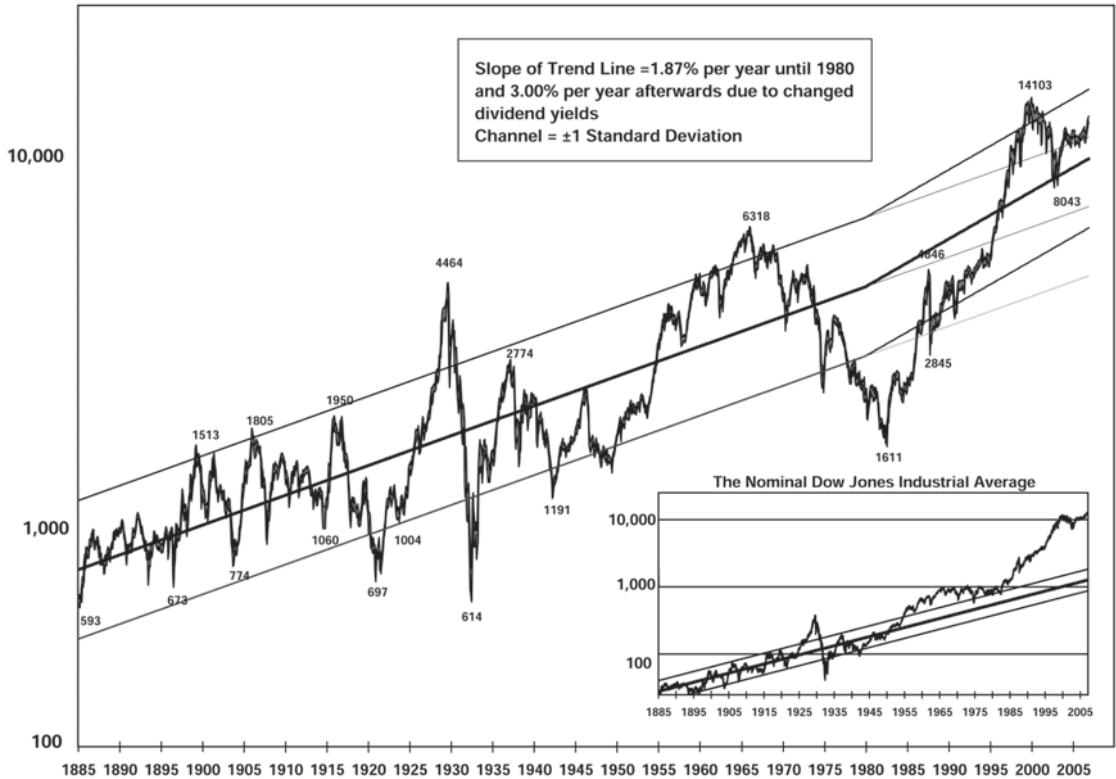
Figure 3-1 plots the monthly high and low of the Dow Jones Industrial Average from its inception in 1885, corrected for changes in the cost of living. The inset shows the Dow Industrial Average uncorrected for inflation.

A *trend line* and a *channel* are created by statistically fitting the Dow on a time trend. The upper and lower bounds are 1 standard deviation, or 50 percent, above and below the trend. The slope of the trend line, 1.85 percent per year, is the average compound rate at which the Dow stocks have appreciated, excluding inflation, since 1885. The Dow Jones average, like most other popular averages, does not include dividends, so the change in the index greatly understates the total return on the Dow stocks. Since the average dividend yield on stocks was about 4.3 percent during this time, the total annual real compound return on the Dow stocks was 6.2 percent over this period, a bit below the long-term real stock return reported in Chapter 1.

³ Before 1914, the divisor was left unchanged when a stock split, and the stock price was multiplied by the split ratio when computing the index. This led to rising stocks having greater weight in the average, something akin to value-weighted stock indexes today.

FIGURE 3-1

The Real Dow Jones Industrial Average, February 1885 through December 2006 (in 2006 Dollars)



The inflation-corrected Dow has stayed within the channel about three-quarters of the time. When the Dow broke out of the channel to the upside, as it did in 1929 and again in the mid-1960s, stocks subsequently suffered poor short-term returns. Likewise, when stocks penetrated the channel on the downside, they subsequently experienced superior short-term returns.

BEWARE THE USE OF TREND LINES TO PREDICT FUTURE RETURNS

Using channels and trend lines to predict future returns, however tempting, can be misleading. Long-standing trends have been broken in the past. Uncorrected for inflation, the Dow Industrials broke and stayed above the trend line in the mid-1950s, as shown in the inset of Figure 3-1. This is because inflation, caused by the shift to a paper money standard,

propelled nominal stock prices justifiably above their previous, noninflationary trend. Those who used trend-line analysis and who failed to analyze stock prices in real, instead of nominal, terms would have sold in 1955 and *never* reentered the market.⁴

But there is now another justification why the channel may be penetrated on the upside. Stock indexes record only capital appreciation, and they therefore understate total returns, which must include dividends. But firms have been paying an ever-lower fraction of their earnings as dividends. More of the return is being pushed into capital gains through stock buybacks and reinvestment of earnings. Since the average dividend yield on stocks has fallen 2.88 percentage points since 1980, a new channel has been drawn in Figure 3-1 with a 2.88 percentage point higher slope to represent increased capital gains. By that measure the Dow level at the end of 2006, although at a peak, was within 1 standard deviation of the mean.

VALUE-WEIGHTED INDEXES

Standard & Poor's Index

Although the Dow Jones Industrial Average was published in 1885, it was certainly not a comprehensive index of stock values, covering at most 30 stocks. In 1906 the Standard Statistics Co. was formed, and in 1918 it began publishing the first index of stock values based on each stock's performance weighted by its capitalization, or market value. This technique is now recognized as giving the best indication of the overall market, and it is almost universally used in establishing market benchmarks. In 1939, Alfred Cowles, founder of the Cowles Commission for Economic Research, constructed indexes of stock values back to 1871 that consisted of all stocks listed on the New York Stock Exchange using Standard & Poor's market-weighting techniques.

The Standard & Poor's stock price index began in 1923, and in 1926 it became the Standard & Poor's Composite Index containing 90 stocks. The index was expanded to 500 stocks on March 4, 1957, and it became the S&P 500 Index. At that time, the value of the S&P 500 Index comprised about 90 percent of the value of all NYSE-listed stocks. The 500 stocks contained exactly 425 industrial, 25 railroad, and 50 utility firms. Before 1988, the number of companies in each industry was restricted to these guidelines.

⁴ For a related situation in which a long-standing benchmark was broken because of inflation, see the first section in Chapter 7, "An Evil Omen Returns."

A base value of 10 was chosen for the average value of the S&P index from 1941 to 1943 so that when the index was first published in 1957, the average price of a share of stock (which stood between \$45 and \$50) was approximately equal to the value of the index. An investor at that time could easily identify with the changes in the S&P 500 Index since a 1-point change approximated the price change for an average stock.

The S&P 500 Index does not contain the 500 largest stocks, nor are all the stocks in the index U.S.-based corporations. For example, Warren Buffett's Berkshire Hathaway, which S&P considers a holding company, is not in the S&P 500 Index. On the other hand, the S&P 500 Index has a few firms that are quite small, representing companies that have fallen in value and have yet to be replaced. As of March 2007, the total value of all S&P 500 companies was about \$12.7 trillion, but this constituted less than 75 percent of the value of all stocks traded in the United States, significantly less than 50 years ago when the index comprised almost 90 percent of the market. A history of the S&P 500 Index and the insights that come from analyzing these stocks in this world-famous index is described in the next chapter.

Nasdaq Index

On February 8, 1971, the method of trading stocks underwent a revolutionary change. On that date, an automated quotation system called the *Nasdaq* (for National Association of Securities Dealers Automated Quotations) provided up-to-date bid and asked prices on 2,400 leading "over-the-counter" (OTC) stocks. Formerly, quotations for these unlisted stocks were submitted by the principal trader or by brokerage houses that carried an inventory. The Nasdaq linked the terminals of more than 500 market makers nationwide to a centralized computer system.

In contrast to the Nasdaq, stocks traded on the New York or American Stock Exchanges are assigned to a single specialist, who is charged with maintaining an orderly market in that stock. The Nasdaq changed the way quotes were disseminated and made trading these issues far more attractive to both investors and traders.

At the time that the Nasdaq was created, it was clearly more prestigious to be listed with an exchange (and preferably the New York Stock Exchange) than be traded on the Nasdaq. Nasdaq stocks tended to be small or new firms that had recently gone public or did not meet the listing requirements of the larger exchanges. However, many young technology firms found the computerized Nasdaq system a natural home.

Some, such as Intel and Microsoft, chose not to migrate to the Big Board, as the NYSE was termed, even when they qualified to do so.

The Nasdaq Index, which is a capitalization-weighted index of all stocks traded on the Nasdaq, was set at 100 on the first day of trading in 1971. It took almost 10 years to double to 200 and another 10 years to reach 500 in 1991. It reached its first major milestone of 1,000 in July 1995.

As the interest in technology stocks grew, the rise in the Nasdaq Index accelerated, and it doubled its value to 2,000 in just three years. In the fall of 1999, the technology boom sent the Nasdaq into orbit. The index increased from 2,700 in October 1999 to its all-time peak of 5,048.62 on March 10, 2000.

The increase in popularity of Nasdaq stocks resulted in a tremendous increase in volume on the exchange. At the onset, the volume on the Nasdaq was a small fraction of that on the New York Stock Exchange. By 1994 share volume on the Nasdaq exceeded that on the NYSE, and five years later dollar volume on the Nasdaq surpassed the NYSE as well.⁵

No longer was the Nasdaq the home of small firms waiting to qualify for Big Board membership. By 1998 the capitalization of the Nasdaq had already exceeded that of the Tokyo Stock Exchange. At the market peak in March 2000, the total market value of firms traded on the Nasdaq reached nearly \$6 trillion, more than one-half that of the NYSE and more than any other stock exchange in the world. At the peak, Nasdaq's Microsoft and Cisco had the two largest market values in the world, and Nasdaq-listed Intel and Oracle were also among the top 10. By 2007 Microsoft was the only Nasdaq stock among U.S. stocks ranked in the top 10 by market value.

When the technology bubble burst, trading and prices on the Nasdaq sunk rapidly. The Nasdaq Index declined from over 5,000 in March 2000 to 1,150 in October 2002 before rebounding to 2,400 at the end of 2006. Trading also fell off from an average of over 2.5 billion shares when prices peaked to approximately 2 billion shares in 2007. Despite the decline in the Nasdaq Index, the Nasdaq still trades in some of the world's most active stocks.

Although there is a lively rivalry between the Nasdaq and the NYSE, most investors should not be concerned about what exchange a

⁵ There is admittedly some double counting of volume in the Nasdaq dealer system due to the fact that the dealer buys the security rather than acting as an auctioneer. See Anne M. Anderson and Edward A. Dyl, "Trading Volume: NASDAQ and the NYSE," *Financial Analysts Journal*, vol. 63, no. 3 (May/June 2007), p. 79.

stock is listed on. Small stocks may be better served by having a specialist provide liquidity, but the spread between the price a stock sells for and the price it can be bought for may be lower on active stocks under the Nasdaq market maker system. There is now rapid consolidation among exchanges, and cross-listing of issues is now becoming common. The importance of what exchange a stock is listed on will decline even more in the future.⁶

Other Stock Indexes: The Center for Research in Security Prices (CRSP)

In 1959, Professor James Lorie of the Graduate School of Business of the University of Chicago received a request from the brokerage house Merrill Lynch, Pierce, Fenner & Smith. The firm wanted to investigate how well people had done investing in common stock and could not find reliable historical data. Professor Lorie teamed up with colleague Lawrence Fisher to build a database of securities data that could answer that question.

With computer technology in its infancy, Lorie and Fisher created the Center for Research in Security Prices (CRSP, pronounced “crisp”) that compiled the first machine-readable file of stock prices dating from 1926 that was to become the accepted database for academic and professional research. The database currently contains all stocks traded on the New York and American Stock Exchanges and the Nasdaq.

At the end of 2006, the market value of the 6,744 stocks was \$18 trillion.

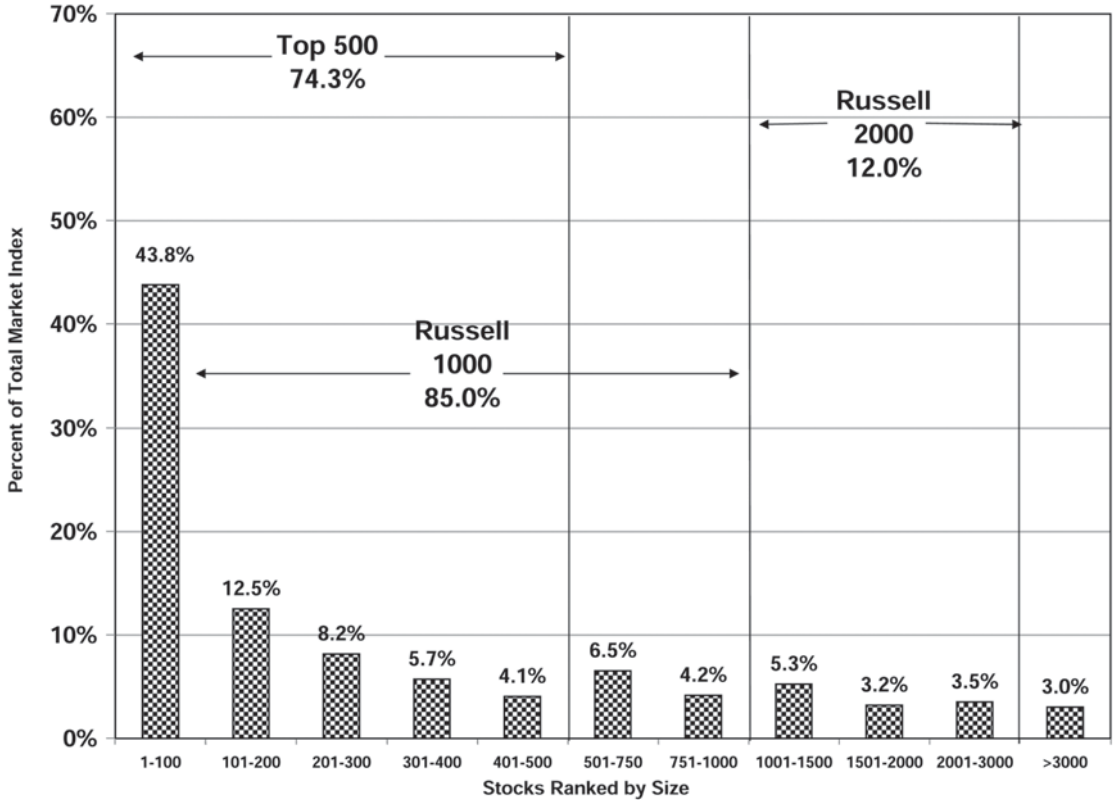
The largest comprehensive index of U.S. firms, Figure 3-2 shows the size breakdown and total market capitalization of the stocks in this index. The top 500 firms, which closely mirror the S&P 500 Index, constitute 74.6 percent of the market value of all stocks. The top 1,000 firms in market value, which are virtually identical to the Russell 1000 and published by the Russell Investment Group, comprise 85.4 percent of the total value of equities. The Russell 2000 contains the next 2,000 largest companies, which adds an additional 11.7 percent to the market value of the total index. The Russell 3000, the sum of the Russell 1000 and 2000 indexes, comprises 97.1 percent of all U.S. stocks. The remaining 3,744 stocks constitute 2.9 percent of the value.

Closely related to the CRSP Total Return indexes is the Dow Jones Wilshire 5000 Index, which was founded in 1974 and contains approximately 5,000 firms.

⁶ Institutions have their own ways of dealing with big blocks of stock no matter what exchange the stock is listed on.

FIGURE 3-2

CRSP Total Market Index (Value at \$18.12 trillion in September 2007)



RETURN BIASES IN STOCK INDEXES

Because stock indexes such as the S&P 500 Index constantly add new firms and delete old ones, some investors believe that the return calculated from these indexes will be higher than the return that can be achieved by investors in the overall market.

But this is not the case. It is true that the best-performing stocks will stay in the S&P 500 Index, but this index misses the powerful upside move of many small and mid-sized issues. For example, Microsoft was not added to the S&P 500 Index until June 1994, eight years after going public. While small stock indexes are the incubators of some of the greatest growth stocks, they also contain those “fallen angels” that dropped out of the large-cap indexes and are headed downward.

An index is not biased if its performance can be replicated or matched by an investor. To replicate an index, the date of additions and deletions to the index must be announced in advance so that new stocks can be bought and deleted stocks can be sold. This is particularly important for issues that enter into bankruptcy: the postbankrupt price (which might be zero) must be factored into the index. All the major stock indexes, such as Standard & Poor's, Dow Jones, and the Nasdaq, can be replicated by investors.⁷ Consequently, there is no statistical reason to believe that capitalization-based indexes give a biased representation of the return on the market.

APPENDIX: WHAT HAPPENED TO THE ORIGINAL 12 DOW INDUSTRIALS?

Two stocks (General Electric and Laclede) retained their original name (and industry); five (American Cotton, American Tobacco, Chicago Gas, National Lead, and North American) became large public companies in their original industries; one (Tennessee Coal and Iron) was merged into the giant U.S. Steel; and two (American Sugar and U.S. Rubber) went private—both in the 1980s. Surprisingly, only one (Distilling and Cattle Feeding) changed its product line (from alcoholic beverages to petrochemicals, although it still manufactures ethanol), and only one (U.S. Leather) liquidated. Here is a rundown of the original 12 stocks (market capitalizations as of March 2007):

American Cotton Oil became Best Food in 1923, Corn Products Refining in 1958, and finally, CPC International in 1969—a major food company with operations in 58 countries. In 1997, CPC spun off its corn-refining business as Corn Products International and changed its name to Bestfoods. Bestfoods was acquired by Unilever in October 2000 for \$20.3 billion. Unilever (UN), which is headquartered in the Netherlands, has a current market value of \$43.2 billion.

American Sugar became Amstar in 1970 and went private in 1984. In September 1991 the company changed its name to Domino Foods, Inc., to reflect its world-famous Domino line of sugar products.

⁷ The original Value Line Index of 1,700 stocks, which was based on a geometric average of the changes in the individual stocks, was biased downward. This eventually led Value Line to abandon the geometric average in favor of the arithmetic one, which could be replicated.

American Tobacco changed its name to American Brands (AMB) in 1969 and to Fortune Brands (FO) in 1997, a global consumer products holding company with core business in liquor, office products, golf equipment, and home improvements. American Brands sold its American Tobacco subsidiary, including the Pall Mall and Lucky Strike brands, to one-time subsidiary B.A.T. Industries in 1994. The current market value is \$12.1 billion.

Chicago Gas became Peoples Gas Light & Coke Co. in 1897, and then Peoples Energy Corp., a utility holding company, in 1980. Peoples Energy Corp. (PGL) was bought by WPS Resources and changed its name in 2006 to Integrys Energy Group (TEG). It has a market value of \$4.1 billion. PGL was a member of the Dow Jones Utility Average until May 1997.

Distilling and Cattle Feeding went through a long and complicated history. It changed its name to American Spirits Manufacturing and then to Distiller's Securities Corp. Two months after the passage of prohibition, the company changed its charter and became U.S. Food Products Corp. and then changed its name again to National Distillers and Chemical. The company became Quantum Chemical Corp. in 1989, a leading producer of petrochemicals and propane. Nearing bankruptcy, it was purchased for \$3.4 billion by Hanson PLC, an Anglo-American conglomerate. It was spun off as Millennium Chemicals (MCH) in October 1996. Lyondell Chemical (LYO) bought Millennium Chemicals in November 2004. The current market value of Lyondell is \$7.7 billion.

General Electric (GE), founded in 1892, is the only original stock still in the Dow Industrials. GE is a huge manufacturing and broadcasting conglomerate that owns NBC and CNBC. Its market value of \$359 billion is the second highest in the world.

Laclede Gas (LG) changed its name to Laclede Group, Inc., and it is a retail distributor of natural gas in the St. Louis area. The market value is \$647 million.

National Lead (NL) changed its name to NL Industries in 1971, and it manufactures titanium dioxide and specialty chemicals. The market value is \$4.96 billion.

North American became Union Electric Co. (UEP) in 1956, providing electricity in Missouri and Illinois. In January 1998, UEP merged with Cipsco (Central Illinois Public Service Co.) to form Ameren (AEE) Corp. The market value is \$10.5 billion.

Tennessee Coal and Iron was bought out by U.S. Steel in 1907, and it became USX-U.S. Steel Group (X) in May 1991. In January 2002, the company changed its name back to U.S. Steel Corp. U.S. Steel has a market value of \$10.2 billion.

U.S. Leather, one of the largest makers of shoes in the early part of this century, liquidated in January 1952, paying its shareholders \$1.50 plus stock in an oil and gas company that was to become worthless.

U.S. Rubber became Uniroyal in 1961, and it was taken private in August 1985. In 1990 Uniroyal was purchased by the Michelin Group, which has a market value of €13 billion.

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4 CHAPTER

THE S&P 500 INDEX

A Half Century of U.S. Corporate History

Most of the change we think we see in life is due to truths being in and out of favor.

ROBERT FROST, "THE BLACK COTTAGE," 1914

Out of the three stock market indexes, the Dow, the Nasdaq, and the S&P 500, only one became the world standard for measuring the performance for U.S. stocks. It was born on February 28, 1957, and it grew out of Standard & Poor's Composite Index, a capitalization-weighted index begun in 1926 that contained 90 large stocks. Ironically, the 1926 index excluded the largest stock in the world at that time, American Telephone and Telegraph, because S&P did not want to let the performance of such a large firm dominate the index. To correct this omission and to recognize the growth of new firms in the 1950s, Standard & Poor's compiled an index of 500 of the largest industrial, rail, and utility firms that traded on the New York Stock Exchange.

The S&P 500 Index comprised about 85 percent of the total value of firms traded on the Big Board in 1957. It soon became the standard against which the performance of institutions and money managers in-

vesting in large U.S. stocks was compared. The S&P 500 Index originally contained exactly 425 industrial, 25 rail, and 50 utility firms, but these groupings were abandoned in 1988 in order to maintain, as S&P claimed, an index that included “500 leading companies in leading industries of the economy.”

Since its creation, the index has been continually updated by adding new firms that meet Standard & Poor’s criteria for market value, earnings, and liquidity while deleting an equal number that fall below these standards.¹ The total number of new firms added to the S&P 500 Index from its inception in 1957 through 2006 was 987, an average of about 20 per year. On average the new firms constitute about 5 percent of the market value of the index.

The highest number of new firms added to the index in a single year occurred in 1976, when Standard & Poor’s added 60 firms including 15 banks and 10 insurance carriers. Until that year, the only financial stocks in the index were consumer finance companies because banks and insurance companies were traded in the “over-the-counter” (OTC) market and timely price data were not available until the Nasdaq Exchange began in 1971. In 2000, at the peak of the technology bubble, 49 new firms were added to the index, the highest since Nasdaq stocks were included in 1976. In 2003, just after the bottom of the subsequent bear market, the number of additions fell to a record-tying low of 8.

SECTOR ROTATION IN THE S&P 500 INDEX

The evolution of the U.S. economy during the past half century has brought about profound changes in its industrial landscape. Steel, chemical, auto, and oil companies once dominated our economy. Today healthcare, technology, finance, and other consumer services firms hold sway.

Increasingly, active investors are using sector analysis to allocate their portfolios. The most popular industry classification system was formulated in 1999 when Standard & Poor’s joined Morgan Stanley to create the Global Industrial Classification Standard (GICS). This system arose from the earlier Standard Industrial Code (SIC) system devised by the U.S. government that had grown less suited to our service-based economy.²

¹ Criteria for listing and other information are found on Standard & Poor’s Web site www2.standardandpoors.com/spf/pdf/index/500factsheet.pdf.

² In 1997 the SIC codes were expanded to include firms in Canada and Mexico, and the revised listing was renamed the North American Industrial Classification System (NAICS).

changes have been dramatic. The materials sector, by far the largest in 1957, has become the smallest today. The materials and energy sectors made up almost one-half of the market value of the index in 1957, but today these two sectors together constitute only 12 percent of the index. On the other hand, the financial, healthcare, and technology sectors, which started off as the three smallest sectors and comprised only 6 percent of the index in 1957, held one-half of the market value of all S&P 500 firms in 2007.

It is important to realize that when measured over long periods of time, the rising or falling market shares do not necessarily correlate with rising or falling investor returns. That is because change in sector shares often reflects the change in the *number* of firms, not just the change in the *value* of individual firms. This is especially true in the financial sector, as commercial and investment banks, insurance companies, brokerage houses, and government-sponsored enterprises such as Fannie Mae and Freddie Mac have been added to the index since 1957. The technology share has also increased primarily because of the addition of new firms. In 1957, IBM was two-thirds the technology sector; in 2007, IBM was only the third largest in a sector that contains 74 firms.

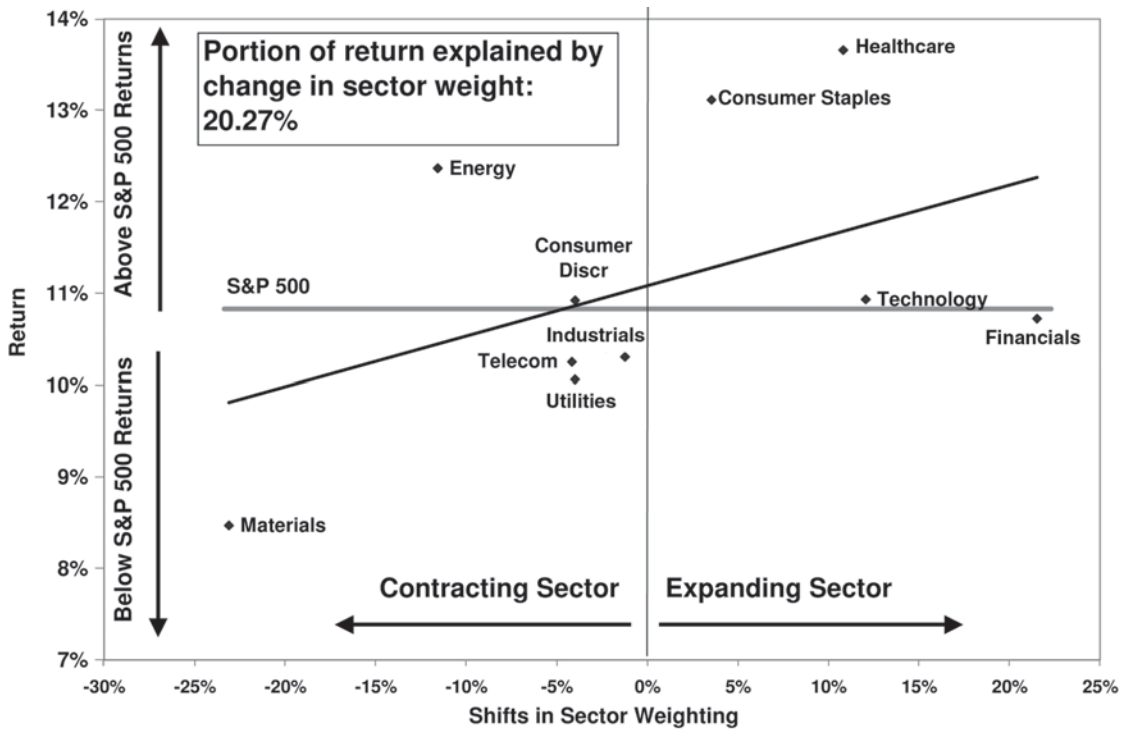
The returns of the 10 GICS sectors against the *change* in their market share over the past 50 years are plotted in Figure 4-2. The fast-growing financial and technology sectors have had only mediocre returns. The weight of their sectors has increased not because the prices of individual firms have risen but because many new firms have been added to the index.

In contrast, the energy sector shrunk from 22 to 8 percent of the market weight of the index, yet its return of 12.87 percent is well above the S&P 500 Index. Statistical analysis shows that over the past 50 years only 20 percent of the return to a sector is related to whether the sector is expanding or contracting. This means that 80 percent of the investor return of a sector is based on the valuation of the firms in the sector, not the relative growth of the industry. Rapidly expanding sectors often induce investors to pay too high a price, which results in lower returns. As a result, the best values are often found in stagnant or declining sectors that are ignored by investors and whose price is low relative to fundamentals.

The performance of the 20 largest companies that Standard & Poor's put into their first list in 1957 is shown in Table 4-1. One feature that stands out is that all 9 oil companies on the list finished in the top 10, with only General Electric nudging ahead of Phillips Petroleum and Texaco for eighth place. The returns on all the oil companies beat the S&P

FIGURE 4-2

Change in Sector Weights and Returns, 1957 through December 2006



500 by between 80 and 310 basis points *per year* despite the rapid shrinkage of the oil sector relative to the rest of the market.

The top-performing stock of the original 20 largest was Socony Mobil Oil, which dropped the Socony, which stood for Standard Oil of New York, in 1966 and merged with Exxon in 1999. The second-best-performing stock was Royal Dutch Petroleum, a firm founded in the Netherlands, and one of the companies that Standard & Poor's deleted from its index in 2002 when it purged all foreign-based firms. The third-best performer was Standard Oil of New Jersey, which changed its name to Exxon in 1972 and is currently the largest-market-value stock not only in the United States but in the entire world.

Fourth-best performing stock was Shell Oil, a U.S.-based company that was purchased by Royal Dutch in 1985. Next was Standard Oil of Indiana, which merged into BP Amoco in 1998. Sixth-ranking Gulf Oil, seventh-ranking Standard Oil of California, and tenth-ranking Texas Co. (Texaco) eventually merged to form ChevronTexaco, while ninth-

TABLE 4-1

50-Year Returns of the 20 Largest Companies in 1957

Return Rank	Original Company	1957-2006 Return	1957 Mkt. Cap Rank
1	SOCONY MOBIL OIL	13.85%	13
2	ROYAL DUTCH PETR	13.75%	12
3	STANDARD OIL NJ	13.31%	2
4	SHELL OIL	13.28%	14
5	STD OIL IND	13.01%	16
6	GULF OIL	12.78%	6
7	STD OIL CALIF	12.29%	10
8	GENERAL ELECTRIC	12.02%	5
9	PHILLIPS PETR	11.98%	20
10	TEXACO	11.63%	8
11	SEARS, ROEBUCK	11.52%	15
12	IBM	11.35%	11
13	AT&T	10.77%	1
14	UNION CARBIDE	9.99%	7
15	DUPONT	8.26%	4
16	EASTMAN KODAK	7.88%	19
17	ALCOA	7.18%	17
18	GENERAL MOTORS	7.05%	3
19	U.S. STEEL	6.55%	9
20	BETHLEHEM STEEL	---	18
	AVERAGE TOP 10	11.37%	
	AVERAGE TOP 20	11.78%	
	S&P 500	10.88%	

ranking Phillips Petroleum, merged with Conoco (Continental Oil Co.) to form ConocoPhillips in 2002.

The only firm to beat any oil firm is General Electric, founded in 1892 as a result of the merger of Thomson Houston and Edison General Electric, the latter founded by Thomas Edison. As noted in the last chapter, General Electric is the only member of the original Dow Jones Industrial Average that has survived intact today. Although GE is listed in the industrial sector, about one-half its revenue comes from its financial and healthcare divisions and NBC.

Two other companies of the original largest 20 bested the performance of the S&P 500 Index over the last half century. They are Sears and Roebuck, thanks to the transformation wrought by Eddie Lampert, who changed the stodgy retailer into a dynamic hedge fund operation. The other is IBM, a firm that in 1957 was two-thirds of the value of the tech sector and has just been able to beat the S&P's return since 1957.³

Eight of the original 20 largest companies lagged the performance of the S&P 500 Index. Two deserve attention. U.S. Steel and AT&T were at one time the largest corporations in the world. Through industrial changes and corporate divestments, they shrunk to a tiny fraction of their former size, but they have been revived, and as of 2007 they are expanding rapidly.

U.S. Steel was formed in 1901 from the merger of 10 steel companies, led by Andrew Carnegie and financed by J. P. Morgan. After the merger, it was the first billion-dollar-sales company in history, and it controlled two-thirds of the U.S. market. To cushion itself against rising energy costs, it bought Marathon Oil Company in 1982 and renamed itself USX Corporation. In 1991, U.S. Steel was spun off as a separate firm, and in 2003, the value of its shares sank to just over \$1 billion, the same size as it was a century earlier. Aggressive cost cutting has brought U.S. Steel back, and it is now the second-biggest steel producer behind Mittal Steel USA, which purchased, among other steel firms, the bankrupt assets from Bethlehem Steel, the eighteenth-largest company in the S&P 500 Index in 1957.

American Telephone and Telegraph Co. was the largest company in the world when it joined the S&P 500 Index in 1957, and it remained that way until 1975. The company boasted a market value of \$11.2 billion in 1957, a capitalization that would rank in the bottom 200 of the S&P 500 firms in 2007. The telephone monopoly known as "Ma Bell" was broken up in 1984, giving birth to the "Baby Bell" regional providers. But the

³ Today IBM is only 7 percent of the technology sector, and its market value is eclipsed by both Microsoft and Cisco.

stripped-down AT&T was bought by one of its children, SBC Communications, in 2005, and through other acquisitions, it worked itself back to the top 20 in market value in the United States by 2007. The 50-year return on AT&T, had you also held all the Baby Bells when Ma Bell spun them off 23 years ago, would have given you a 10.77 percent annual return, virtually matching the index.

General Motors, which was formed by the consolidation of 17 auto companies in 1908, was destined to become the largest auto producer in the world, a title that in 2007 it still owns. And until it was surpassed by Toyota in 2007, General Motors was the world leader in sales. But foreign competition and healthcare obligations to its retired labor force have drained GM's resources and reduced the creditworthiness of its once-grade-A obligations to "junk" status. Despite its trouble, it is the largest foreign car manufacturer in China, the world's fastest-growing automotive market. The world is waiting to see whether GM, like U.S. Steel and AT&T, can regain its predominant position in the automobile market.

The returns of three—Union Carbide (now part of Dow Chemical), DuPont, and Alcoa—of the remaining four firms all belong to the materials industry and have lagged the market significantly over the past half century. The fourth firm, Eastman Kodak, failed to make a successful transition to digital photography. Unionization and foreign competition are some reasons behind the poor performance of these firms. Whether these erstwhile giant corporations will be able to reinvent themselves is yet to be seen.

TOP-PERFORMING FIRMS

The 20 best-performing firms of the original S&P 500 that have survived with their corporate structure intact are shown in Table 4-2. Table 4-3 lists the 20 best-performing firms whether they have survived intact or have been merged into another firm.

By far the best-performing stock was Philip Morris, which in 2003 changed its name to Altria Group.⁴ Philip Morris introduced the world to the Marlboro Man, one of the world's most recognized icons, two years before the formulation of the S&P 500 Index. Marlboro cigarettes subsequently became the world's best-selling brand and propelled Philip Morris stock upward.

The average annual return on Philip Morris over the past half century, at 19.88 percent per year, almost doubled the 10.88 percent annual

⁴The firm retained its ticker symbol MO, or "Big Mo," as traders affectionately call Philip Morris.

TABLE 4-2

The 20 Best-Performing S&P 500 Firms That Have Survived Intact, 1957 through December 2006

Rank	1957 Name	2007 Name	1957-2006 Return	Sector
1	PHILIP MORRIS	ALTRIA GROUP	19.88%	Con. Staples
2	ABBOTT LABS	ABBOTT LABS	15.86%	Healthcare
3	CRANE CO	CRANE CO	15.47%	Industrials
4	MERCK	MERCK	15.43%	Healthcare
5	BRISTOL MYERS	BRISTOL-MYERS SQUIBB	15.43%	Healthcare
6	PEPSI-COLA CO.	PEPSICO INC	15.40%	Con. Staples
7	SWEETS CO OF AMER.	TOOTSIE ROLL INDS	15.12%	Con. Staples
8	COCA-COLA CO	COCA-COLA CO	15.05%	Con. Staples
9	COLGATE-PALMOLIVE	COLGATE-PALMOLIVE	14.99%	Con. Staples
10	AMERICAN TOBACCO	FORTUNE BRANDS INC	14.92%	Con. Disc.
11	HJ HEINZ CO.	HJ HEINZ CO	14.48%	Con. Staples
12	PFIZER	PFIZER INC	14.48%	Healthcare
13	MCGRAW-HILL BOOK CO	MCGRAW-HILL COS.	14.31%	Con. Disc.
14	SCHERING	SCHERING-PLOUGH	14.22%	Healthcare
15	WM WRIGLEY	WRIGLEY WM JR	14.15%	Con. Staples
16	SCHLUMBERGER	SCHLUMBERGER LTD	14.06%	Energy
17	PROCTER & GAMBLE	PROCTER & GAMBLE CO	14.05%	Con. Staples
18	HERSHEY CO	HERSHEY	14.02%	Con. Staples
19	KROGER	KROGER CO	14.01%	Con. Staples
20	MELVILLE SHOE	CVS CORP	13.85%	Con. Staples

return on the S&P 500 Index. This return means that \$1,000 invested in Philip Morris on March 1, 1957, would have accumulated to over \$8.25 million by the end of 2006, nearly 50 times the \$170,000 accumulation in the S&P 500 Index.

Philip Morris's outstanding performance does not just date from mid-century. Philip Morris was also the best-performing company since 1925, the date when comprehensive returns on individual stocks were first compiled. From the end of 1925 through the end of 2006, Philip Morris delivered a 17.2 percent compound annual return, 7.4 percent greater than the market indexes. If you had invested \$1,000 in this firm in 1925, it would be worth, with dividends reinvested, almost \$380 million in 2007!

Philip Morris's bounty did not extend to only its own stockholders. Philip Morris eventually became the owner of 10 other original S&P 500

TABLE 4-3

The 20 Best-Performing Firms of the Original S&P 500 Index, 1957 through December 2006

Return Rank	Original Company	Surviving Company	1957-2006 Return
1	PHILIP MORRIS	ALTRIA GROUP	19.88%
2	THATCHER GLASS	ALTRIA GROUP	18.61%
3	DR. PEPPER	CADBURY SCHWEPPE	17.92%
4	CELANESE CORP.	CELANESE AG	17.91%
5	LANE BRYANT	LIMITED INC.	17.84%
6	NATIONAL CAN	PECHINEY SA	17.81%
7	GENERAL FOODS	ALTRIA GROUP	17.14%
8	LORILLARD	LOEWS CORP.	17.13%
9	CALIFORNIA PACKING CO.	ALTRIA GROUP	16.71%
10	STANDARD BRANDS	ALTRIA GROUP	16.60%
11	NATIONAL DAIRY	ALTRIA/KRAFT	16.24%
12	R.J. REYNOLDS TOBACCO	ALTRIA GROUP	15.90%
13	NABISCO	ALTRIA GROUP	15.90%
14	ABBOTT LABS	ABBOTT LABS	15.86%
15	PENICK & FORD	ALTRIA GROUP	15.75%
16	RICHARDSON MERRELL	PROCTER & GAMBLE	15.52%
17	FLINTKOTE	BRITISH AMER. TOB.	15.50%
18	VIRGINIA CAROLINA CHEM.	EXXON MOBIL	15.48%
19	CRANE CO.	CRANE CO.	15.47%
20	HOUDAILLE INDUSTRIES	PRIVATIZED/IDEX	15.44%

firms. Many investors became enormously wealthy because the shares of their firms were exchanged with shares of successful companies such as Philip Morris. Riding on the coattails of such winners is an unexpected gift for many stockholders.

HOW BAD NEWS FOR THE FIRM BECOMES GOOD NEWS FOR INVESTORS

Some readers may be surprised that Philip Morris is a top performer for investors in the face of the onslaught of governmental restrictions and legal actions that have cost the firm tens of billions of dollars and have threatened the cigarette manufacturer with bankruptcy.

But in the capital markets, bad news for the firm often can be good news for investors who hold onto the stock and reinvest their dividends. If investors become overly pessimistic about the prospects for a stock, the low price enables stockholders who reinvest their dividends to buy the company on the cheap. These reinvested dividends have turned its stock into a pile of gold for those who stuck with Philip Morris.

TOP-PERFORMING SURVIVOR FIRMS

Philip Morris is not the only firm that has served investors well. The return on the other 19 best-performing surviving companies has beaten the return on the S&P 500 Index by between 3 and 5 percent per year. Of the top 20 firms, 16 are dominated by two industries; consumer staples, represented by internationally well known consumer brand-name companies, and healthcare, particularly large pharmaceutical firms.⁵ Hershey chocolate, Heinz ketchup, and Wrigley gum, as well as Coca-Cola and Pepsi-Cola, have built up wide brand equity and consumer trust. The four other winner stocks are Crane, a manufacturer of engineered industrial products founded in 1855 by Richard Crane; Fortune Brands, formerly American Tobacco, founded in 1910, which has since divested its tobacco holding; McGraw-Hill, a global information provider, founded by James H. McGraw in 1899 and now the owner of Standard & Poor's; and Schlumberger, an oil service company begun by the Frenchman Conrad Schlumberger in 1919. All these firms have, despite significant changes in the economic and political landscapes, expanded aggressively into international markets.

One firm of particular note is CVS Corporation, which in 1957 entered the S&P 500 Index as Melville Shoe Corp., a company whose name was taken from the founder, Frank Melville, who started a shoe company in 1892 and incorporated as Melville Shoe in 1922.

Shoe companies have been among the worst investments over the past century, and even Warren Buffett bemoans his purchase of Dexter Shoe in 1991. But Melville was fortunate enough to buy the Consumer Value Store chain in 1969, specializing in personal health products. The chain quickly became the most profitable division of the company, and in 1996 Melville changed its name to CVS. So a shoe manufacturer, destined to be a bad investment, turned to gold as a result of the management's fortuitous purchase of a retail drug chain.

⁵ About one-half of the products of Fortune Brands qualify as consumer staples, but because of its ventures in golf equipment and home improvement products, it is now classified in the consumer discretionary index.

There are similar stories for firms taken from Table 4-3, which lists the 20 best-performing stocks whether they have survived in their original corporate form or have been merged into another firm. Thatcher Glass was the second best performing of all original S&P 500 stocks behind Philip Morris and was the leading milk bottle manufacturer in the early 1950s. But as the baby boom turned into the baby bust and glass bottles were replaced by cardboard cartons, Thatcher's business sank. Fortunately for Thatcher shareholders, in 1966 the firm was purchased by Rexall Drug, which became Dart Industries, which merged with Kraft in 1980 and was eventually bought by Philip Morris in 1988. An investor who purchased 100 shares of Thatcher Glass in 1957 and reinvested the dividends would have owned 140,000 shares of Philip Morris stock, worth almost \$13 million by the end of 2006!

OTHER FIRMS THAT TURNED GOLDEN

As the medical, legal, and popular assault on smoking accelerated through the 1980s, Philip Morris, as well as the other giant tobacco manufacturer, RJ Reynolds, diversified into brand-name food products. In 1985 Philip Morris purchased General Food, and in 1988 it purchased Kraft Foods for \$13.5 billion, which had originally been called National Dairy Products and was an original member of the S&P 500 Index. Philip Morris completed its food acquisitions with Nabisco Group Holdings in 2000.

Nabisco Group Holdings was the company the Kohlberg Kravis Roberts & Co. (KKR) spun off in 1991 after taking RJR Nabisco private in 1989 for \$29 billion, at that time the largest leveraged buyout in history. Under our methodology for computing long-term returns, if a firm is taken private, the cash from the buyout is assumed to be invested in an S&P 500 Index fund until the company is spun off, at which point the shares are repurchased in the new IPO.⁶ RJ Reynolds Tobacco Co. had previously absorbed six original S&P companies: Penick & Ford, California Packing, Del Monte Foods, Cream of Wheat (purchased in 1971 by Nabisco), Standard Brands, and finally National Biscuit Co. in 1985. All these companies became top-20 performers in large part because of their ultimate purchase by Philip Morris.

Also on the list of best-performing stocks is Richardson Merrell, which was purchased by Procter & Gamble in 1985, and Flintkote, which

⁶ If the firm remains private, the returns are assumed to accumulate at the same level as the S&P 500 Index.

was founded in 1901 and produced roofing materials. In 1980 an ownership stake was bought by Genstar, which was then absorbed by Imasco, and finally bought by British American Tobacco in 2000. The purchase was lucky for shareholders because Flintkote went bankrupt in 2004 as a result of asbestos litigation.

Virginia Carolina Chemicals was bought by Mobil Oil, best performer of the largest 20 corporations. Houdaille Industries, founded by the Frenchman Maurice Houdaille before World War I, was bought by KKR in 1979; at the time, it was the first leveraged buyout over \$100 million. Its 17.78 percent average return from 1957 through 1979 was high enough to give the firm the twentieth position.⁷

OUTPERFORMANCE OF ORIGINAL S&P 500 FIRMS

One of the most remarkable aspects of these original 500 firms is that the investor who purchased the original portfolio of 500 stocks and never bought any of the nearly 1,000 additional firms that have been added by Standard & Poor's in the subsequent 50 years would have outperformed the dynamic updated index. The return of the original 500 firms was 11.72 percent versus 10.83 percent for the updated index. This annual difference results in a 50 percent higher accumulation in the original stocks than those updated in the index.

Why did this happen? How could the new companies that fueled our economic growth and made America the preeminent economy in the world underperform the older firms? The answer is straightforward. Although the earnings and sales of many of the new firms grew faster than those of the older firms, the price investors paid for these stocks was simply too high to generate good returns.

Stocks that qualify for entry into the S&P 500 Index must have sufficient market value to be among the 500 largest firms. But a market value this high is often reached because of unwarranted optimism on the part of investors. During the energy crisis of the early 1980s, firms such as Global Marine and Western Co. were added to the energy sector, and they subsequently went bankrupt. In fact, 12 of the 13 energy stocks that were added to the S&P 500 Index during the late 1970s and early 1980s did not subsequently match the performance of either the energy sector or the S&P 500 Index.

⁷ However, one can trace the firm further. In 1987 IDEX was formed to buy back six units of Houdaille that had been sold to a British firm. IDEX, an acronym for Innovation, Diversification, and Excellence, has outperformed the S&P 500 Index by 1.5 percent per year, and if that return were appended to Houdaille, its half-century return would be even higher.

About 30 percent of the 125 firms that have been added to the technology sector of the S&P 500 Index since 1957 were added in 1999 and 2000. Needless to say, most of these firms have greatly underperformed the market. The telecommunications sector added virtually no new firms from 1957 through the early 1990s. But in the late 1990s, firms such as WorldCom, Global Crossing, and Quest Communications entered the index with great fanfare, only to collapse afterward.

Of all 10 industrial sectors, only the consumer discretionary sector has added firms that have outperformed the first firms put into the index. This sector was dominated by the auto manufacturers (GM, Chrysler, and then Ford), their suppliers (Firestone and Goodyear), and large retailers, such as JCPenney and Woolworth's.

CONCLUSION

The superior performance of the original S&P 500 firms surprises most investors. But value investors know that growth stocks often are priced too high and often induce investors to pay too high a price. Profitable firms that do not catch investors' eyes are often underpriced. If investors reinvest the dividends of such firms, they are buying undervalued shares that will add significantly to their final accumulation.

The study of the original 500 companies also gives you an appreciation of the dramatic changes that the U.S. economy has undergone in the past half century. Notwithstanding, many of the top performers are producing the same brands that they did 50 years earlier. Most have aggressively expanded their franchise internationally. Brands such as Heinz ketchup, Wrigley gum, Coca-Cola, Pepsi-Cola, and Tootsie Rolls are as profitable today as they were when these products were launched, some over a hundred years ago.

But we also see that many companies make good investments by being merged into a stronger company. And four of the top-performing original companies—Dr. Pepper, Celanese, National Can, and Flintkote—are now owned by foreign companies. In fact, it is more likely than not that the future winners among companies that are currently American based will not be headquartered in the United States. Foreign firms, clearly secondary when the S&P 500 Index was founded in 1957, are apt to be the ultimate owners of many of today's top firms.

5 CHAPTER

THE IMPACT OF TAXES ON STOCK AND BOND RETURNS

Stocks Have the Edge

In this world nothing is certain but death and taxes.

BENJAMIN FRANKLIN¹

The power to tax involves the power to destroy.

JOHN MARSHALL²

For all long-term investors, there is only one objective—maximum total real return after taxes.

JOHN TEMPLETON³

¹ Letter to M. Leroy, 1789.

² *McCulloch v. Maryland*, 1819.

³ Excerpts from “The Templeton Touch” by William Proctor, quoted in Charles D. Ellis, ed., *Classics*, Homewood, Ill.: Dow Jones-Irwin, 1989, p. 738.

John Templeton's objective to maximize total real return after taxes is an essential investment strategy. And stocks are very well suited to this purpose. In contrast to fixed-income investments, both the capital gains and now the dividends are treated favorably by the U.S. tax code. So in addition to having superior before-tax returns, stockholders often hold an even larger after-tax advantage over bondholders.

HISTORICAL TAXES ON INCOME AND CAPITAL GAINS

Figure 5-1a plots the marginal tax rate on dividend and interest income for investors at three income levels: the highest tax bracket, the tax rate for real 2006 income of \$150,000, and the tax rate for real income of \$50,000. The tax rates on capital gains are shown in Figure 5-1b.

Until the dividend tax rate reductions were put into effect in 2003, the tax rates on dividend and interest income were identical, although in the past, small amounts of dividends were often exempt from tax. From 1930 to 2003 the capital gains tax rate was generally below the dividend tax rate; then in 2003 the tax rates on qualified dividends and capital gains were made equal. A history of the tax code applicable to stock investors is provided in the appendix at the end of this chapter.

A TOTAL AFTER-TAX RETURNS INDEX

A total real returns index for stocks, bonds, bills, and gold is presented in Figure 1-4 in Chapter 1. The effect of taxes on these returns is shown in Figure 5-2.

- The upper line of the stock range equals the before-tax real stock returns shown in Figure 1-4. These returns would be applicable to tax-exempt individuals or institutions.
- The lower line of the stock range in Figure 5-2 assumes that investors pay the highest tax rate on dividend, interest, and capital gains income, with no deferral of capital gains taxes.
- The shaded area shows the range of total real returns from the lowest- to the highest-taxed investor.

These calculations include only federal taxes; no state, local, or estate taxes are considered.

The difference between the before- and after-tax total returns is striking. Total before-tax real stock returns accumulate to \$755,163, while after-tax accumulation for someone in the highest bracket is about \$30,018—less than 5 percent of the before-tax accumulation. Similar

FIGURE 5-1

Federal Tax Rates, 1913 through December 2003

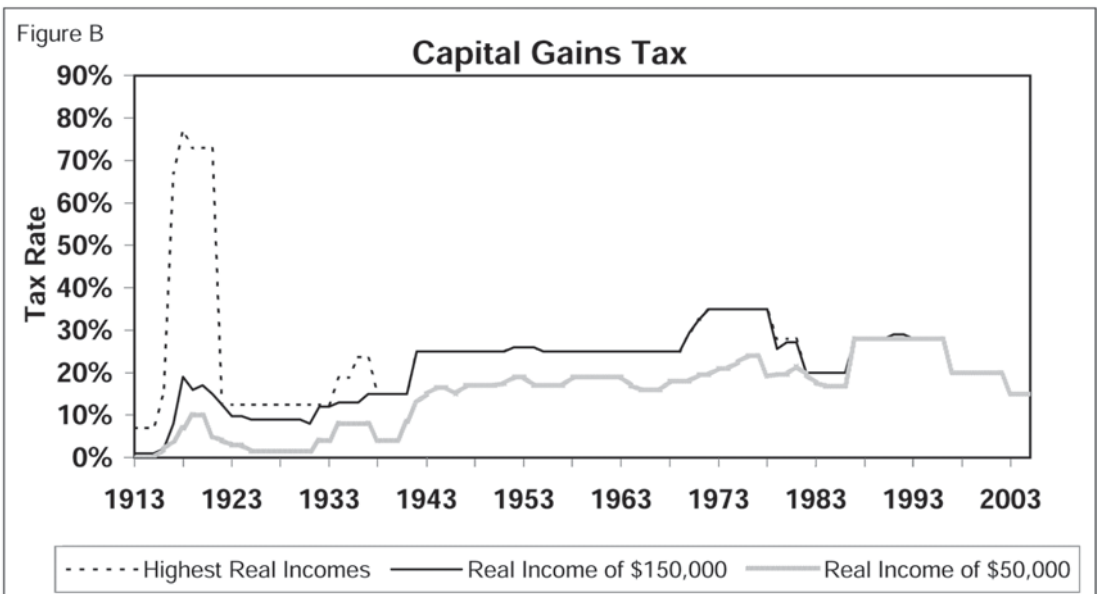
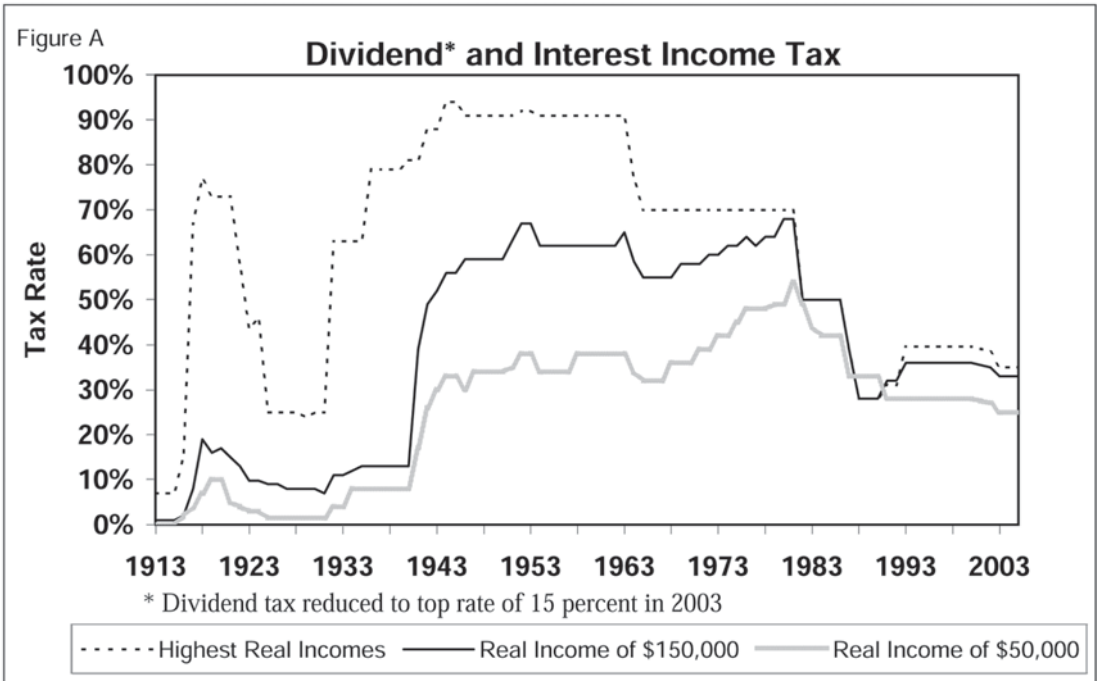
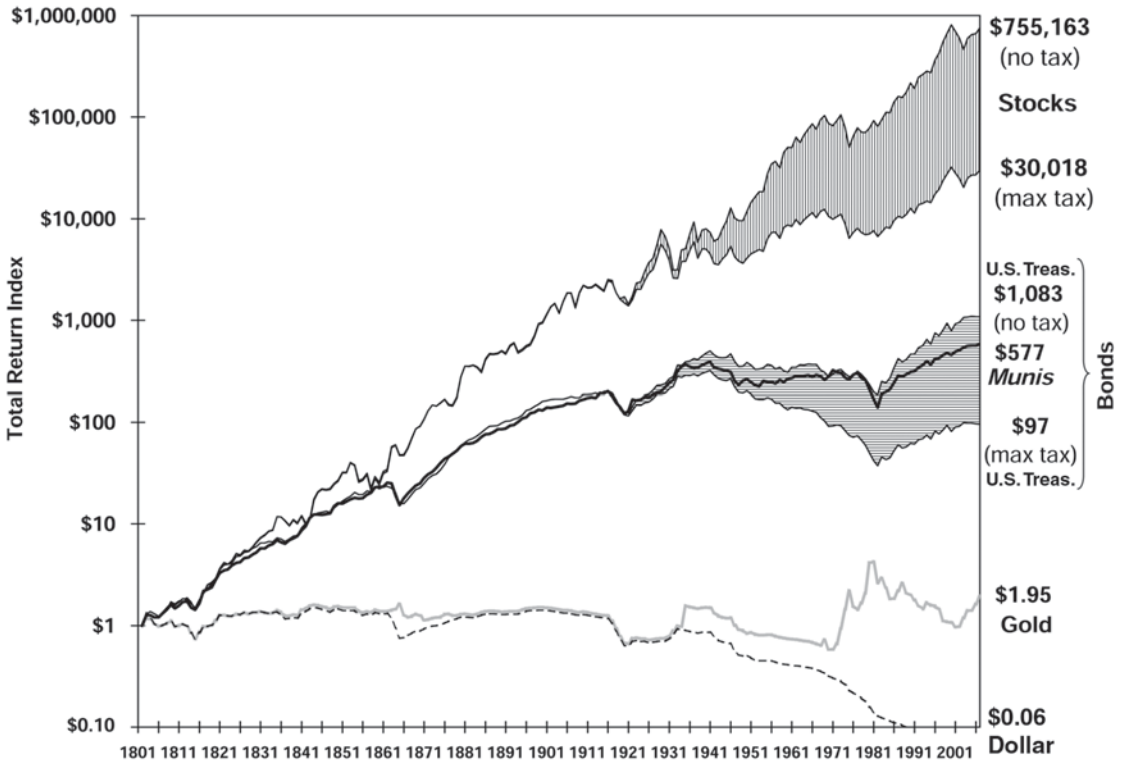


FIGURE 5-2

After-Tax Real Return for Various Federal Tax Brackets, 1802 through December 2006



ranges for the total real returns on Treasury bonds and the total real returns on municipal bonds, which are exempt from federal taxes, are displayed. Since municipal bond yields are generally lower than Treasury bond yields, the total return on Treasuries is higher than municipal bonds for untaxed investors, but lower for most taxable investors.

The historical real after-tax returns for four tax brackets are displayed in Table 5-1. Since 1913, when the federal income tax was instituted, the after-tax real return on stocks has ranged from 6.3 percent for untaxed investors to 2.8 percent for investors in the highest bracket who do not defer their capital gains. For taxable bonds, the real annual return ranges from 1.9 to -0.7 percent, and in bills from 0.5 to -2.3 percent, depending on the tax bracket. Municipal bonds have yielded a 0.9 percent annual real return since the income tax was instituted.

TABLE 5-1

After-Tax Real Asset Returns, 1802 through December 2006: Compound Annual Rates of Return (%)*

		Stocks Tax Brackets				Bonds Tax Brackets				Bills Tax Brackets				Muni Bds	Gold	CPI
		\$0	\$50K	\$150K	Max	\$0	\$50K	\$150K	Max	\$0	\$50K	\$150K	Max			
Period	1802-2006	6.8	5.9	5.6	5.2	3.5	2.8	2.6	2.3	2.8	2.3	1.8	1.5	3.0	0.3	1.4
	1871-2006	6.7	5.4	4.9	4.2	2.8	1.8	1.5	1.0	1.7	0.9	0.2	-0.3	2.0	0.4	2.1
	1913-2006	6.3	4.4	3.7	2.8	1.9	0.5	0.0	-0.7	0.5	-0.6	-1.6	-2.3	0.9	0.4	3.3
Major Subperiods	I 1802-1870	7.0	7.0	7.0	7.0	4.8	4.8	4.8	4.8	5.1	5.1	5.1	5.1	5.0	0.2	0.1
	II 1871-1925	6.6	6.5	6.4	6.2	3.7	3.7	3.6	3.4	3.2	3.1	3.0	2.7	3.4	-0.8	0.6
	III 1926-2006	6.6	4.4	3.7	2.8	2.2	0.6	0.0	-0.6	0.7	-0.6	-1.6	-2.3	1.1	1.2	3.0
Postwar Periods	1946-2006	6.8	4.3	3.4	2.9	1.4	-0.6	-1.2	-1.7	0.6	-1.1	-2.5	-3.2	0.5	0.5	4.0
	1946-1965	10.0	7.0	5.2	3.8	-1.2	-2.0	-2.7	-3.5	-0.8	-1.5	-2.3	-2.7	-0.6	-2.7	2.8
	1966-1981	-0.4	-2.2	-3.0	-3.3	-4.2	-6.1	-7.0	-7.5	-0.2	-3.0	-5.2	-6.1	-1.0	8.8	7.0
	1982-1999	13.6	9.4	9.1	9.1	8.4	4.9	4.5	4.4	2.9	0.8	-0.8	-1.7	2.7	-4.9	3.3
	1982-2006	9.0	6.4	6.3	6.2	7.3	4.5	4.2	4.0	2.1	0.4	-0.9	-1.7	2.2	-1.2	3.1

*Federal income tax only. Assume one-year holding period for capital gains portion of return.

Despite the debilitating effect of taxes on equity accumulations, taxes cause the greatest damage to the returns on fixed-income investments. On an after-tax basis, an investor in the top tax bracket who put \$1,000 in Treasury bills at the beginning of 1946 would have \$138 after taxes and after inflation today, a *loss* in purchasing power of more than 86 percent. Instead, a highest-bracket investor would have turned \$1,000 into over \$5,719 by buying stocks, a 470 percent increase in purchasing power.

In fact, for someone in the highest tax bracket, short-term Treasury bills have yielded a negative after-tax real return since 1871, even lower if state and local taxes are taken into account. In contrast, top-bracket taxable investors would have increased their purchasing power in stocks 269-fold over the same period.

THE BENEFITS OF DEFERRING CAPITAL GAINS TAXES

In May 2003 President George W. Bush signed the Jobs and Growth Reconciliation Act of 2003, which reduced the highest tax rate on qualified

dividends and capital gains to 15 percent. Nevertheless, effective taxes on capital gains are still lower than on dividends since taxes on capital gains are paid only when the asset is sold, not as the gain is accrued. The advantage of this tax deferral is that the return from capital gains accumulates at the higher before-tax rates rather than the after-tax rates as in the case of dividends. I call the advantage of capital gains over dividend income the “deferral benefit.”⁴

For long-term investors the advantage of the deferral benefit can be substantial. For example, take two stocks, one yielding 10 percent per year in dividend income and the other yielding 10 percent solely in capital gains. Assume an individual is in a 30 percent taxable bracket, and the capital gains and dividend tax rate is 15 percent. For an untaxed investor, both investments would yield identical 10 percent returns. But the after-tax yield on the dividend-paying stock is 8.5 percent per year, while, if the investor waits for 30 years before selling the capital-gains-paying stock, the after-tax return is 9.41 percent per year. This is only 59 basis points less than the return of an untaxed investor.

Therefore, from a tax standpoint, there is still bias for firms to deliver capital gains as opposed to dividend income. This is unfortunate since, as we shall note in Chapter 9, dividend-paying stocks generally yield better before- and after-tax returns than non-dividend-paying stocks. Dividends can be put on the same tax basis as capital gains if investors who reinvest their dividends back into the stock are allowed to obtain a tax deferral on reinvested dividends until the stock is sold.

INFLATION AND THE CAPITAL GAINS TAX

In the United States, capital gains taxes are paid on the difference between the price of an asset when it is purchased (its *nominal price*) and the value (price) of that asset when it is sold, with no adjustment made for inflation. This nominally based tax system means that an asset that appreciates by less than the rate of inflation—resulting in a loss of purchasing power—will nevertheless be taxed upon sale.

Although the appreciation of stock prices generally compensates investors for increases in the rate of inflation, especially in the long run, a tax code based on *nominal* prices penalizes investors in an inflationary environment. For a given real return, even a moderate inflation rate of 3 percent causes an investor with a five-year average holding period to

⁴ It may be that firms that pay higher dividends have better incentives to provide shareholders with higher total returns. This possibility is not explored in this chapter.

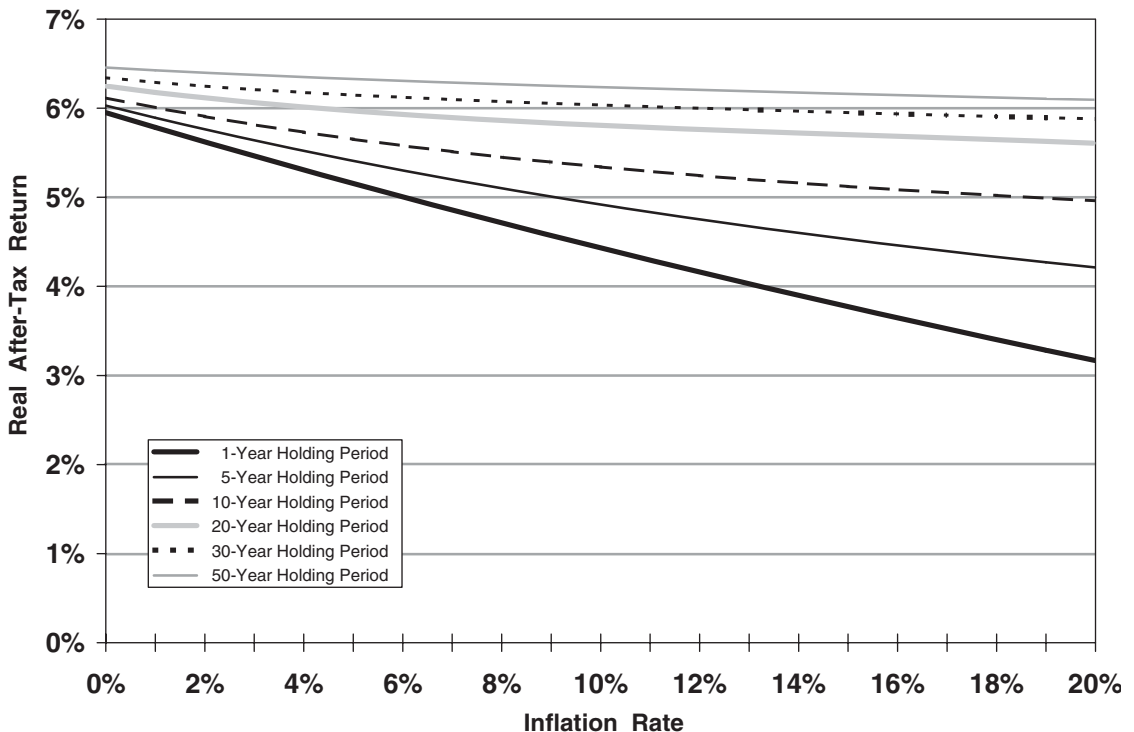
lose 31 basis points per year compared with the after-tax return that would result if the inflation rate were zero. If the inflation rate rises to 6 percent, the decline in annual return is more than 65 basis points per year. I call this effect the “inflation tax.” The inflation tax for various inflation rates and various holding periods under the current tax system are displayed in Figure 5-3.⁵

The inflation tax has a far more devastating effect on after-tax real returns when the holding period is short than when it is long. This is because the more frequently an investor buys and sells assets, the more frequently the government can tax the capital gains. But even for long-term investors, the inflation tax reduces after-tax returns.

⁵ Figure 5-3 assumes a total real return of 7 percent (real appreciation of 5 percent, a dividend yield of 2 percent), and tax rates of 15 percent on capital gains and dividend income. If inflation is 3 percent, the total before-tax return on stocks will be 10 percent in nominal terms.

FIGURE 5-3

Impact of Holding Period on Real After-Tax Returns



There is considerable support, both inside and outside government, to make some adjustment for inflation in the tax system. In 1986, the U.S. Treasury proposed the indexation of capital gains, but this provision was never enacted into law. In 1997, the House of Representatives included capital gains indexation in its tax law, but it was removed by House-Senate conferees under threat of a presidential veto. Under these plans, investors would pay taxes on only that portion of the gain (if any) that exceeded the increase in the price level over the holding period of the asset. Although this legislation is currently dormant, in recent years the Federal Reserve has kept inflation low, and this has reduced the impact of the inflation tax.

INCREASINGLY FAVORABLE TAX FACTORS FOR EQUITIES

In recent years there have been some very favorable tax developments for stocks. They include the following:

1. Reduction in dividend and capital gains tax rates
2. Lower inflation, which reduces the inflation tax imposed on nominal capital gains,
3. Switch to capital gains from dividends, which increases the deferral benefit

The capital gains tax rate has been reduced from a maximum of 35 percent in 1978 to 15 percent in 2003. Until 2003, when the tax rate on dividends was for the first time decoupled from the tax rate on ordinary income, the tax rate on dividends ranged from a high of 90 percent in the immediate post–World War II years to 33 percent in 1998 and then to the special rate of 15 percent in 2003. (See the appendix at the end of the chapter for the history of the tax code.)

Since the tax law is based on only nominal values uncorrected for inflation, inflation imposes an additional tax on capital gains. The inflation rate has fallen from double-digit levels in 1979 to the 2 to 3 percent level in 2007. Since tax brackets are indexed to inflation, the tax rate on dividends is not directly affected by inflation. Furthermore, since the capital gains tax is based on realizations instead of accruals, firms have been buying back shares in lieu of paying dividends and generating more capital gains income. As a result, the average dividend yield has fallen from about 5 percent before 1980 to only 2 percent in 2007.

It can be calculated that all these factors have increased the real after-tax return on stocks by more than 2 percentage points over the past 30 years for a *given* before-tax return. Although the real after-tax return

on bonds has also increased as a result of the drop in the tax rates on ordinary income, the increase in the real return on stocks has been greater. In any equilibrium model of asset pricing, the favorable tax factors for equities suggest that stocks should be priced at a higher multiple of earnings. This will be discussed in Chapter 8.

STOCKS OR BONDS IN TAX-DEFERRED ACCOUNTS?

The most important savings vehicles for many individuals are their tax-deferred accounts (TDAs) such as Keogh, IRA, and 401(k) plans. Many investors hold most of their stock (if they hold any at all) in their tax-deferred accounts, while they hold primarily fixed-income assets in their taxable accounts.

Yet many of the recent changes in the tax laws argue that investors should do the opposite. Dividends will enjoy the lower tax rates and appreciation on shares will gain the lower capital gains tax advantage only if they are held in taxable accounts. This is because when a tax-deferred account is cashed out at retirement, an individual pays the full ordinary income tax on the entire withdrawal regardless of how much of the accumulation has been realized through capital gains and how much through dividend income.

The above counsel, however, ignores two factors. First, if you are an active trader or buy mutual funds that actively trade, then there may be significant capital gains realized, some short run, that would be best kept in a tax-deferred account. Trading in tax-deferred accounts also does not require complicated tax computations since there are no taxes paid until money is withdrawn and the source of the money is of no consequence.

Second, although the government taxes your capital gains and dividends at ordinary rates when withdrawn from a TDA, the government also shares more of the risk. If you realize a capital loss in a taxable account, the government limits your ability to offset this loss against ordinary income. However, when funds are withdrawn from a tax-deferred account, the full withdrawal is treated as taxable income, so that all losses become totally deductible from taxable income. Therefore, there is less after-tax risk putting your money in tax-deferred accounts.

When all the factors are considered, it is better for most investors to hold stocks in their taxable accounts, unless they are active traders. If you have a long horizon, the possibility that you will have a loss in your stock accounts is minimal, so the loss-sharing aspect of TDAs is less important. It is advisable, however, to hold stocks that do not pay tax-

qualified dividends, such as REITs and other income trusts, in one's tax-deferred account to avoid current taxes. However, some risk-averse investors who are reluctant to hold stocks in their personal accounts because of short-term volatility find it easier to hold stocks in their retirement accounts where they have a longer-term perspective and may be better able to tolerate short-term losses.

CONCLUSION

Tax planning is important to maximize returns from financial assets. Because of favorable dividend and capital gains tax rates and the potential to defer those capital gains taxes, stocks hold a significant tax advantage over fixed-income assets. These advantages have risen in recent years as the capital gains and dividend tax has been reduced, inflation has remained low, and firms have repurchased shares to increase capital gains. These favorable developments have increased the after-tax return of equities by more than 2 percentage points over the average after-tax return of the past 50 years. As favorable as stocks are over bonds for long-term investors, the advantage of equities is even greater for the taxable investor.

APPENDIX: HISTORY OF THE TAX CODE

Federal income tax was first collected under the Revenue Act of 1913, when the Sixteenth Amendment to the U.S. Constitution was ratified. Until 1921 there was no tax preference given to capital gains income. When tax rates were increased sharply during World War I, investors refrained from realizing gains and complained to Congress about the tax consequences of selling their assets. Congress was persuaded that such "frozen portfolios" were detrimental to the efficient allocation of capital, and so in 1922 a maximum tax rate of 12.5 percent was established on capital gains income. This rate became effective when taxable income reached \$30,000, which is equivalent to about \$240,000 in today's dollars.

In 1934, a new tax code was enacted that, for the first time, excluded a portion of capital gains from taxable income. This exclusion allowed middle-income investors, and not just the rich, to enjoy the tax benefits of capital gains income. The excluded portion of the gain depended on the length of time that the asset was held; there was no exclusion if the asset was held 1 year or less, but the exclusion was increased to 70 percent if the asset was held more than 10 years. Since marginal tax rates

ranged up to 79 percent in 1936, the effective maximum tax on very-long-term gains was reduced to about 24 percent.

In 1938, the tax code was amended again to provide for a 50 percent exclusion of capital gains income if an asset was held more than 18 months, but in no case would the tax exceed 15 percent on such capital gains. The maximum rate on capital gains income was raised to 25 percent in 1942, but the holding period was reduced to 6 months. Except for a 1 percent surtax that raised the maximum rate to 26 percent during the Korean War, the 25 percent rate held until 1969.

In 1969, the maximum tax rate on capital gains in excess of \$50,000 was phased out over a number of years, so ultimately the 50 percent exclusion applied to all tax rates. Since the maximum rate on ordinary income was 70 percent, this meant the maximum tax rate on capital gains rose to 35 percent by 1973. In 1978, the exclusion was raised to 60 percent, which lowered the effective maximum tax rate on capital gains to 28 percent. When the maximum tax rate on ordinary income was reduced to 50 percent in 1982, the maximum tax rate on capital gains was again reduced to 20 percent.

In 1986, the tax code was extensively altered to reduce and simplify the tax structure and ultimately eliminate the distinction between capital gains and ordinary income. By 1988, the maximum tax rates for both capital gains and ordinary income were identical, at 33 percent. For the first time since 1922, there was no preference for capital gains income. In 1990, the top rate was lowered to 28 percent on both ordinary and capital gains income. In 1991, a slight wedge was reopened between capital gains and ordinary income: the top rate on the latter was raised to 31 percent, while the former remained at 28 percent. In 1993, President Clinton raised tax rates again, increasing the top rate on ordinary income to 39.6 percent while keeping the capital gains tax unchanged. In 1997, Congress lowered the maximum capital gains tax to 20 percent for assets held more than 18 months and the following year returned to the 12-month capital gains period. Starting in 2001, investors could take advantage of a new 18 percent top capital gains rate for assets held at least 5 years.

In 2003 President Bush signed into law legislation that lowered the top rate on capital gains and qualified dividend income to 15 percent. Qualified dividend income must come from taxable enterprises, not “flow through” organizations such as real estate investment trusts or investment companies.

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CHAPTER 6

THE INVESTMENT VIEW OF STOCKS

How Fickle Markets Overwhelm Historical Facts

The “new-era” doctrine—that “good” stocks (or “blue chips”) were sound investments regardless of how high the price paid for them—was at the bottom only a means of rationalizing under the title of “investment” the well-nigh universal capitulation to the gambling fever.

BENJAMIN GRAHAM AND DAVID DODD, 1934¹

Investing in stocks has become a national hobby and a national obsession. To update Marx, it is the religion of the masses.

ROGER LOWENSTEIN, 1996²

¹ Benjamin Graham and David Dodd, *Security Analysis*, New York: McGraw-Hill, 1934, p. 11.

² Roger Lowenstein, “A Common Market: The Public’s Zeal to Invest,” *Wall Street Journal*, September 9, 1996, p. A11.

It was a seasonally cool Monday evening on October 14, 1929, when Irving Fisher arrived at the Builders' Exchange Club at 2 Park Avenue in New York City. Fisher, a professor of economics at Yale University and the most renowned economist of his time, was scheduled to address the monthly meeting of the Purchasing Agents Association.

The Yale economist, often called the founder of modern capital theory, was no mere academic. He actively analyzed and forecast financial market conditions, wrote dozens of newsletters on topics ranging from health to investments, and created a highly successful card-indexing firm based on one of his own patented inventions. Despite hailing from a modest background, his personal wealth in the summer of 1929 exceeded \$10 million.³

Association members and the press crowded the meeting room. Fisher had intended to defend investment trusts, the forerunner of today's mutual funds. But the audience was most eager to hear his views on the stock market, as they had been nervous since early September when Roger Babson, businessman and market seer, predicted a "terrific" crash in stock prices.⁴ Fisher had dismissed Babson's pessimism, noting that he had been bearish for some time. But the public sought to be reassured by the great man who had championed stocks for so long.

The audience was not disappointed. After a few introductory remarks, Fisher uttered a sentence that, much to his regret, became one of the most-quoted phrases in stock market history: "Stock prices," he proclaimed, "have reached what looks like a permanently high plateau."⁵

On October 29, two weeks to the day after Fisher's speech, stocks crashed. His "high plateau" turned instead into a bottomless abyss. The next three years witnessed the most devastating market collapse in history. Like Neville Chamberlain's proud claim that the "agreement" Adolph Hitler signed in Munich in September 1938 guaranteed "peace in our time," Fisher's stock market prediction stands as a memorial to the folly of great men who failed to envision impending disaster.

After the crash, it made little difference to the public that Fisher had earlier correctly forecast the bull market in the 1920s, or recognized the importance of the Federal Reserve in creating a favorable economic climate, or properly defended investment trusts, the forerunners of today's mutual funds, as the best way that the public could participate in the stock market. After 1929, his reputation was shattered.

³ Robert Loring Allen, *Irving Fisher: A Biography*, Cambridge: Blackwell, 1993, p. 206.

⁴ *Commercial and Financial Chronicle*, September 7, 1929.

⁵ "Fisher Sees Stocks Permanently High," *New York Times*, October 16, 1929, p. 2.

But one should hesitate to render too harsh a judgment on Fisher's analysis. By the end of 1929, stock prices had recovered nearly 50 percent of their losses, and they would have likely continued upward had it not been for the disastrous performance of the Federal Reserve, an institution into which Fisher and many investors put their faith.

As the central bank stood by when the financial system collapsed around it, the most vicious bear market in history took hold. The 1930s would leave an indelible mark on the psyches of all investors. As happened so often throughout history, the data that confirmed the long-term superiority of stocks and served as the rationale for the market advance were dismissed as investors dumped stocks regardless of their intrinsic value. Public and professional opinions about stocks are as volatile as the markets themselves.

EARLY VIEWS OF STOCK INVESTING

Throughout the nineteenth century, stocks were deemed the province of speculators and insiders but certainly not conservative investors. It was not until the early twentieth century that researchers came to realize that stocks, as a class, might be suitable investments under certain economic conditions for investors outside those traditional channels. In the early 1920s, Irving Fisher maintained that stocks would indeed be superior to bonds during inflationary times although common shares would likely underperform bonds during periods of declining prices.⁶ This view became the conventional wisdom of the early twentieth century.

Edgar Lawrence Smith, a financial analyst and investment manager of the 1920s, exploded this popular conception. Smith was the first to demonstrate that accumulations in a diversified portfolio of common stocks outperformed bonds not only when commodity prices were rising but also when prices were falling. Smith published his studies in 1925 in a book entitled *Common Stocks as Long-Term Investments*. In the introduction he stated:

These studies are a record of a failure—the failure of facts to sustain a preconceived theory, . . . [the theory being] that high-grade bonds had proved to be better investments during periods of [falling commodity prices].⁷

By examining stock returns back to the Civil War, Smith found that not only did stocks beat bonds whether prices were rising or falling but there was also a very small chance that you would have to wait a long

⁶ Irving Fisher, *How to Invest When Prices Are Rising*, Scranton, Pa.: G. Lynn Sumner & Co., 1912.

⁷ Edgar L. Smith, *Common Stocks as Long-Term Investments*, New York: Macmillan, 1925, p. v.

time (which he put at 6 and, at most, 15 years) before being able to sell your stocks at a profit. He concluded:

We have found that there is a force at work in our common stock holdings which tends ever toward increasing their principal value. . . . [U]nless we have had the extreme misfortune to invest at the very peak of a noteworthy rise, those periods in which the average market value of our holding remains less than the amount we paid for them are of comparatively short duration. Our hazard even in such extreme cases appears to be that of time alone.⁸

Smith's conclusion was right not only historically but also prospectively. It took just over 15 years to recover the money invested at the 1929 peak, following a crash far worse than Smith had ever examined. And since World War II, the recovery period for stocks has been better than Smith's wildest dreams. The longest it has ever taken since 1945 to recover an original investment in the stock market (including reinvested dividends) was the five-year, eight-month period from August 2000 through April 2006.

The Influence of Smith's Work

Smith wrote his book at the outset of one of the greatest bull markets in our history. Its conclusions caused a sensation in both academic and investing circles. The prestigious weekly *The Economist* stated, "Every intelligent investor and stockbroker should study Mr. Smith's most interesting little book, and examine the tests individually and their very surprising results."⁹

Irving Fisher saw Smith's study as a confirmation of his own long-held belief that bonds were overrated as safe investments in a world with uncertain inflation. Fisher summarized the new findings:

It seems, then, that the market overrates the safety of "safe" securities and pays too much for them, that it underrates the risk of risky securities and pays too little for them, that it pays too much for immediate and too little for remote returns, and finally, that it mistakes the steadiness of money income from a bond for a steadiness of real income which it does not possess. In steadiness of real income, or purchasing power, a list of diversified common stocks surpasses bonds.¹⁰

⁸ Ibid., p. 81.

⁹ "Ordinary Shares as Investments," *The Economist*, June 6, 1925, p. 1141.

¹⁰ From the Foreword by Irving Fisher in Kenneth S. Van Strum, *Investing in Purchasing Power*, New York: Barron's, 1925, p. vii. Van Strum, a writer for Barron's weekly, followed up and confirmed Smith's research.

Smith's ideas quickly crossed the Atlantic and were the subject of much discussion in Great Britain. John Maynard Keynes, the great British economist and originator of the business cycle theory that became the accepted paradigm for future generations, reviewed Smith's book with much excitement. Keynes stated:

The results are striking. Mr. Smith finds in almost every case, not only when prices were rising, but also when they were falling, that common stocks have turned out best in the long-run, indeed, markedly so. . . . This actual experience in the United States over the past fifty years affords prima facie evidence that the prejudice of investors and investing institutions in favor of bonds as being "safe" and against common stocks as having, even the best of them, a "speculative" flavor, has led to a relative over-valuation of bonds and under-valuation of common stocks.¹¹

Money managers were also quick to realize the impact of Smith's work. Hartley Withers wrote in the *London Investors Chronicle* and *Money Market Review*:

Old-fashioned investors and their old-fashioned advisers have so long been in the habit of looking on all holdings of ordinary shares or common stocks as something rather naughty and speculative, that one feels a certain amount of hesitation in even ventilating the view that is now rapidly gaining acceptance that ordinary shares, under certain conditions, are really safer than [bonds], even though the latter may be of the variety which is commonly called "gilt-edged."¹²

Smith's writings were published in such prestigious journals as the *Review of Economic Statistics* and the *Journal of the American Statistical Association*.¹³ Further research confirmed his results. Smith acquired an international following when Siegfried Stern published an extensive study of returns in common stock in 13 European countries from the onset of World War I through 1928. Stern's study showed that the advantage of investing in common stocks over bonds and other financial investments extended far beyond America's financial markets.¹⁴

¹¹ John Maynard Keynes, "An American Study of Shares versus Bonds as Permanent Investments," *The Nation & The Athenaeum*, May 2, 1925, p. 157.

¹² Quoted by Edgar Lawrence Smith in *Common Stocks and Business Cycles*, New York: William-Fredrick Press, 1959, p. 20.

¹³ Edgar Lawrence Smith, "Market Value of Industrial Equities," *Review of Economic Statistics*, vol. 9 (January 1927), pp. 37–40, and "Tests Applied to an Index of the Price Level for Industrial Stocks," *Journal of the American Statistical Association*, Supplement (March 1931), pp. 127–135.

¹⁴ Siegfried Stern, *Fourteen Years of European Investments, 1914–1928*, London: Bankers' Publishing Co., 1929.

Common Stock Theory of Investment

The research demonstrating the superiority of stocks became known as the “common stock theory of investment.”¹⁵ Smith himself was careful to not overstate his findings. He wrote:

*Over a period of years the principal value of a well-diversified holding of common stocks of representative corporations in essential industries tends to increase in accordance with the operation of compound interest. . . . Such stock holding may be relied upon over a term of years to pay an average income return on such increasing values of something more than the average current rate on commercial paper.*¹⁶

Yet Chelcie C. Bosland, a professor of economics at Brown University in the 1930s, claimed that the common stock theory was often misused to justify any investment in stocks no matter what the price. Bosland stated:

The purchase of common stocks after 1922 was more likely to result in profit than in loss. Even though this was largely a cyclical up-swing, many believed that it was a vindication of the theory that common stocks are good long-term investments. Participation in this profit-making procedure became widespread. The “boom psychology” was everywhere in evidence. No doubt the “common stock theory” gave even to the downright speculator the feeling that his actions were based upon the solid rock of scientific finding.¹⁷

A RADICAL SHIFT IN SENTIMENT

But the glorious days for common stocks did not last. The crash pushed the image of stocks as safe and fundamentally sound investments into the doghouse and with it Smith’s contention that stocks were the best long-term investments. Lawrence Chamberlain, an author and well-known investment banker, stated, “*Common stocks, as such, are not superior to bonds as long-term investments, because primarily they are not investments at all. They are speculations.*”¹⁸

The common stock theory of investment was attacked from all angles. In 1934, Benjamin Graham, an investment fund manager, and

¹⁵ Chelcie C. Bosland, *The Common Stock Theory of Investment, Its Development and Significance*, New York: Ronald Press, 1937.

¹⁶ Smith, *Common Stocks as Long-Term Investments*, p. 79, emphasis added.

¹⁷ Bosland, *The Common Stock Theory of Investment*, p. 4.

¹⁸ Lawrence Chamberlain and William W. Hay, *Investment and Speculations*, New York: Henry Holt & Co., 1931, p. 55, emphasis his.

David Dodd, a finance professor at Columbia University, wrote *Security Analysis*, which became the bible of the value-oriented approach to analyzing stocks and bonds. Through its many editions, the book has had a lasting impact on students and market professionals alike.

Graham and Dodd clearly blamed Smith's book for feeding the bull market mania of the 1920s by proposing plausible-sounding but fallacious theories to justify the purchase of stocks. They wrote:

The self-deception of the mass speculator must, however, have its element of justification. . . . In the new-era bull market, the "rational" basis was the record of long-term improvement shown by diversified common-stock holdings. [There is] a small and rather sketchy volume from which the new-era theory may be said to have sprung. The book is entitled *Common Stocks as Long-Term Investments* by Edgar Lawrence Smith, published in 1924.¹⁹

THE POSTCRASH VIEW OF STOCK RETURNS

As the news spread about all the people who lost their life savings in the market, the notion that stocks could still beat other financial assets sounded ludicrous.

In the late 1930s, Alfred Cowles III, founder of the Cowles Commission for Economic Research, constructed capitalization-weighted stock indexes back to 1871 of all stocks traded on the New York Stock Exchange. Cowles examined stock returns including reinvested dividends and concluded:

During that period [1871–1926] there is considerable evidence to support the conclusion that stocks in general sold at about three-quarters of their true value as measured by the return to the investor.²⁰

Yet Cowles placed the blame for the crash of 1929 squarely on the shoulder of the government, claiming that increased taxation and government controls drove stock prices downward.

As stocks slowly recovered from the Depression, their returns seemed to warrant a new look. In 1953, two professors from the University of Michigan, Wilford J. Eiteman and Frank P. Smith, published a study of the investment returns on all industrial companies with trading

¹⁹ Benjamin Graham and David Dodd, *Security Analysis*, 2d ed., New York: McGraw-Hill, 1940, p. 357.

²⁰ Alfred Cowles III and associates, *Common Stock Indexes 1871–1937*, Bloomington, Ind.: Pricipia Press, 1938, p. 50.

volume over 1 million shares in 1936. By regularly purchasing these 92 stocks without any regard to the stock market cycle (a strategy called *dollar cost averaging*), they found that the returns over the next 14 years, at 12.2 percent per year, far exceeded those in fixed-income investments. Twelve years later they repeated the study, using the same stocks they had used in their previous study. This time the returns were even higher despite the fact that they made no adjustment for any of the new firms or new industries that had surfaced in the interim. They wrote:

If a portfolio of common stocks selected by such obviously foolish methods as were employed in this study will show an annual compound rate of return as high as 14.2 percent, then a small investor with limited knowledge of market conditions can place his savings in a diversified list of common stocks with some assurance that, given time, his holding will provide him with safety of principal and an adequate annual yield.²¹

Many dismissed the Eiteman and Smith study because it did not include the Great Crash of 1929 to 1932. But in 1964, two professors from the University of Chicago, Lawrence Fisher and James H. Lorie, examined stock returns through the stock crash of 1929, the Great Depression, and World War II.²² Fisher and Lorie concluded that stocks offered significantly higher returns (which they reported at 9.0 percent per year) than any other investment media during the entire 35-year period, 1926 through 1960. They even factored taxes and transaction costs into their return calculations and concluded:

It will perhaps be surprising to many that the returns have consistently been so high. . . . The fact that many persons choose investments with a substantially lower average rate of return than that available on common stocks suggests the essentially conservative nature of those investors and the extent of their concern about the risk of loss inherent in common stocks.²³

Ten years later, Roger Ibbotson and Rex Sinquefeld published an even more extensive review of returns in an article entitled "Stocks, Bonds, Bills, and Inflation: Year-by-Year Historical Returns (1926–74)."²⁴ They acknowledged their indebtedness to the Lorie and Fisher study and confirmed the superiority of stocks as long-term investments. Their summary statistics, which are published annually in yearbooks, are fre-

²¹ Wilford J. Eiteman and Frank P. Smith, *Common Stock Values and Yields*, Ann Arbor: University of Michigan Press, 1962, p. 40.

²² "Rates of Return on Investment in Common Stocks," *Journal of Business*, vol. 37 (January 1964), pp. 1–21.

²³ *Ibid.*, p. 20.

²⁴ *Journal of Business*, vol. 49 (January 1976), pp. 11–43.

quently quoted and have often served as the return benchmarks for the securities industry.²⁵

THE BEGINNING OF THE GREAT BULL MARKET

The Ibbotson and Sinquefeld findings were first published in the teeth of the worst bear market since the Great Depression. Because of the Vietnam War, surging inflation, and the OPEC oil embargo, real stock returns were negative from the end of 1966 through the summer of 1982. But as the Fed successfully squeezed out inflation and interest rates fell sharply, the stock market began its greatest bull market run in August 1982. From a level of 790 the Dow began to shoot skyward, surging past 1,000 to a new record by the end of year.

Amid much skepticism, some analysts took the correct view of the markets. Robert Foman, president and chairman of E.F. Hutton, proclaimed in October 1983 that we are “in the dawning of a new age of equities” and boldly predicted the Dow Jones average could hit 2,000 or more by the end of the decade.

But even Foman was too pessimistic, as the Dow Industrials broke 2,000 in January 1987. Except for the great stock crash that occurred that October, which is documented in Chapter 16, stocks marched steadily upward, and the Dow broke 3,000 just before Saddam Hussein invaded Kuwait in August 1990. The Gulf War and a real estate recession precipitated a second bear market, but this one, like the crash in 1987, was short-lived.

Iraq’s defeat in the Gulf War ushered in one of the most fabulous decades in stock market history. The world witnessed the collapse of communism and diminished threat of global conflict. The transfer of resources from military expenditures to domestic consumption enabled the United States to experience increased economic growth and low inflation. The interests of Americans turned inward, and the postwar baby boomers became preoccupied with career enhancement and retirement security.

The Dow Industrials quickly scaled 3,000 in March 1991. Few thought the trend would last. In 1992, *Forbes* warned investors in a cover story “The Crazy Things People Say to Rationalize Stock Prices” that stocks were in the “midst of a speculative buying panic” and cited Raskob’s foolish advice to invest at the market peak in 1929.²⁶

²⁵ *Stocks, Bonds, Bills, and Inflation Yearbooks*, 1983–1997, Chicago: Ibbotson and Associates.

²⁶ William Baldwin, “The Crazy Things People Say to Rationalize Stock Prices,” *Forbes*, April 27, 1992, pp. 140–150.

But such caution was ill advised. After a successful battle against inflation in 1994, the Fed eased interest rates and the Dow subsequently moved above 4,000 in early 1995. When the Dow was at 4,300, *Business-Week* defended the durability of the bull market in an article on May 15, 1995, entitled "Dow 5000? Don't Laugh." The Dow quickly crossed that barrier by November and then reached 6,000 eleven months later.

By late 1995, the persistent rise in stock prices caused many more analysts to sound the alarm. Michael Metz of Oppenheimer, Charles Clough of Merrill Lynch, and Byron Wein of Morgan Stanley expressed strong doubts about the underpinnings of the rally. In September 1995, David Shulman, chief equity strategist for Salomon Brothers, wrote an article entitled "Fear and Greed," which compared the current market climate to that of similar stock market peaks in 1929 and 1961. Shulman claimed intellectual support was an important ingredient in sustaining bull markets, noting Edgar Smith's and Irving Fisher's work in the 1920s, the Fisher-Lorie studies in the 1960s, and my *Stocks for the Long Run*, published in 1994. Shulman's own long-term studies, based on dividend growth, reinforced his long-term bearish views on stocks.²⁷

WARNINGS OF OVERSPECULATION

By 1996 price-earnings ratios on the S&P 500 Index reached 20, considerably above its average postwar level. More warnings were issued. Roger Lowenstein, a well-known author and financial writer, asserted in the *Wall Street Journal*:

Investing in stocks has become a national hobby and a national obsession. People may denigrate their government, their schools, their spoiled sports stars. But belief in the market is almost universal. To update Marx, it is the religion of the masses.²⁸

Floyd Norris, lead financial writer for the *New York Times*, echoed Lowenstein's comments by penning an article in January 1997 "In the Market We Trust."²⁹ Henry Kaufman, the Salomon Brothers guru whose pronouncements on the fixed-income market had frequently rocked bonds in the 1980s, declared that "the exaggerated financial euphoria is

²⁷ Three months later, in December 1995, Shulman capitulated to the bullish side, claiming his long-time emphasis on dividend yields was incorrect.

²⁸ Roger Lowenstein, "A Common Market: The Public's Zeal to Invest," *Wall Street Journal*, September 9, 1996, p. A1.

²⁹ Floyd Norris, "In the Market We Trust," *New York Times*, January 12, 1997.

increasingly conspicuous,” and he cited assurances offered by optimists equivalent to Irving Fisher’s utterance that stocks had reached a permanently high plateau.³⁰

Warnings of the end of the bull market did not emanate just from Wall Street. Academicians were increasingly investigating this unprecedented rise in stock values. Robert Shiller of Yale University and John Campbell of Harvard wrote a scholarly paper showing that the market was significantly overvalued and presented this research to the board of governors of the Federal Reserve System in early December 1996.³¹

With the Dow surging past 6,400, Alan Greenspan, chairman of the Federal Reserve, issued a warning in a speech before the annual dinner for the American Enterprise Institute (AEI) in Washington on December 5, 1996. He asked, “How do we know when irrational exuberance has unduly escalated asset values, which then become subject to unexpected and prolonged contractions as they have in Japan over the past decade? And how do we factor that assessment into monetary policy?”

His words had an electrifying effect, and the phrase “irrational exuberance” became the most celebrated utterance of Greenspan’s tenure as Fed chairman. Asian and European markets fell dramatically as his words were flashed across computer monitors. The next morning Wall Street opened dramatically lower. But investors quickly regained their balance, and stocks closed in New York with only moderate losses.

From there it was onward and upward, with the Dow breaking 7,000 in February 1997 and 8,000 in July. Even *Newsweek’s* cautious cover story “Married to the Market,” depicting a Wall Street wedding between America and a bull, did nothing to quell investor optimism.³²

The market became an ever-increasing preoccupation of middle- and upper-income Americans. Business books and magazines proliferated, and the all-business cable news stations, particularly CNBC, drew huge audiences. Television sets in bars, airports, and other public places were invariably tuned to an all-business network. Electronic tickers and all-business TV stations were broadcast in lunchrooms, bars, and even lounges of the major business schools throughout the country. Cruise

³⁰ Henry Kaufman, “Today’s Financial Euphoria Can’t Last,” *Wall Street Journal*, November 25, 1996, p. A18.

³¹ Robert Shiller and John Campbell, “Valuation Ratios and the Long-Run Stock Market Outlook,” *Journal of Portfolio Management*, vol. 24 (Winter 1997).

³² *Newsweek*, April 27, 1998. Cover stories about the stock market in major newsweeklies have often been poorly timed. *BusinessWeek’s* cover article “The Death of Equities” on August 13, 1979, occurred 14 years after the market had peaked and 3 years before the beginning of the greatest bull market in stocks.

ships and resorts in some of the world's most isolated locations were sure to carry all-financial stations. Air travelers could view up-to-the-minute Dow and Nasdaq averages flying 35,000 feet above the sea as they were flashed from monitors on phones anchored to the back of the seat in front of them.

Adding impetus to the already surging market was the explosion of communications technology. Internet service providers such as AOL allowed investors to stay in touch with markets and their portfolio from anywhere in the world. Whether it was from Internet "chat rooms," financial Web sites, or e-mail newsletters, investors found access to a plethora of information at their fingertips. CNBC became so popular that major investment houses made sure that all their brokers watched the station on television or their desktop computers so that they could be one step ahead of clients calling in with breaking business news.

The bull market psychology appeared impervious to financial and economic shocks. The first wave of the Asian crisis, discussed further in Chapter 10, sent the market down a record 554 points on October 27, 1997, and closed trading temporarily. But this did little to dent investors' enthusiasm for stocks.

The following year, the Russian government defaulted on its bonds, and Long-Term Capital Management, considered the world's premier hedge fund, found itself entangled in speculative positions measured in the *trillions* of dollars that it could not trade. Markets temporarily seized up, and the Federal Reserve facilitated a rescue of the fund in order to resuscitate financial markets. These events sent the Dow Industrials down almost 2,000 points, but three quick Fed rate cuts sent the market soaring again. On March 29, 1999, the Dow closed above 10,000, and it then went on to a record close of 11,722.98 on January 14, 2000.

THE TOP OF THE BUBBLE

As always, the bull market gave birth to those who envisioned much higher stock prices. In 1999, two economists, James Glassman and Kevin Hassett, published a book entitled *Dow 36,000*. They claimed that the Dow Jones Industrial Average, despite its meteoric rise, was still grossly undervalued, and its true valuation was nearly three times higher at 36,000. They incorrectly asserted that the theoretical underpinning for their analysis came from my book *Stocks for the Long Run*! Since I showed that nominal (nonindexed) bonds were as risky as stocks over long horizons, they improperly claimed that stock prices should rise sufficiently

to reduce their returns to those of bonds, which implied an astronomical level for stock prices.³³

Despite the pundits' preoccupation with the Dow Industrials, the real action in the market was in the Nasdaq. The once sleepy over-the-counter market in unlisted stocks soared to preeminence as the public's fascination with computers, the Internet, mobile communications, and networking firms blossomed. Volume on the Nasdaq eclipsed the New York Stock Exchange, as investors feverishly traded shares in Cisco, Sun Microsystems, Oracle, JDS Uniphase, and other companies that were scarcely in existence a decade earlier. The most heated pace of trading centered on the Internet stocks, where a dot-com index of 24 online firms soared from 142 in November 1997 to a high of 1,350 on March 10, 2000.

THE BEAR MARKET AND ITS AFTERMATH

The date March 10, 2000, marked the peak not only of the Nasdaq but also of many Internet and technology stock indexes. When capital expenditures in technology unexpectedly slowed, the bubble burst and a severe bear market began. Measured by the S&P 500 Index, the market declined by 49.15 percent between March 10 and October 9, 2000, eclipsing the 48.2 percent decline in the 1972 to 1974 bear market and the worst since the Great Depression. There were some redeeming features to the devastation. Since inflation had been far lower during the recent bear market, the after-inflation decline was considerably more moderate, and small stocks did not fall nearly as much in the 2002 bear market as they did in the 1970s.

Still, the decline in stock values exceeded \$9 trillion, by far the greatest loss in history. The bear market came in two waves. The first was the popping of the technology bubble, which sent the Nasdaq index plummeting by nearly 70 percent by the summer of 2001. Nontech stocks held up very well until the second wave of the bear market, which was sparked by the spectacular crash of Enron and allegations of accounting irregularities at many firms, including such blue chips as General Electric.

Just as the bull market brought out the optimists, the collapsing stock prices brought out the bears in droves. In September 2002, Bill

³³ I immediately wrote a rebuttal in the *Wall Street Journal* ("Are Internet Stocks Overvalued? Are They Ever," April 19, 1999, p. A22) stating that their analysis was faulty and that stocks must have returns exceeding those on U.S. Treasury inflation-protected bonds, whose yield had reached 4 percent at that time.

Gross, the legendary head of the PIMCO bond trading department and head of at that time the largest mutual fund in existence, came out with an piece entitled “Dow 5,000” in which he said that despite the market’s awful decline, stocks were still nowhere near as low as they should be on the basis of economic fundamentals. As will be discussed in the next chapter, this analysis was wrong since it concentrated on historical growth of earnings, failing to take into account changes in dividend and investment policies that impacted future growth. Here, within a period of a couple years, you had economists claiming the right value for the Dow was as high as 36,000 and as low as 5,000.

The bear market squelched the public’s fascination with stocks. Televisions in public venues were no longer tuned to CNBC but instead switched on sports and Hollywood gossip. As one bar owner colorfully put it, “People are licking their wounds and they don’t want to talk about stocks anymore. It’s back to sports, women, and who won the game.”³⁴

The bear market also left many professionals skeptical of stocks. Yet bonds did not seem an attractive alternative, as their yields had declined below 4 percent. Many looked to other, nontraditional assets that might lead the way.

David Swensen, chief investment officer at Yale University since 1985, seemed to provide that answer. At the peak of the bull market, he wrote a book, *Pioneering Portfolio Management: An Unconventional Approach to Institutional Investment*, that espoused the qualities of “nontraditional” (and often illiquid) assets, such as private equity, venture capital, real estate, timber, and hedge funds. Hedge funds—pools of investment money that can be invested in any way the fund managers see fit, often in the nonconventional assets Swensen advocated—enjoyed a boom.³⁵ From a mere \$100 billion in 1990, assets of hedge funds grew to over \$1.5 trillion by 2007.

But the surge of assets into hedge funds drove the prices of many unconventional assets to levels never before seen. Jeremy Grantham, a successful money manager at GMO and a one-time big booster of unconventional investing, stated in April 2007, “After these moves, most diversifying and exotic assets are badly overpriced.”³⁶ In comparison, in

³⁴ Paul Sloan, “The Craze Collapses,” *US News and World Report Online*, November 30, 2000.

³⁵ The word *hedge* means “to offset,” as someone making an investment in a foreign market may want to hedge, or offset, adverse currency movements with a transaction in the forward market. Hedge funds often, but not always, took positions that were contrary to the stock market.

³⁶ Jeremy Grantham, “A Global Bubble Warns against the Stampede to Diversify,” *Financial Times*, April 24, 2007, p. 38.

early 2007 the valuation of stocks, particularly large-capitalization equities, was near its historical average, and many hedge funds were bidding well above the market for large, publicly traded companies.

Despite the bursting of the bubble and the success of nontraditional investors, many individual investors ignored these bears and retained their long-term faith in stocks as the best long-term investments. Data collected by Robert Shiller of Yale University confirmed that despite the severe bear market of 2001 to 2002, as of January 2007, three-quarters of investors believed that stocks were the best long-term investment.³⁷

And with good reason. Stocks have returned a very healthy 15 percent per year measured from the market lows reached in October 2002 through the end of 2006. By 2007, stocks as measured by the popular capitalization-weighted indexes were at or near all-time highs, having recovered all their losses sustained in the bear market.

The bull and bear markets of the last decade were no different from the bull and bear markets that preceded them. As stocks rose, the bulls came out of the woodwork, and at the top they fabricated theories that would support even higher prices. In the subsequent down markets, the bears would pounce with justifications for even lower prices. Nearly all would discard the long-term historical evidence that supports the case for equities. How can investors avoid these fickle prognosticators and accurately assess the future returns on the market? This is the topic of our next chapter.

³⁷ Robert Shiller, Yale School of Management Stock Market Confidence Indexes, <http://icf.som.yale.edu/confidence.index>.

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2 PART

VALUATION, STYLE INVESTING, AND GLOBAL MARKETS

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7 CHAPTER

STOCKS: SOURCES AND MEASURES OF MARKET VALUE

Even when the underlying motive of purchase [of common stocks] is mere speculative greed, human nature desires to conceal this unlovely impulse behind a screen of apparent logic and good sense.

BENJAMIN GRAHAM AND DAVID DODD, 1940¹

AN EVIL OMEN RETURNS

In the summer of 1958, an event of great significance took place for those who followed long-standing indicators of stock market value. For the first time in history, the interest rate on long-term government bonds rose above the dividend yield on common stocks.

BusinessWeek noted this event in an August 1958 article entitled “An Evil Omen Returns,” warning investors that when yields on stocks approached those on bonds, a major market decline was in the offing.² The stock market crash of 1929 occurred in a year when stock dividend

¹ “The Theory of Common-Stock Investment,” *Security Analysis*, 2d ed., New York: McGraw-Hill, 1940, p. 343.

² *BusinessWeek*, August 9, 1958, p. 81.

yields fell to the level of bond yields. The stock crashes of 1891 and 1907 also followed episodes when the yield on bonds came within 1 percent of the dividend yield on stocks.

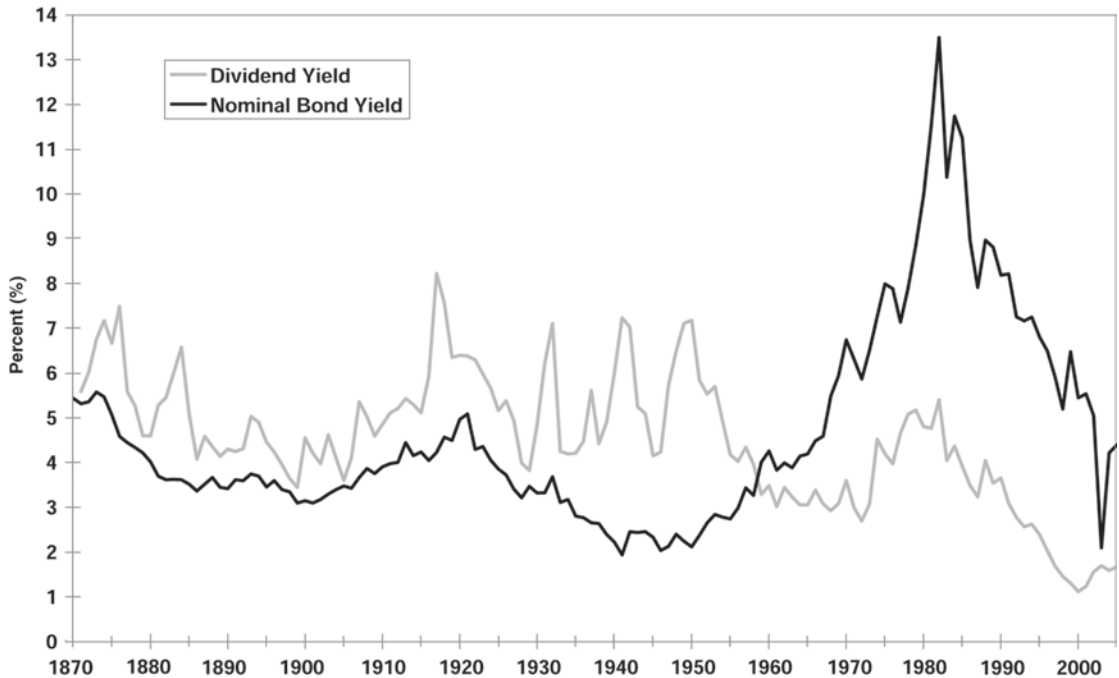
Until 1958, as Figure 7-1 indicates, the yearly dividend yield on stocks had always been higher than long-term interest rates, and financial analysts thought that this was the way it was supposed to be. Stocks were riskier than bonds and therefore should yield more in the marketplace. Under this reasoning, whenever stock prices went too high and sent dividend yields below the yields on bonds, it was time to sell.

But things did not work that way in 1958. Stocks returned over 30 percent in the 12 months after dividend yields fell below bond yields, and stocks continued to soar into the early 1960s.

It is now understood that there were good economic reasons why this well-respected valuation indicator fell by the wayside. Inflation increased the yield on bonds to compensate lenders for rising prices, while investors bought stocks against the eroding value of money. As early as September 1958, *BusinessWeek* noted, "The relationship between stock

FIGURE 7-1

Dividend and Nominal Bond Yields, 1871 through December 2006



and bond yields was clearly posting a warning signal, but investors still believe inflation is inevitable and stocks are the only hedge against it.”³

Yet many on Wall Street were puzzled by the “great yield reversal.” Nicholas Molodovsky, vice president of White, Weld & Co. and editor of the *Financial Analysts Journal*, observed:

Some financial analysts called [the reversal of bond and stock yields] a financial revolution brought about by many complex causes. Others, on the contrary, made no attempt to explain the unexplainable. They showed readiness to accept it as a manifestation of providence in the financial universe.⁴

Imagine the investor who followed this well-regarded indicator and pulled all his or her money out of the stock market in August 1958 and put it into bonds, vowing never to buy stocks again unless dividend yields rose above bond yields. Such an investor, if he or she were still alive, would still be waiting to get back into stocks. After 1958, stock dividend yields *never again* exceeded those of bonds. Yet over the last half century, stock returns overwhelmed the returns on fixed-income securities.

This episode illustrates that valuation benchmarks are valid only as long as underlying economic and financial conditions do not change. The chronic postwar inflation, resulting from a switch to a paper money standard, changed forever the way investors judged the investment merits of stocks and bonds. Stocks were claims on real assets whose prices rose with inflation, while bonds were not. Those investors who clung to the old ways of valuing equity never participated in the greatest bull market for stocks in history.

VALUATION OF CASH FLOWS FROM STOCKS

The fundamental sources of stock valuation derive from the earnings and dividends of firms. In contrast to a work of art—which can be bought both for an investment and for its viewing pleasure—stocks have value only because of the cash flows that current investors receive or the appreciation caused by cash flows that future investors hope to receive. These cash flows may come from the payment of dividends out of earnings or from cash distributions resulting from the sale of the firm’s

³ “In the Markets,” *BusinessWeek*, September 13, 1958, p. 91.

⁴ “The Many Aspects of Yields,” *Financial Analysts Journal*, vol. 18, no. 2 (March–April 1962), pp. 49–62.

assets. One can estimate the investment value of shares by forecasting and valuing these expected cash flows.⁵

More generally, the value of any asset—stock, bond, real estate, or any other property—is determined by the discounted value of all expected future cash flows. Future cash flows are *discounted* because cash received in the future is not worth as much as cash received in the present. The reasons for discounting are (1) the innate *time preferences* of most individuals to enjoy their consumption today rather than wait for tomorrow; (2) *productivity*, which allows funds invested today to yield a higher return tomorrow; and (3) *inflation*, which reduces the future purchasing power of cash received in the future. A fourth reason, which applies primarily to the cash flows from risky assets such as equities, is the *uncertainty* associated with the magnitude of future cash flows.

Sources of Shareholder Value

For the stockholder, earnings are the source of future cash flows. Earnings, profits, and net incomes are the cash flows that remain after the costs of production are subtracted from the sales revenues of the firm. The costs of production include labor and material costs, interest on debt, corporate taxes, and allowances for depreciation.

Firms can create value for shareholders by using their earnings in a number of ways. The first and historically the most important is this one:

- Payment of cash dividends

Earnings that are not used for dividends are called *retained earnings*. Retained earnings can be used to create value in the following ways:

- Retirement of debt
- Investment in securities or other assets or acquisition of other firms
- Repurchase of the firm's own shares (which is known as a *buy-back*)
- Investment in capital projects designed to increase future profits

If a firm retires its debt, it reduces its interest expense and therefore increases the cash flow available to shareholders. If a firm buys assets, the income from these assets is available to pay future dividends

⁵ There might be some psychic value to holding a controlling interest in a firm. In that case, the owner values the stock more than minority shareholders value it.

or otherwise increase value. If a firm repurchases its shares, it reduces the number of shares outstanding and thus increases future *per share* earnings. Finally, retained earnings can be used to expand the capital of the firm in order generate higher future revenues and/or reduce costs.

Some people believe that shareholders value cash dividends the most, and that assertion is probably true in a tax-free world. But from a tax standpoint, share repurchases are superior to dividends. As discussed in Chapter 5, share repurchases generate capital gains whose tax can be deferred until the shares are sold. Recently an increasing number of firms have been engaging in share repurchases. Nevertheless, the commitment to pay a cash dividend often focuses management on delivering profits to shareholders and reduces the probability that earnings will be spent in a less productive way.

Others might argue that debt repayment lowers shareholder value because the interest saved on the debt retired is generally less than the rate of return earned on equity capital. They might also claim that by retiring debt, they lose the ability to deduct the interest paid as an expense (the interest tax shield).⁶ But debt entails a fixed commitment that must be met in good or bad times, and, as such, the use of debt increases the volatility of earnings. Reducing debt therefore lowers the volatility of future earnings and may not diminish shareholder value.⁷

Some investors claim the investment of earnings is an important source of value. But this is not always the case. If retained earnings are reinvested profitably, value will surely be created. But retained earnings, especially if they are accumulated in liquid investments, might tempt managers to overbid to acquire other firms or to spend these funds on perquisites and other activities that do not increase the value to shareholders. Therefore, the market often views the buildup of cash reserves and marketable securities with suspicion and often discounts their value.

If the fear of misusing retained earnings is particularly strong, it is possible that the market will value the firm at less than the value of its

⁶ Whether debt is a valuable tax shield depends on whether interest rates are bid up enough to offset that shield. See Merton H. Miller, "Debt and Taxes," Papers and Proceedings of the Thirty-Fifth Annual Meeting of the American Finance Association, Atlantic City, N.J., September 16–18, 1977, *Journal of Finance*, vol. 32, no. 2 (May 1977), pp. 261–275.

⁷ Meeting interest payments may also be a good discipline for management and reduce the tendency to waste excess profits. See Michael Jensen, "The Takeover Controversy: Analysis and Evidence," in John Coffee, Louis Lowenstein, and Susan Rose-Ackerman, eds., *Takeovers and Contests for Corporate Control*, New York: Oxford University Press, 1987.

reserves. Great investors, such as Benjamin Graham, made some of their most profitable trades by purchasing shares in such companies and then convincing management (sometimes tactfully, sometimes with a threat of takeover) to disgorge its liquid assets.⁸

One might question why management would not employ assets in a way to maximize shareholder value since managers often hold a large equity stake in the firm. The reason is that a conflict often exists between the goal of the shareholders, which is solely to increase the return on their shares, and the goals of management, which may include prestige, control of markets, and other objectives. Economists recognize the conflicts between the goals of managers and shareholders as *agency costs*, and these costs are inherent in every corporate structure where ownership is separated from management. Payment of cash dividends or committed share repurchases often lowers management's temptation to pursue goals that do not maximize shareholder value.

Finally, capital expenditures are certainly necessary in a growing firm, yet many studies show that firms often overexpand and spend too much on capital, which reduces profits and forces retrenchment by management.⁹ Often young, fast-growing companies may create more value by spending on capital expenditures, while companies in older, more mature industries, in which agency costs are most severe, pay dividends or repurchase shares, which is better for shareholders.

The Value of Stock as Related to Dividend Policy

Management determines its dividend policy by evaluating many factors including the tax impact on shareholders; the need to generate internal funds to retire debt, invest, or repurchase shares; and the desire to maintain a stable dividend level in the face of fluctuating earnings. Since the price of a stock depends primarily on the present discounted value of all expected future dividends, it appears that dividend policy is crucial to determining the value of the stock.

But as long as one specific condition holds—that *the firm earns the same return on its retained earnings as shareholders demand on its stock*—then future dividend policy does not impact the market value of the firm. This is because dividends not paid today become retained earnings that

⁸ Benjamin Graham and Seymour Chatman (ed.), *Benjamin Graham: The Memoirs of the Dean of Wall Street*, New York: McGraw-Hill, 1996, Chap. 11.

⁹ See Jeremy Siegel, "Capital Pigs," *The Future for Investors: Why the Tried and the True Triumph over the Bold and the New*, New York: Crown Business, 2005, Chap. 7.

generate higher dividends in the future, so that the present value of those dividends is unchanged, notwithstanding when they are paid.¹⁰

The management can, of course, influence the time path of dividends. The lower the *dividend payout ratio*, which is the ratio of cash dividends to earnings, the smaller the dividends will be in the near future. But over time, dividends will rise and eventually exceed the path of dividends associated with a higher dividend payout ratio. Assuming the firm earns the same return on investment as the investors require from the equity, the present value of these dividend streams will be identical no matter what payout ratio is chosen.

Although earnings drive the dividend policy of the firm, the price of the stock is always equal to the present value of all future *dividends* and not the present value of future earnings. Earnings not paid to investors can have value only if they are paid as dividends or other cash disbursements at a later date. Valuing stock as the present discounted value of future earnings is manifestly wrong and greatly overstates the value of a firm.¹¹

John Burr Williams, one of the greatest investment analysts of the early part of the last century and the author of the classic *Theory of Investment Value*, argued this point persuasively in 1938:

Most people will object at once to the foregoing formula for valuing stocks by saying that it should use the present worth of future earnings, not future dividends. But should not earnings and dividends both give the same answer under the implicit assumptions of our critics? If earnings not paid out in dividends are all successfully reinvested at compound interest for the benefit of the stockholder, as the critics imply, then these earnings should produce dividends later; if not, then they are money lost. Earnings are only a means to an end, and the means should not be mistaken for the end.¹²

A simple example should illustrate this proposition. Assume a company's stock is selling for \$100 per share and earns 10 percent, or \$10 per share each year, which, given its risk, is equal to the return investor's demand on its stock. If it paid all its earnings as dividends, it would pay \$10 per share every year into the future. This stream of dividends, if discounted at 10 percent, yields a \$100 share price.

¹⁰ Differential taxes between capital gains and dividends are an exception to this rule. If taxes are higher on dividends, a high-dividend policy will reduce the value of shares.

¹¹ Firms that pay no dividends, such as Warren Buffett's Berkshire Hathaway, have value because their assets, which earn cash returns, can be liquidated and disbursed to shareholders in the future.

¹² John Burr Williams, *The Theory of Investment Value*, Cambridge, Mass.: Harvard University Press, 1938, p. 30.

If instead the company did not pay a dividend but invested its earnings in assets whose return is the identical 10 percent, the value of the company would remain the same. Yet its earnings would grow to \$11 per share in the second year, \$12.10 in the third, and so on. The present value of these per share earnings, discounted at a 10 percent rate of return, is infinite—clearly a nonsensical value for the firm. This is because discounting earnings that are not paid out as dividends is wrong and overstates the value of the firm. Under the assumptions given, the firm is always worth \$100, whether the firm reinvests the earnings at a 10 percent rate of return or pays dividends to the shareholders.

The assumption that the firm earns the same rate of return on its retained earnings as the market demands on its stock is a strong one, despite the fact that it is often assumed in capital market theory to result from optimal investment behavior of the firm. But the firm does not always invest optimally, as the previous section suggests. Frequently management engages in expenditures that have a lower return, and in that case a policy of paying dividends will result in higher returns to shareholders.

EARNINGS CONCEPTS

Despite the dependence of firm value on current and future dividends, dividends are not possible on a sustained basis without positive earnings. As a result, it is critical that a concept of earnings be developed that gives investors the best possible measure of the sustainable cash that is available for the payment of dividends.

Earnings, which are sometimes called *net income*, or *profit*, are simply the difference between revenues and costs. But the determination of earnings is not just a cash-in-minus-cash-out calculation since many costs and revenues, such as capital expenditures, depreciation, and contracts for future delivery, extend over many years. Furthermore, some expenses and revenues are one-time or “extraordinary” items, such as capital gains and losses or major restructurings, and they do not add meaningfully to the picture of the ongoing or sustainable earnings that are so important in valuing a firm. Because of these issues, there is no single “right” concept of earnings.

Earnings Reporting Methods

There are two principal ways that firms report their earnings. *Net income* or *reported earnings* are those earnings sanctioned by the Financial Ac-

counting Standards Board (FASB), an organization established in 1973 to establish accounting standards. These standards are called the *generally accepted accounting principles* (GAAP), and they are used to compute the earnings that appear in the annual report and are filed with government agencies.¹³

The other more generous concept of earnings is called *operating earnings*. Operating earnings represent ongoing revenues and expenses, omitting unusual items that occur on a one-time basis. For example, operating earnings often exclude restructuring charges (for example, expenses associated with a firm's closing a plant or selling a division), investment gains and losses, inventory write-offs, expenses associated with mergers and spin-offs, and depreciation of "goodwill."

Operating earnings are what Wall Street watches and what analysts forecast. The difference between the operating earnings a firm reports and what analysts expect it to report is what drives stocks during the "earnings season," which occurs in the few weeks following the end of each quarter. When we hear that XYZ Corporation "beat the Street," it invariably means that its earnings came in above the average (or consensus) forecast of *operating earnings*.

In theory, operating earnings gives a more accurate assessment of the long-term sustainable profits of a firm than reported earnings gives. But the concept of operating earnings is not formally defined by the accounting profession, and its calculation involves much management discretion. As management has come under increasing pressure to beat the Street's earnings forecasts, they are motivated to "stretch the envelope" and exclude more expenses (or include more revenues) than are appropriate.

The data show the increased gap between reported and operating earnings in recent years. From 1970 to 1990, reported earnings averaged only 2 percent below operating earnings. Since 1991, the average difference between operating and reported earnings has widened to over 18 percent, nine times the previous average.¹⁴ In 2002, the gap between the two earnings concepts widened to a record 67 percent. However, in 2006, this earnings gap had narrowed to about 7 percent.¹⁵

During the later phases of the bull market of the 1990s, some firms, particularly those in the technology sector, were rightly criticized for ex-

¹³ Although earnings filed with the IRS may differ from these.

¹⁴ It was partly the favorable reaction of investors themselves that spurred management to increase write-offs. In the 1990 to 1991 recession, investors bought firms that had large write-offs because the investors believed that those firms would drop losing divisions and become more profitable.

¹⁵ See the S&P 500 Web site on earnings.

cluding too many expenses. For example, Cisco Systems wrote off inventories that the firm couldn't sell and used accounting techniques that made its acquisitions appear far more favorable than they were. Some firms advanced pro forma earnings concepts that involved even more extreme assumptions. Amazon.com declared it was profitable in 2000 on a pro forma basis if the interest on nearly \$2 billion of debt were ignored.

The Employee Stock Option Controversy

One of the most controversial issues is accounting for employee stock options. Employee stock options give workers a right to buy stock at a given price if they have worked for the firm a given period of time, usually five years. The proliferation of stock options given as a part of employee compensation began after the IRS ruled that payment by options did not violate the compensation limitations set by Congress.

But options were popular not only because they bypassed restrictions on management compensation but also because most stock options, when granted, did not have to be accounted for as expenses in the firm's profit statements. Instead, these options were expensed only if and when they were exercised.

Although the FASB approved this treatment many years ago, there were many vociferous critics. Nobody put the case for expensing options better than Warren Buffett who stated in 1992, well before this issue took center stage:

If stock options are not a form of compensation, what are they? If compensation is not an expense, what is it? And if expenses shouldn't go into the income statement, where in the world should they go?¹⁶

Buffett is perfectly correct. Options should be expensed when issued because earnings should reflect the firm's best determination of the "sustainable flow of profits," profits that could be paid out as dividends to shareholders. If employees were not issued options, their regular cash compensation would have to be raised by the value of the options forgone. Whether the compensation is paid by cash, options, or candy bars, it represents an expense to the firm.

When an option is exercised, the firm sells new shares to the option holder at a discounted price determined by the terms of the option. These new shares will reduce the *per share* earnings and is called the *dilution* of earnings. Current shareholders are giving up part of the firm's

¹⁶ Berkshire Hathaway 1992 Annual Report.

profits to new shareholders who, through options, purchased the shares at below market prices.

In 2000 the FASB reversed its position and, following the lead of the International Accounting Standards Board (IASB), decided that options should be expensed when granted.

Technology firms, heavy users of options, lobbied Congress to block the FASB from instituting those rules. But after the technology bubble broke, there was clear professional sentiment that options should be expensed, and the FASB set 2006 as the year that firms must expense options. Many firms began expensing options earlier, and by the middle of 2004, 176 firms in the S&P 500, representing over 40 percent of the market capitalization, expensed options.

Employee Stock Options Lower Risks to Stockholders

The issuance of employee stock options increases the risk borne by shareholders. If the firm experiences poor earnings and the share price declines, then many employee options will expire worthless and the firm, since it had expensed them, will realize a gain by reversing the expense. On the other hand, if there is good news and the share price rises, then the options will be exercised and per share earnings will decline because of the dilution.

The risk that employees shoulder when they accept options instead of cash compensation thereby reduces the risk to the outside shareholders. This means that a firm that fully expenses the fair value of options paid to employees should, all other things equal, be valued slightly more than firms that pay an equivalent amount of cash in lieu of options.

But this also means that much of the upside of technology stocks is enjoyed first by employees exercising their options, which dilutes the interest of outside shareholders. This is an important consideration not always appreciated by those buying stocks in this options-saturated sector.

Controversies in Accounting for Pension Costs

Defined Benefit and Defined Contribution Plans

Almost as contentious as the treatment of options is the accounting treatment of pension costs. There are two major types of pension plans: defined benefit (DB) plans and defined contribution (DC) plans.

Defined contribution plans, which gained enormous popularity in the 1990s' bull market, place both the employees' and employer's pension

contributions directly into assets that are owned by the employees. In these plans, the firm does not guarantee any benefits. In contrast, in *defined benefit plans* the employer spells out the income and healthcare benefits that will be paid, and the assets backing these plans are not chosen by or directly owned by the employees.

Under government regulations, DB plans must be *funded*—that is, the firm must place assets in a separate account that will cover the expected benefits associated with these plans. In DC plans, the risk that the value of the plan at retirement will not cover retirement expenses is taken by the employees instead of the employers, and it is the employees who must decide where to place their investment dollars.

There were two reasons for the tremendous increase in the popularity of the DC plans over the past two decades. One was the great bull market of the 1990s that made many employees believe that they could obtain a better return on their own investments than the returns promised by the firm.

The second reason was that contributions in a DC plan were immediately *vested*—that is, they became the property of the employee. If an employee left the firm, he could take his DC assets with him. In contrast, it takes a number of years before the benefits of a DB plan belong to the employee. If an employee leaves the firm before these benefits become vested, then the employee receives no benefit.

Problems and Risks in Defined Benefit Plans

Current rules for calculating the returns on the assets backing DB plans are generous to the corporations. The FASB allows firms to choose their own estimate of the rate of return on the assets in their portfolio, and often these estimates are too high. Furthermore, if the value of the assets falls below the pension liabilities (and the fund is called *underfunded*), the FASB allows firms to close this gap over a substantial period of time. Although the government shortened the period over which firms must restore underfunded pensions in the Pension Protection Act of 2006, firms are still allowed to choose their own return estimates.

While the government requires firms to build a fund for retirement income benefits, it does *not* require them to fund other pension-related benefits, particularly health benefits. In 2003 a Goldman Sachs analyst estimated that the healthcare liabilities of the three Detroit automakers amount to \$92 billion, roughly 50 percent greater than their combined market capitalizations.¹⁷

¹⁷ David Stires, "The Breaking Point," *Fortune*, February 18, 2003.

Most investors are fully cognizant of these unfunded liabilities and have taken down the value of the auto manufacturers as well as other firms that have large underfunded pension plans. The bankruptcy of the steel manufacturers and airlines over the last decade are related to their inability to meet their pension obligations. By mid-2007, because of rising stock prices and interest rates (which help reduce the magnitude of the pension obligation), overall the S&P 500 firms were fully funded with respect to their pension obligations but still were about \$300 billion underfunded in health and other postretirement employee benefits (OPEB).¹⁸

Since virtually all pension plans started in the last 20 years have been set up as DC plans and have sharply cut back or eliminated retiree health benefits, the corporate pension problem will disappear over time as the risk of funding retirement is shifted to individuals instead of corporations. Nevertheless, it behooves investors to take a close look at the stock of firms with large DB plans as they can be a serious drain on future earnings.

Standard & Poor's Core Earnings

The dismay over the treatment of pensions and options and the ever-widening definition of *operating earnings* led the Standard & Poor's corporation in 2001 to propose a uniform method of calculating earnings that they called *core earnings*. The objective was to define and measure earnings from a firm's principal or "core" businesses and to exclude from earnings revenues or expenses that are incurred for other reasons. Core earnings excludes employee stock options, recalculates pension costs, and excludes unrelated capital gains and losses, goodwill impairments, and one-time litigation gains and losses, among others.

This unusual and bold stance was taken by the nonregulatory, private sector firm that is the keeper of the world's most replicated benchmark, the S&P 500 Index. The *New York Times* called it one of the best ideas in 2002.¹⁹ Warren Buffett applauded the S&P's stance, stating in an open letter to David Blitzer, managing director of Standard & Poor's, "Your move is both courageous and correct. In the future, investors will look back at your action as a milestone event."²⁰

¹⁸ This was communicated to me by Howard Silverblatt of Standard & Poor's in an e-mail on June 5, 2007.

¹⁹ Tim Carvell, "The Year in Ideas," *New York Times Magazine*, December 15, 2002.

²⁰ Warren Buffett, open letter to David Blitzer, managing director of Standard & Poor's, May 15, 2002.

I believe that adopting the concept of core earnings makes a significant move in the direction of standardizing profit statements and is currently the best way to measure a firm's earnings potential.²¹ One should not underestimate how important this is. A typical firm in today's market sells for about 20 times yearly earnings. This means that only one-twentieth, or 5 percent, of its price depends on what happens in the next 12 months and 95 percent of its price depends on what happens after that. That is why when we calculate earnings, accounting decisions should distinguish between any one-time gains and losses that are not expected to be repeated and those that have implications for future profitability. This is what Standard & Poor's accomplished with core earnings.

EARNINGS QUALITY

Going beyond Standard & Poor's core earnings, another way to measure the quality of earnings is by examining a firm's *accruals*, which is defined as accounting earnings minus cash flows.

A firm with high accruals may be manipulating its earnings, and this could be a warning of problems in the future. Alternatively, low accruals may be a good sign that earnings are being conservatively estimated by the firm.

There is strong evidence that firms with low accruals have much higher stock returns than firms with high accruals. Richard Sloan, a professor at the University of Michigan, was the first to determine that a high level of accruals was related to subsequent poor earnings and low stock returns.²²

Sloan found that from 1962 through 2001, the difference between the firms with the highest-quality earnings (lowest accruals) and those with the poorest-quality earnings (highest accruals) was a staggering 18 percent *per year*. Further research indicated that despite the importance of accruals, Wall Street analysts did not take this into account when forecasting future earnings growth.

²¹ The core earnings concept is the brainchild of David Blitzer, managing director and chairman of the Index Committee, Robert Friedman, Howard Silverblatt, and others.

²² Richard Sloan, "Do Stock Prices Reflect Information in Accruals and Cash Flows about Future Earnings?" *Accounting Review*, vol. 71 (1996). High levels of accruals are also associated with more SEC enforcement actions, earnings restatements, and class action lawsuits, all of which have negative implications for stock returns. Also see Richard Sloan, Scott Richardson, Mark Soliman, and Irem Tuna, "Accrual Reliability, Earnings Persistence and Stock Prices," *Journal of Accounting and Economics*, vol. 39 (2005).

Determining earnings will always be fraught with estimates, even if made in good faith. The bottom line is that cash flows, as well as dividends, are much harder to manipulate than earnings.

DOWNWARD BIASES IN EARNINGS

Although some accounting conventions work in a favorable direction for the firm, there are many that work in the opposite direction. For example, research and development costs are routinely expensed although there is good reason to capitalize these expenditures and then depreciate them over time.²³ This means that the earnings of firms with a high level of R&D expenditures, such as the pharmaceutical industry, may be understating their earnings.

Take Pfizer, the largest drug stock in the world and one of the 10 largest companies in the S&P 500 in March 2007. In 2006, Pfizer spent \$7.6 billion on research and development for drugs and slightly over \$2 billion on plants and equipment. Governed by current accounting rules, Pfizer subtracted from its earnings only 5 percent of the \$2 billion it spent on plant and equipment as depreciation because the remainder would be deducted over the useful life of these assets.

But 100 percent of the \$7.6 billion Pfizer spent on research and development was subtracted from its earnings. This is because Pfizer's R&D is not considered an asset under these accounting definitions, and it must be expensed when the expenditures are made.

Does this make sense? Is Pfizer's R&D less of an asset than its property, plants, and equipment? Considering that Pfizer's value largely stems directly from the patents it gains through its research and development expenditures, this accounting treatment seems to cast too negative a shadow on Pfizer's performance.

Leonard Nakamura, an economist at the Federal Reserve Bank of Philadelphia, believes this is the case. "It's really those [R&D] expenditures that are going to drive long-run corporate performance," he has stated.²⁴ Thus, in many ways, especially for industries with intensive research and development, current earnings measures understate the future earnings potential of the corporation and economic reality.

Another understatement comes from the treatment of interest expense. Interest expenses are deducted from corporate earnings even

²³ Leonard Nakamura, "Investing in Intangibles: Is a Trillion Dollars Missing from GDP?" *Business Review*, Federal Reserve Bank of Philadelphia, Fourth Quarter 2001, pp. 27–37.

²⁴ Cecily Kump, "Innovation," *Forbes*, July 5, 2004.

though inflation, which raises interest costs, causes a corresponding reduction in the real value of corporate debt. In inflationary times the impact of rising prices on fixed corporate liabilities could be substantial.

The bottom line is that some accounting practices understate the true earnings of firms.

HISTORICAL YARDSTICKS FOR VALUING THE MARKET

Many yardsticks have been used to evaluate whether stock prices are overvalued or undervalued. Most of these measure the market value of the shares outstanding relative to economic *fundamentals*, such as earnings, dividends, or book values, or to some economic aggregate, such as the gross domestic product (GDP) or total replacement cost of the capital stock. Stock prices are often said to be “high” if these ratios exceed their historical average value. Yet one has to be very careful when exercising this judgment. The following are a set of commonly used valuation measures.

Price-Earnings Ratios

The most basic and fundamental yardstick for valuing stocks is the *price-earnings ratio*. The price-earnings ratio (or *P-E ratio*) of a stock is simply the ratio of its price to its annual earnings. The price-earnings ratio of the market is the ratio of the aggregate earnings of the market to the aggregate value of the market. The P-E ratio measures how much an investor is willing to pay for a dollar’s worth of current earnings.

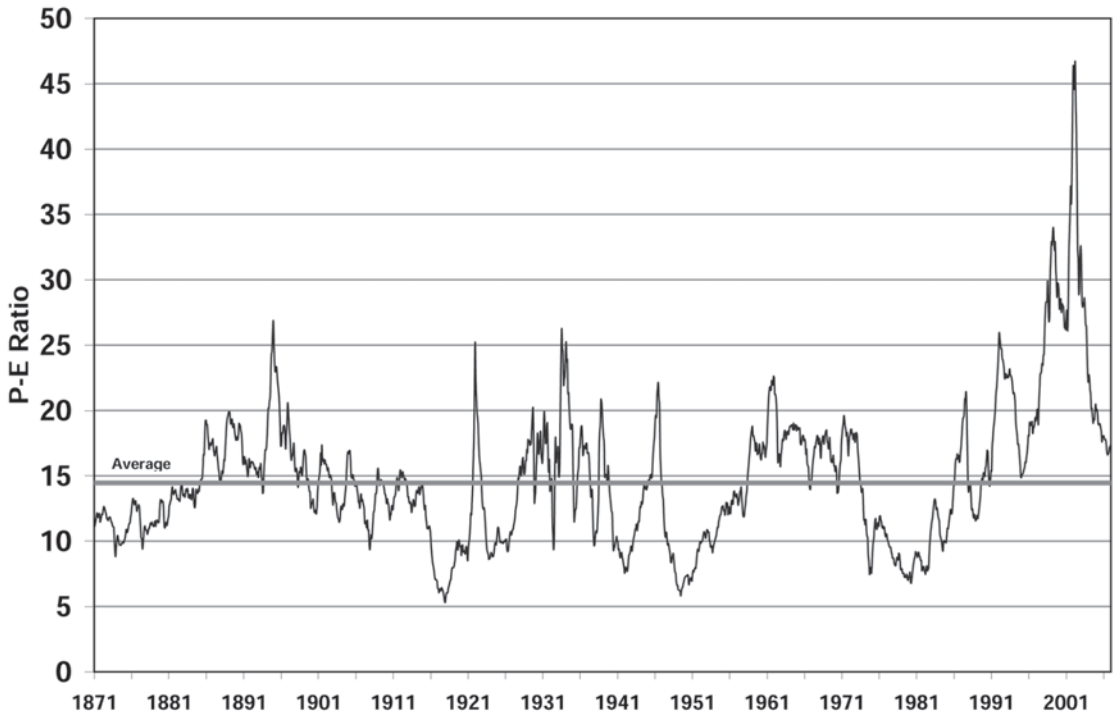
The single most important variable determining the P-E ratio for an individual stock is the expectation of future earnings growth. If investors believe future earnings growth is going to be high, they will pay at a higher P-E ratio than they will pay if they expect earnings to stagnate or decline. But earnings growth is not the only factor influencing the P-E ratio. P-E ratios are also influenced by other factors such as interest rates, risk attitudes of investors, taxes, and liquidity.

The P-E ratio of the entire market, based on the most recent 12 months of reported earnings, is shown in Figure 7-2. It has fluctuated between a low of 5.31 in 1917 and a high of 46.71 in 2002. Its average historical level is 14.45.

The very high number recorded for 2002 is due to very special circumstances. It is not the “bubble” in market prices that prevailed at the end of the last century. Instead, as we will discuss in the next chapter, it is related to the collapse in reported earnings caused by a few technology

FIGURE 7-2

Historical P-E Ratios Based on the Last 12 Months of Reported Earnings, 1871 through December 2006



firms, such as JDS Uniphase and AOL, that took huge write-offs related to overpriced stocks that were purchased at the height of the bubble.

P-E Ratios and Future Stock Returns

Although the P-E ratio can be a misleading indicator of future stock returns in the short run, in the long run the P-E ratio is a very useful predictor. The reasons may be understood by analyzing how stock and bond returns are calculated.

The *current yield* of a bond is the ratio of the interest received over the price paid, and it is a good measure of future return if the bond is not selling at a large premium or discount to its maturity value. A similar computation can be made with stocks by computing the *earnings yield*, which is the earnings per share divided by the price. The earnings yield

is the inverse of the price-earnings ratio, and it would be the current yield on a stock if all earnings were paid out as dividends.²⁵

Since the underlying assets of a firm are real, the earnings yield is a *real*, or inflation-adjusted, return. Inflation raises the prices of the output and hence the cash flows from the underlying assets. As a result real assets tend to rise in value when the price level increases. The increasing cash flow from equities contrasts to the *fixed* return earned from bonds, where the coupons and the final payment are fixed in money terms and do not rise with inflation.

The long-run data certainly bear out this contention. As noted above, the average historical P-E ratio has been 14.45, so the average earnings yield on stocks has been $1/14.45$, or 6.8 percent. This earnings yield is virtually identical to the 6.7 percent real return on equities from 1871 taken from Table 1-1.

When using the earnings yields to predict forward-looking real returns, it is advisable to take some average of past earnings to smooth out temporary increases and decreases in earnings that may be due to such factors as the business cycle. The earnings yield based on a five-year average of past earnings against the next five years of real returns is plotted in Figure 7-3.

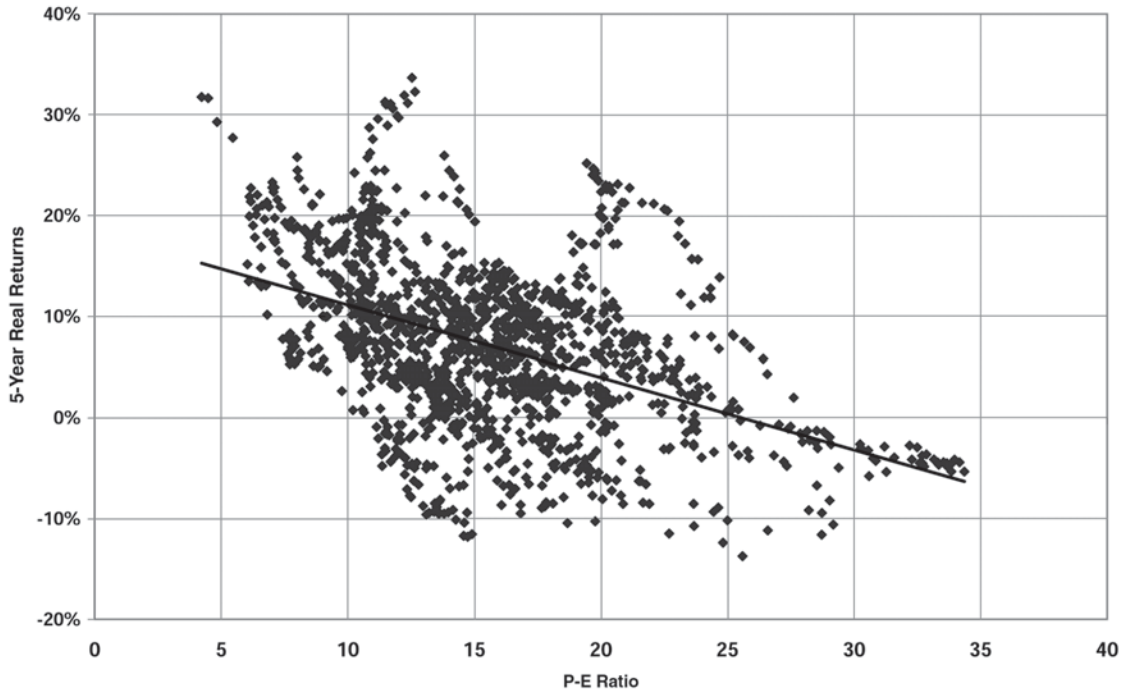
Although there is significant noise in the data, the plot does show a significant relation between earnings yields and subsequent returns. The very high earnings yields (and low P-E ratios) of over 0.2 were associated with the highest subsequent five-year returns, while the two lowest earnings yields (and highest P-E ratios) of 0.0291 and 0.0293 are associated with low subsequent returns. Almost one-quarter of the subsequent five-year returns can be explained by the earnings yields.

But one must be very careful about using a historical average of earnings. Although such a procedure will remove some of the cyclical bias in the data, it is not robust to changes in dividend yield policy. As noted in Chapter 3 in discussing the trend line of the Dow Jones Industrials, and as will be discussed in the next chapter, a change in dividend policy will change the rate of earnings growth so that average earnings yields are not directly comparable. A fall in the payout ratio, which accelerates capital gains, will lead to an *underestimate* of future real returns if an average of past earnings is used.

²⁵ If all earnings are not paid as dividends, then the return on the stock will be the sum of the dividend yield plus the capital gain, which, under the assumptions about the invariance of the value of the firm to the dividend policy noted earlier, will equal the earnings yield on the stock.

FIGURE 7-3

Plots of the Earnings Yields Based on a Five-Year Average of Past Earnings, January 1876 through December 2001, versus the Next Five Years of Real Returns



The Fed Model, Earnings Yields, and Bond Yields

In early 1997, in response to Federal Reserve Chairman Alan Greenspan's increasing concern about the impact of the rising stock market on the economy, three researchers from the Federal Reserve produced a paper entitled "Earnings Forecasts and the Predictability of Stock Returns: Evidence from Trading the S&P."²⁶ This paper documented the remarkable correspondence between the earnings yields on stocks and the 30-year government bond rates.

Greenspan supported the results of this paper and suggested that the central bank regarded the stock market as "overvalued" whenever

²⁶ Joel Lander, Athanasios Orphanides, and Martha Douvogiannis, "Earnings Forecasts and the Predictability of Stock Returns: Evidence from Trading the S&P," Federal Reserve, January 1997. Reprinted in the *Journal of Portfolio Management*, vol. 23 (Summer 1997), pp. 24–35. It refers to an earlier version that was presented in October 1996.

this earnings yield fell below the bond yield and “undervalued” whenever the reverse occurred. The analysis showed that the market was most overvalued in August 1987, just before the October 1987 stock market crash, and most undervalued in the early 1980s, when the great bull market began.

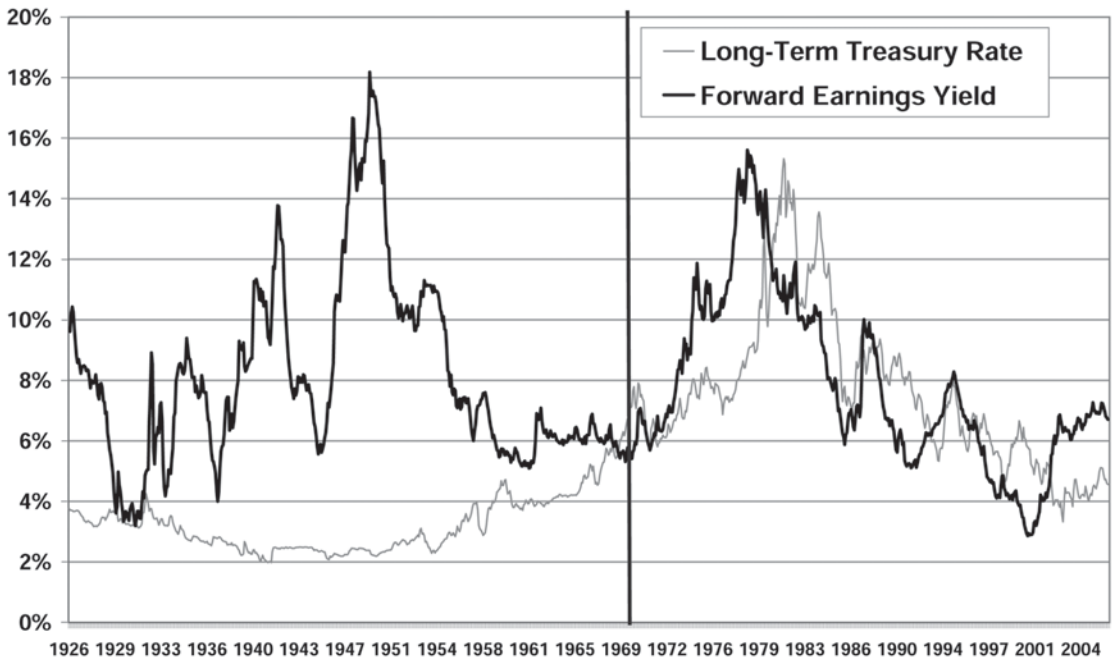
The basic idea behind the Fed model is that bonds are the chief alternative for stocks in investors’ portfolios. When the bond yields rise above the earnings yields, stock prices fall because investors shift their portfolio holdings from stocks to bonds. On the other hand, when the bond yields fall below the earnings yields, investors shift to stocks from bonds.

Figure 7-4 shows that the Fed model appeared to work fairly well beginning in 1970. When interest rates fell, stocks rallied to bring the earnings yields down, and the opposite occurred when interest rates rose.

What is surprising is that this relation held despite the fact that stocks and bonds are very different assets. Government bonds have ironclad guarantees to pay a specified number of dollars over time but bear the risk of inflation. Stocks, on the other hand, are real assets whose prices will rise with inflation, but they bear the risk of the uncertainty of

FIGURE 7-4

Fed Model of Stock Market Valuation, 1926 through December 2006



earnings. The reason why the Fed model worked is that the market rated these two risks as approximately equal during this period.

There is no question that both bonds and stocks do badly when inflation increases. Bond prices fell in the late 1960s and 1970s because rising inflation forced interest rates up to offset the depreciating value of money. Stocks fall during inflationary periods for other reasons, such as poor monetary policy, low productivity, and a tax system that is only partially indexed to inflation. These are detailed in Chapter 5.

But these two risks are not equal when inflation is low or when deflation threatens. In those circumstances, bonds (especially U.S. government bonds) will do very well, but deflation undermines firms' pricing power and is bad for corporate profits. Figure 7-4 shows that before inflation became a major concern in the 1970s, there was no relation between bond yields and earnings yields and the Fed model broke down.

In order to put stock and bond valuations on an equivalent valuation, one should compare the earnings yields on stocks with the yields on Treasury inflation-protected securities (TIPS) and bonds. TIPS have absolute certainty of purchasing power return and are the safest assets. Stocks are of course riskier, and they should bear a risk premium above TIPS.

There is considerable debate on what constitutes a "normal" risk premium between stocks and inflation-protected bonds, as is discussed in Chapter 2. Generally the equity risk premium is taken between 2 and 3 percent, but it could certainly be higher in times of great uncertainty or lower when investors are very bullish on stocks.

Corporate Profits and National Income

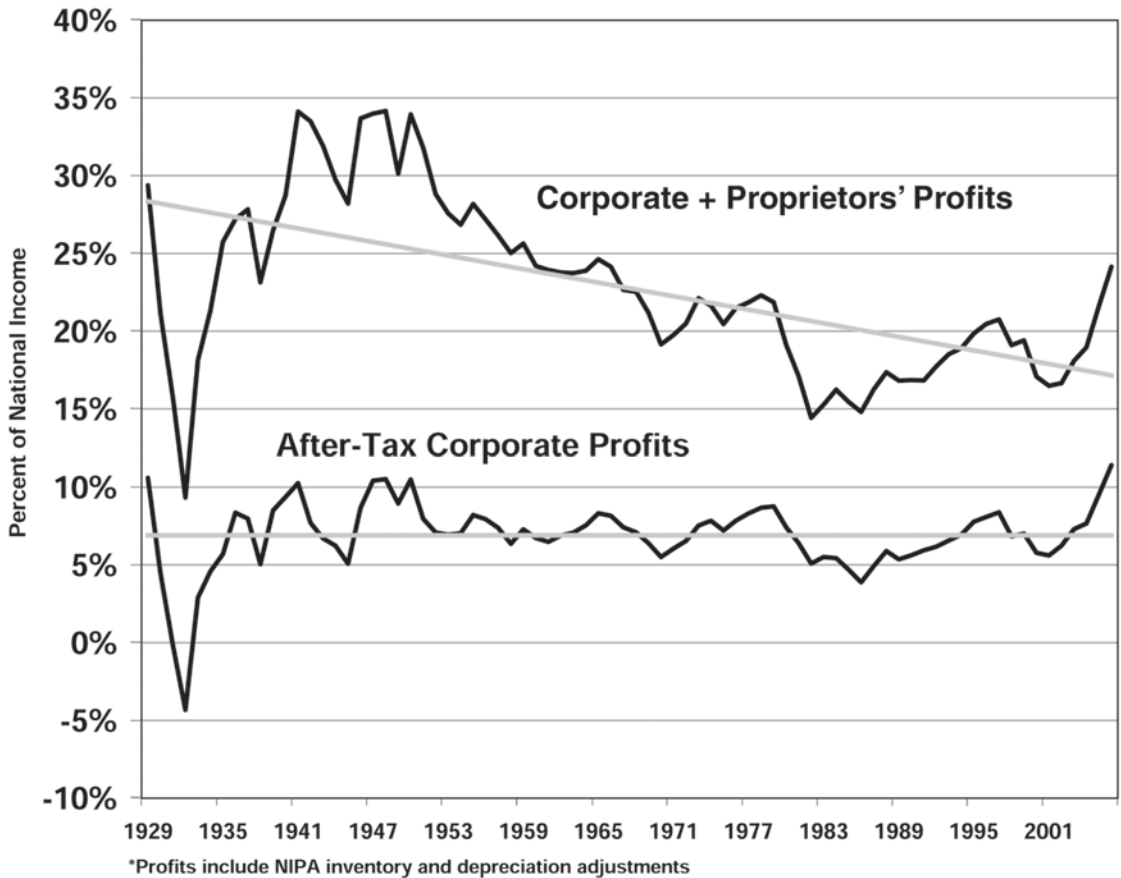
Another indicator of stock market valuation is the ratio of corporate profits to national income (GDP). Its rise in recent years has alarmed some stock market analysts who worry that if the share of profits to national income falls to its long-term average, stock prices will suffer.

Closer examination of this claim should put those fears to rest. Figure 7-5 displays the ratio of after-tax corporate profits and after-tax profits plus proprietors' income, and their sum since 1947. Proprietors' income is profits of nonincorporated businesses, including profits to partnerships and individual owners.

One can see the long-term downtrend of proprietors' income share from the 1940s to the 1980s, which has recovered only slightly since then. Over this period many brokerage houses, investment banks, and other firms became publicly traded corporations, and some government-

FIGURE 7-5

Market Value, Replacement Cost, and the GDP



sponsored firms such as Fannie Mae and Freddie Mac also became public corporations. The sum of corporate profits and proprietors' income is only slightly higher than its long-term average.

Another consideration is that the fraction of corporate profits of U.S.-based firms that come from abroad has also been increasing. In 2006, over 44 percent of the sales of S&P 500 companies were foreign. As the U.S. economy shrinks relative to the size of the world economy, the corporate profits of U.S. multinational corporations should rise relative to the GDP.

Book Value, Market Value, and Tobin's Q

The *book value* of a firm has often been used as a valuation yardstick. The book value is the value of a firm's assets minus its liabilities, evaluated at historical costs. The use of aggregate book value as a measure of the overall value of a firm is severely limited because book value uses *historical* prices and thus ignores the effect of changing prices on the value of the assets or liabilities. If a firm purchased a plot of land for \$1 million that is now worth \$10 million, examining the book value will not reveal this. Over time, the historical value of assets becomes less reliable as a measure of current market value.

To help correct these distortions, James Tobin, a professor at Yale University and a Nobel laureate, adjusted the book value for inflation and computed the "replacement cost" of the assets and liabilities on the balance sheet.²⁷ He developed a theory that the "equilibrium" or "correct" market price of a firm should equal its assets minus its liabilities adjusted for inflation. If the aggregate market value of a firm exceeds the cost of capital, it would be profitable to create more capital, sell shares to finance it, and reap a profit. If the market value falls below the replacement cost, then it would be better for a firm to dismantle and sell its capital, or stop investment and cut production.

Tobin designated the ratio of the market value to the replacement cost with the letter Q , and he indicated that its ratio should be unity if the stock market was properly valued. The historical values of "Tobin's Q ," as the theory has become known, are shown in Figure 7-6. The ratio has fluctuated between a high of 1.84 in 1999 to a low of 0.27 in 1920, with the average being 0.70.

In 2000 Andrew Smithers and Stephen Wright of the United Kingdom published the book *Valuing Wall Street*,²⁸ which maintained that Tobin's Q was the best measure of value and that the U.S. markets as well as the U.K. and many other European markets were extremely overvalued by this criterion. There are some who maintain that Q should generally be less than unity because older capital is not as productive as newly installed capital.²⁹ If this is true, then the market was even more overvalued in the late 1990s.

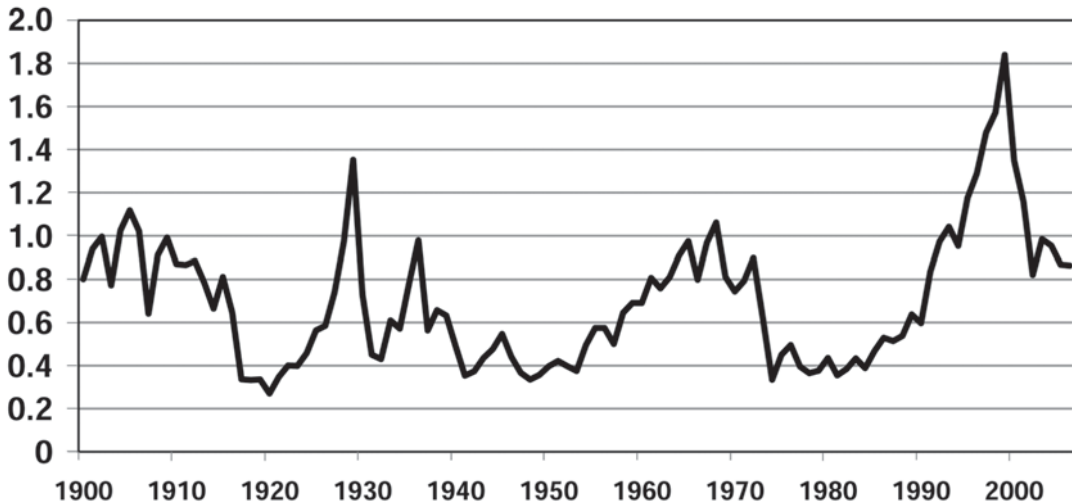
²⁷ James Tobin, "A General Equilibrium Approach to Monetary Theory," *Journal of Money, Credit, and Banking*, vol. 1 (February 1969), pp. 15–29.

²⁸ Andrew Smithers and Stephen Wright, *Valuing Wall Street: Protecting Wealth in Turbulent Markets*, New York: McGraw-Hill, 2000.

²⁹ This is also because in equilibrium the marginal productivity of capital should be treated as being equal to the cost of new capital, while the stock market measures the average productivity of both old and new capital.

FIGURE 7-6

Tobin's Q = Ratio of Market Value to Replacement Cost of Capital



But there are critics of the Q theory. Capital equipment and structures lack a good secondary market, and hence there is no realistic way to value much of the physical capital stock. The inability to value intellectual capital is a perhaps more significant drawback. Microsoft has a book value of about \$40 billion but a market value over seven times as large. In fact, the value of most technology firms is composed of their intellectual capital.

Smithers maintains that the existence of intellectual capital should not be used to justify any gap between the book and market values. Although firms may own trademarks and patents, they do not own the entrepreneurs, engineers, or other employees that generate ideas. As long as there is a competitive labor market, accounting allowances for human factors of production must be calculated by their market values, just as physical capital. The stock options lavished on employees during the technology boom of the late 1990s to keep key personnel from being bid away by other firms are an example of this.

This point is well taken, but some firms are more successful than others at creating and maintaining productive groups of talented individuals. Often employees can create more firm value by working together than they can by working separately, and other firms may not be able to create the same creative environment. The ability of the United

States to draw talent from the rest of the world may create shareholder value in excess of the cost of hiring these workers.³⁰

It may be that in the very long run the market value of the tangible and intangible capital must equal the cost of reproducing it. But book value is a construct of the past; market value derives from prospective earnings and looks to the future. These prospective earnings more accurately establish the basis of stock valuation than the historical costs at which the firms purchased these assets.

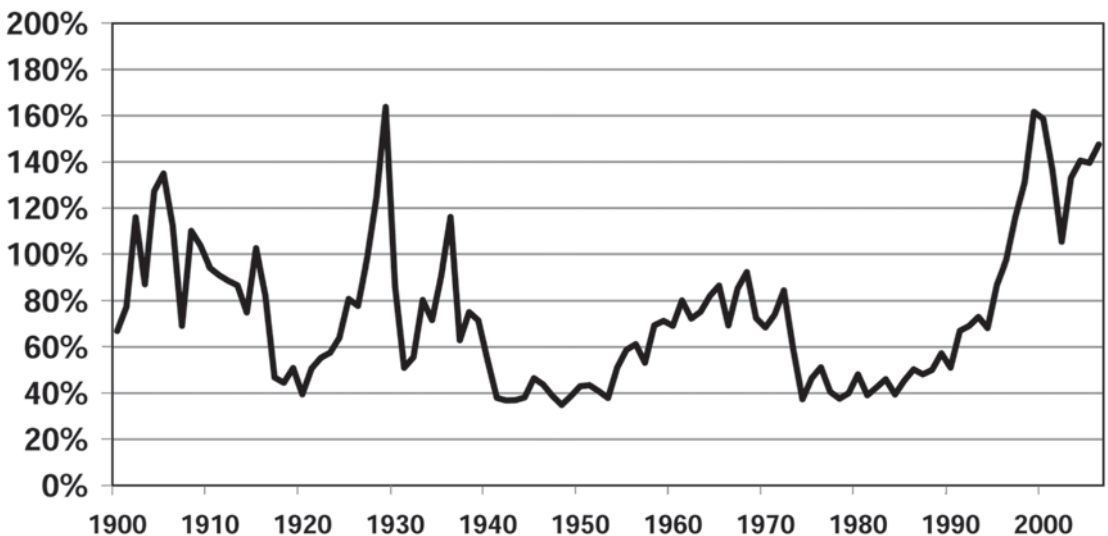
Market Value Relative to the GDP and Other Ratios

The gross domestic product (GDP) is universally regarded as the best measure of the overall output in the economy. It would be reasonable to assume that the market value (MV) of firms should bear some normal relation to the size of the economy. Figure 7-7 shows the ratio of the market value of stocks to the GDP since 1900.

³⁰ Of course, one can reply that for every firm that creates a more productive environment, there is another firm that creates an unsuccessful one and ends up overpaying and wasting intellectual resources.

FIGURE 7-7

Market Value of Equities as Percent of Total GDP



The ratio of the market value of equity to the GDP can both theoretically and empirically exceed 1. Equity valuation is a balance sheet item, while the GDP is an annual flow. Many firms have capital that far exceeds their annual sales, so it is not at all unusual for the value of an economy's capital to be greater than its output.

But more importantly, equity capital is only a part of total capital. Both debt and equity finance the capital stock, and the ratio between them changes over time. In the 1990s as interest rates fell, many firms retired high-coupon bonds and reduced their leverage, a process called *deleveraging*. Deleveraging increases the value of equity and decreases the value of debt but leaves the total value of the firms unchanged. As the market has risen, more firms have become public companies. This will increase the market value of stocks even if the total value of firms, public and private, remains unchanged.

Moreover, the ratio of the market capitalization to the GDP differs widely among countries. Multinational firms might be headquartered in a particular country while their sales span the globe. As international trade increases, it should not be surprising if the market value of firms deviates from the GDP of the country in which they are headquartered. Table 7-1 shows that the market value of shares traded in Hong Kong are over 600 percent of its GDP, while in Germany, Italy, and Japan the ratio is less than 100 percent. The variation between countries results from large differences in the leverage, the fraction of firms that are publicly traded, and the international scope of the firms headquartered there.

One ratio that has very little meaning but is often seen in the press is a time series of the ratio of a stock index such as the S&P 500 or the Dow Jones Industrials to the GDP. Stock indexes report the average prices of individual shares, not the total value of such shares that will

TABLE 7-1

Summary Market Statistics for Various Countries as of February 2007: Market Value (MV) to Gross Domestic Product (GDP); P-E Ratio; and Dividend Yield

Statistic	U.S.	Japan	Germany	Britain	Hong Kong	Switzerland	Italy
MV/GDP*	136%	74%	53%	159%	602%	270%	47%
P-E†	19.0	24.1	15.9	18.9	14.9	17.6	14.8
Div. Yld.†	1.67%	0.97%	2.29%	3.54%	2.78%	1.62%	3.53%

*Data for market value (MV)/GDP are for February 17, 2007.

†P-E and dividend yield are based on last 12 months of earnings and dividends.

increase over time as new firms go public. Another misleading time series is a representative stock index against average housing prices. The flow of housing services, or rental income, is not included in the price of homes, while stock price indexes include capital gains caused by reinvested earnings.

CONCLUSION

The fundamental determinant of stock values remains the earnings of a corporation, from which dividends are paid, and the interest rate that discounts those dividends. The best concept of earnings is the “core earnings” concept developed by Standard & Poor’s in 2002, which was the first to fully expense options and make adjustments to pension income. The earnings yield, which is the reciprocal of the P-E ratio, is a good predictor of future *real* stock returns.

One of the most difficult issues in economics is to know when there has been a basic structural shift in the economy and when there has not. Admittedly, there are too many times, such as the technology bubble at the end of the last century, when speculators used “new era” economics to justify unreasonably high prices. But there are also times when there has been an important structural shift, such as in the 1950s when the dividend yields on stocks fell below the interest rates on long-term Treasury bonds.

There have been some important shifts in recent years. The fall in the dividend payout ratio has shifted stock returns from dividends to capital gains, impacting the growth rates of future earnings and dividends. Furthermore, the dramatic fall in transactions costs combined with the increase in macroeconomic stability may also change the P-E ratio of stock prices to valuation metrics. How these events will impact future stock returns will be discussed in the next chapter.

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CHAPTER 8

THE IMPACT OF ECONOMIC GROWTH ON MARKET VALUATION AND THE COMING AGE WAVE

The term “new economy” has become, beginning in 2000, a fad in itself. It appears suddenly as a new name for our hopes and for economic progress due to recent technological advances, notably the Internet, and for our reasons to think that the future growth prospects are ever so brilliant.

ROBERT SHILLER, 2001¹

What are the most important macrotrends in the economy that influence future stock market returns? Economic growth immediately comes to mind. But economic growth has nowhere near as big an impact on stock returns as most investors believe. However, other important trends do have a positive impact on stock valuation: the stability of the overall economy, the reduction in transactions costs, and the change in taxes on stock market income.

¹ Robert Shiller, *Irrational Exuberance*, New York: First Broadway Books, 2001, Afterword to the paperback edition, p. 249.

Yet all of these factors may be eclipsed by the most important macroeconomic trend of the next two decades—the hundreds of millions of baby boomers from the developed world that are planning to finance their retirement by selling their financial assets. This chapter will analyze all these issues, coming to the conclusion that the long-term future of equity returns looks bright *if* the United States keeps its capital markets open to the rest of the world.

GDP GROWTH AND STOCK RETURNS

Some very surprising results are shown in Figure 8-1. In Chapter 1 we reported on the long-term stock returns of 16 major markets around the world from 1900 through 2006. The long-term dollar returns of each country reported against the average real growth of its GDP are plotted in Figure 8-1a. The results are striking. Real GDP growth is *negatively* correlated with stock market returns.² That is, higher economic growth in individual countries is associated with lower returns to equity investors.³ Similarly, the stock returns for the developing countries against their GDP growth are plotted in Figure 8-1b.⁴ Again, despite the huge returns chalked up to developing markets in recent years, there is a negative relation between the returns to individual countries and the growth rates of their GDP.

Why does this occur? Since stock prices are the present value of future dividends, it would seem natural to assume that economic growth would positively impact future dividends and hence increase stock prices. But the determinants of stock prices are earnings and dividends on a *per share* basis. Although economic growth influences *aggregate* earnings and dividends favorably, economic growth does not necessarily increase the growth of *per share* earnings or dividends. This is because economic growth requires increased capital expenditures, and this capital does not come freely.

Implementing and upgrading technology requires substantial investment. These expenditures must be funded either by borrowing in the debt market (through the banks, trade credit, or by selling bonds) or

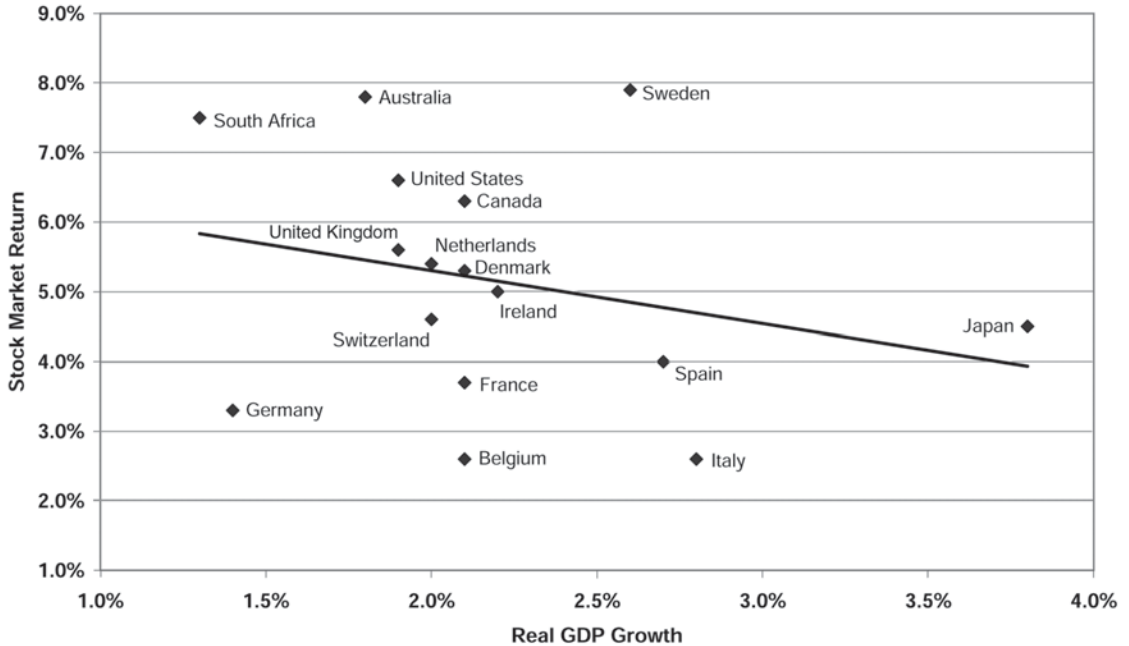
² This is an update of the chart that was presented in the second edition of *Stocks for the Long Run* (1998) as Figure 9-2 but omitted from the third edition.

³ Elroy Dimson, Paul Marsh, and Michael Staunton confirm my findings in the *Triumph of the Optimists: 101 Years of Global Investment Returns* (Princeton, N.J.: Princeton University Press, 2002), but they do not provide an explanation for it.

⁴ This is an updated version of Chart 16 in Jeremy Siegel, *The Future for Investors: Why the Tried and the True Triumph over the Bold and the New*, New York: Crown Business, 2005.

FIGURE 8-1a

Long-Term Dollar Returns Reported for 16 Countries against Each Country's Average Real GDP Growth, 1900 through December 2006



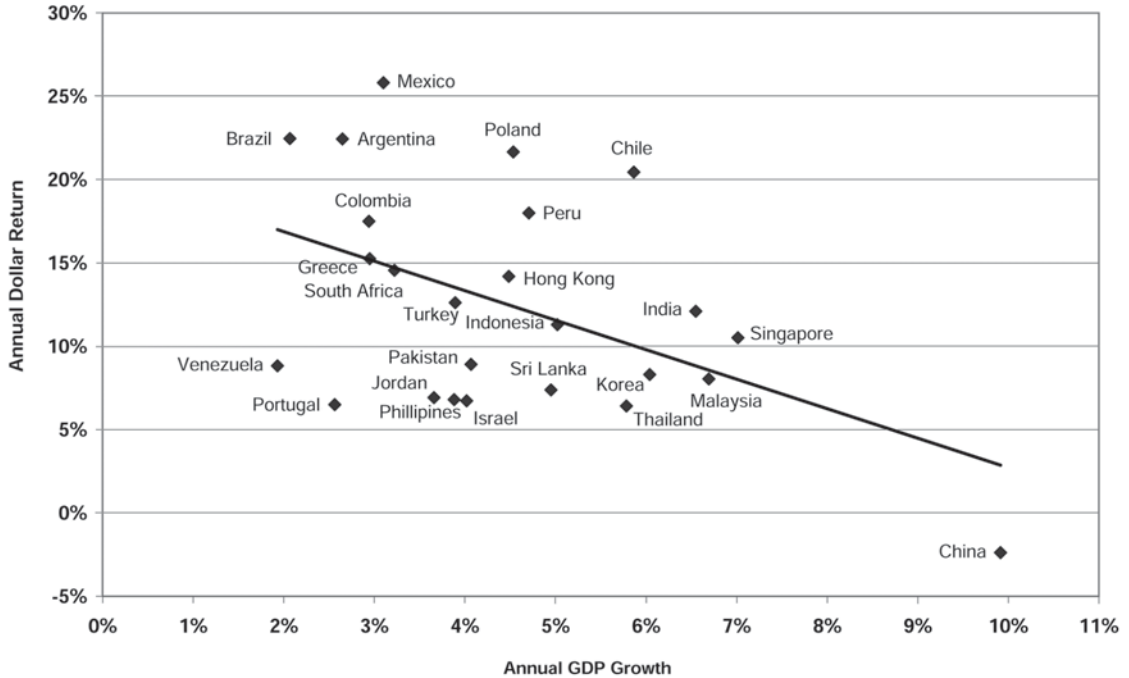
by floating new shares. The added interest costs (in the case of debt financing) and the dilution of earnings (in the case of equity financing) reduce the growth of per share earnings.

It is possible that growth can occur in the short term without capital expansion by using the existing plant more intensely. But the long-run historical evidence strongly suggests that capital must be expanded to support higher growth. One of the signal characteristics of long-term historical data is that the level of the capital stock—the total value of all physical capital such as factories and equipment as well as intellectual capital—has grown over time roughly in proportion to the level of aggregate output. In other words, a 10 percent increase in GDP ultimately requires a 10 percent increase in the capital stock.⁵

⁵ For a good summary of all this literature, see Jay R. Ritter, "Equity Growth and Equity Returns," *Pacific-Basin Finance Journal*, vol. 13 (2005), pp. 489–503.

FIGURE 8-1b

Long-Term Stock Returns for 25 Developing Countries against Each Country's Average Real GDP Growth, Various Starting Years through December 2006



The Gordon Dividend Growth Model

The belief that growth automatically boosts stock prices grows out of the misuse of a popular model for valuing stocks—namely, the *Gordon dividend growth model* developed by Roger Gordon in 1962.⁶ In Chapter 7 we noted that the price of a stock is the present value of all the future dividends. It can be easily shown that if dividends grow in the future at a constant rate g , then the price per share of a stock P can be written as follows:

$$P = \frac{d}{r - g}$$

⁶ Myron J. Gordon, *The Investment, Financing, and Valuation of the Corporation*, Homewood, Ill.: Irwin, 1962.

where d is next period's dividend per share, g is the constant rate of future growth of dividends per share, and r is the discount rate that investors apply to stock.

From this model, it appears as if an increase in growth g unambiguously raises the price of shares. But the g in the Gordon equation refers to the growth in *per share* dividends, not the growth in aggregate dividends, and the two concepts can deviate substantially, as the historical data confirm.

ECONOMIC GROWTH AND STOCK RETURNS

The summary statistics for dividends per share, earnings per share, and stock returns for the U.S. economy from 1871 through December 2006 are shown in Table 8-1. The data show that real per share earnings growth over the entire 135 years has averaged a paltry 1.88 percent, considerably below the growth rate of real GDP, which is about twice that number. As noted above, because shares and/or debt must be used to finance capital expenditures, earnings per share growth do not match aggregate economic growth over the long run.

It is also of interest that the growth of earnings and dividends per share is higher since World War II than before even though the GDP growth is lower. The cause of the higher earnings growth in the last 60 years is the decline in the dividend-payout ratio and subsequent increase in the use of retained earnings to finance growth.

As explained in Chapter 7, the valuation of a firm is independent of the dividend policy chosen as long as the rate of return on retained earnings is identical to that demanded by shareholders. This can be shown

TABLE 8-1

Summary Statistics for Dividends per Share, Earnings per Share, and Stock Returns for the U.S. Economy, 1871 through December 2006

	Real GDP Growth	Real per Share Earnings Growth	Real per Share Dividend Growth	Dividend Yield*	Payout Ratio*
1871-2006	3.57%	1.88%	1.32%	4.58%	58.17%
1871-1945	3.97%	0.66%	0.74%	5.29%	66.78%
1946-2006	3.09%	3.40%	2.03%	3.53%	51.38%

*Denotes median.

by the Gordon model. If a firm cuts its dividend d and uses the proceeds to earn a rate of return r , the growth of future dividends g will rise by just enough to keep price of the stock P , unchanged under the lower dividend.

The low growth of real historical earnings per share has caused some economists to predict low future real returns for the stock market. In 2002, at the bear market low, Robert Arnott and Peter Bernstein predicted that the current low dividend yield when added to the historical growth of real earnings will yield future real stock returns of between 2 and 4 percent.⁷

But these pessimistic predictions proved wrong because they ignored the impact of the lower dividend-payout ratio on earnings growth.⁸ As noted above, a reduction in the dividend increases retained earnings, and if the return that management earns of its retained earnings is identical to the return demanded by shareholders on its stock, then the increase in earnings per share growth will exactly offset the decrease in the dividend yield.⁹ One must not forecast future real returns from historical earnings growth rates when the payout ratio has changed.

FACTORS THAT RAISE VALUATION RATIOS

We have noted that the historical real return on equity has been between 6½ and 7 percent per year over long periods and that this has coincided with an average P-E ratio of approximately 15. But there have been structural changes in the economy in recent years that may change that ratio.

Two of these changes relate directly to the expected rate of the return on equities and one to the equity risk premium.

⁷ Robert D. Arnott and Peter L. Bernstein, "What Risk Premium Is 'Normal'?" *Financial Analysts Journal*, vol. 58 (2002), pp. 64–85. As noted in Chapter 6, Bill Gross from PIMCO (Pacific Investment Management Company, Newport Beach, Calif.) also used this analysis to predict "Dow 5000" in September 2002.

⁸ Robert Arnott and Cliff Asness disputed the claim that higher retained earnings means higher dividend growth and issued a pessimistic forecast in "Surprise! Higher Dividends = Higher Earnings Growth," *Financial Analysts Journal*, January/February 2003, pp. 70–87.

⁹ A simple example will illustrate the point. If the P-E ratio of the market is 15, then the earnings yield is 6.8 percent, which is also a prediction of its real return. If the dividend yield is set at 5 percent, then the accumulation of retained earnings will allow the rate of growth of real earnings per share to be 1.8 percent per year. If the dividend yield is set at 2 percent, then the increase in per share real earnings will be 4.8 percent per year.

Factors That Impact Expected Returns

We have shown in Chapter 5 that the reduction in taxes on equity return due to the reduction in marginal and capital gains tax rates and inflation have added more than 2 percentage points to the return over the last half century. This is substantially more than the increase in the after-tax return on fixed-income assets.

But there has been a second significant factor increasing expected return on stocks—the reduction in transactions costs. Chapter 1 confirmed that the real return on equity *as measured by stock indexes* was near 7 percent in the nineteenth and twentieth centuries. But over the nineteenth century and the early part of the twentieth century, it was extremely difficult, if not impossible, for an investor to replicate the stock returns calculated from these stock indexes.

Charles Jones of Columbia University has documented stock trading costs over the last century.¹⁰ These costs include both the fees paid to brokers and the “bid-asked spread,” or the difference between the buying and selling costs for stocks. His analysis shows that the average one-way cost to either buy or sell a stock has dropped from over 1 percent of value traded as late as 1975 (before the deregulation of brokerage fees) to under 0.18 percent today.

The fall in transactions costs suggests that the price of obtaining and maintaining a diversified portfolio of common stocks, which is necessary to replicate index returns, could have easily cost from 1 to 2 percent per year over much of the nineteenth and twentieth centuries. Because of these costs, investors in earlier years purchased fewer stocks than in an index and were less diversified, thereby assuming more risk than implied by stock indexes. Alternatively, if investors attempted to buy all the stocks, their real returns could have been as low as 5 percent per year after deducting transactions costs.

The collapse of transactions costs over the past two decades means that stockholders can now acquire and hold a completely diversified portfolio at an extremely low cost.¹¹ It has been well established that liquid securities—that is, those assets that can be sold quickly and at little cost on short notice in the public market—command a premium over illiquid securities. Through most of the past two centuries, stocks were far less liquid than today, and therefore they were sold at a significant

¹⁰ Charles M. Jones, “A Century of Stock Market Liquidity and Trading Costs,” working paper, May 23, 2002.

¹¹ The cost of some index funds for even small investors is only 0.1 percent per year. See Chapter 20.

discount to such safe and liquid assets as government bonds. As stocks become more liquid, their valuation relative to earnings and dividends should rise.¹²

The Equity Risk Premium

Over the past 200 years the average compound rate of return on stocks in comparison to safe long-term government bonds—the *equity premium*—has been between 3 and 3½ percent.¹³ In 1985, economists Rajnish Mehra and Edward Prescott published a paper entitled “The Equity Premium: A Puzzle.”¹⁴ In their work they showed that given the standard models of risk and return that economists had developed over the years, one could not explain the large gap between the returns on equities and fixed-income assets found in the historical data. They claimed that economic models predicted that either the rate of return on stocks should be lower, or the rate of return on fixed-income assets should be higher, or both. In fact, according to their studies, an equity premium as low as 1 percent or less could be justified.¹⁵

Mehra and Prescott were not the first to believe that the equity premium derived from historical returns was too large. Fifty years earlier Professor Chelcie Bosland of Brown University had stated that one of the consequences of the spread of knowledge of superior stock returns in the 1920s as a result of Edgar Lawrence Smith’s contributions would be a narrowing of the equity premium:

Paradoxical though it may seem, there is considerable truth in the statement that widespread knowledge of the profitability of common stocks, gained from the studies that have been made, tends to diminish the likelihood that correspondingly large profits can be gained from stocks in the future. The competitive bidding for stocks which results from this knowledge causes prices at the time of purchase to be high, with the attendant smaller possibilities of gain in the principal and high yield. The discount process may do away with a large share of the gains from common stock

¹² John B. Carlson and Eduard A. Pelz, “Investor Expectations and Fundamentals: Disappointment Ahead?” Federal Reserve Bank of Cleveland, *Economic Commentary*, May 1, 2000.

¹³ This is based on the difference in *compound*, or geometric, average rates of return. The premium is higher based on arithmetic average returns.

¹⁴ Rajnish Mehra and Edward C. Prescott, “The Equity Premium: A Puzzle,” *Journal of Monetary Economics*, vol. 15 (March 1985), pp. 145–162.

¹⁵ Mehra and Prescott used the Cowles Foundation data going back to 1872. In their research, they did not even mention the mean reversion characteristics of stock that would have shrunk the equity premium even more.

investment and returns to stockholders and investors in other securities may tend to become equalized.¹⁶

More Stable Economy

There is much literature that attempts to justify the 3 to 3½ percent risk premium found in the historical data in the context of standard macroeconomic models.¹⁷ Some of these are based on very high aversion by individuals to lowering their consumption. Others are based on the myopic behavior of those who dislike taking short-term losses on their investments even when they have substantial long-run gains.

Even if we assume that the historical level of the equity risk premium is justified, there is a reason why that premium might narrow in the future: increasing stability of the real economy.

Examine Figure 8-2, which displays the changes in U.S. industrial production since 1884. One can see a major reduction in economic volatility over time, particularly after the Great Depression and again following 1980. Furthermore, by examining industrial production alone, one may *underestimate* the reduced volatility of the entire economy because of the increase in the importance of the more stable service sector.

The swings in the GDP have also become more muted. Recessions have become shorter and milder and expansions longer. The last economic expansion in the United States lasted a record 10 years from March 1991 to March 2001. Economic expansions in Europe have lasted even longer: the last recession in the United Kingdom ended in 1995 and much of the Eurozone has been recession free for more than a decade.

Economists call this trend toward greater macroeconomic stability “The Great Moderation.”¹⁸ The moderation has been attributed to better monetary policy; a larger service sector, which is inherently more stable than the goods sectors; and better inventory and production control, enabled in part by the information revolution.

Whatever the reasons, greater macroeconomic stability should lead to greater stability of earnings and a lower equity premium. The lower

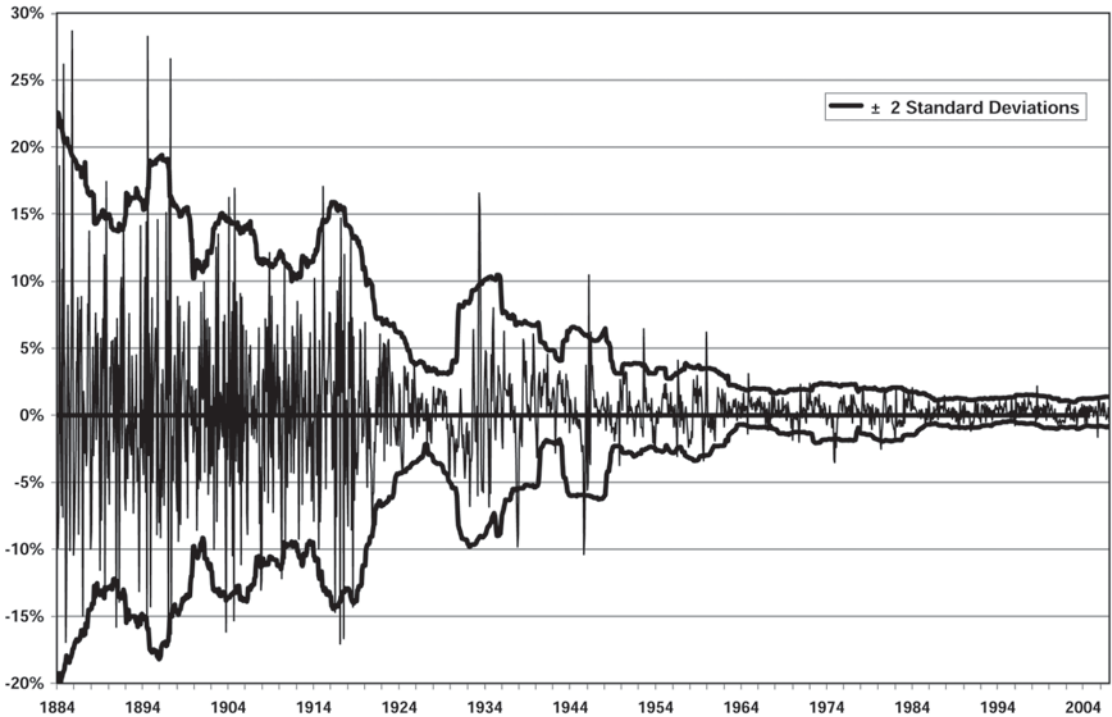
¹⁶ Chelcie C. Bosland, *The Common Stock Theory of Investment*, New York: Ronald Press, 1937, p. 132.

¹⁷ See Jeremy Siegel, “Perspectives on the Equity Risk Premium,” *Financial Analysts Journal*, vol. 61, no. 1 (November/December 2005), pp. 61–73. Reprinted in Rodney N. Sullivan, ed., *Bold Thinking on Investment Management, The FAJ 60th Anniversary Anthology*, Charlottesville, Va.: CFA Institute, 2005, pp. 202–217.

¹⁸ James H. Stock and Mark W. Watson, “Has the Business Cycle Changed and Why?” *NBER Macroeconomics Annual*, 2002, pp. 159–218.

FIGURE 8-2

Monthly Percentage Change in Industrial Production, 1884 through December 2006



the equity premium, the higher will be the valuation of stocks relative to economic fundamentals, such as earnings and dividends. In this more stable economic environment, firms may wish to boost their earnings by increasing their leverage, using lower-cost debt to substitute for higher-cost equity.¹⁹

New Justified P-E Ratios

What do all these favorable developments mean for the stock market? First, they mean that the average historical P-E ratio of 15 may no

¹⁹ Lower economic volatility also means that labor income has become more predictable and workers can be persuaded to put a larger share of their savings in riskier assets such as equities. This is because workers will not need to accumulate as many fixed-income assets to protect themselves in case unemployment arises, which will also have a favorable impact on equity prices. See John Heaton and Deborah Lucas, "Portfolio Choice in the Presence of Background Risk," *Economic Journal*, vol. 110 (January), pp. 1-26.

longer be appropriate in today's market. If the real risk-free rate of interest on long-term TIPS bonds is 2 percent, then a 3 percent equity premium will yield a 5 percent real return on equities, equivalent to a price-to-earnings ratio of 20. If the equity premium shrinks to 2 percent, then the price-to-earnings ratio can rise to 25 to yield a 4 percent real, forward-looking return on equities. If the real risk-free rate rises to 3 percent, the real return on equities will be 5 percent with a 2 percent risk premium, implying a P-E ratio of 20. Therefore, if inflation stays low, the tax policy remains favorable for equities, and the business cycle remains muted, one can justify price-to-earnings ratios in the low 20s for the equity market.

THE AGE WAVE

Inflation, tax policy, macroeconomic stability, and the drop in transactions costs are important factors influencing the valuation of equities. But looking into the future, there is one factor that is apt to be even more important: the *age wave*.

The reality is that the United States and the rest of the developed world stand at a precipice. Over the next two decades, nearly a quarter *billion* Americans, Europeans, and Japanese—members of the prosperous baby-boom generation that was born following World War II—will leave the labor force. Many are expecting a long and comfortable retirement by relying on government and private pension plans as well as tax-supported medical services.

But unless we can exploit the dramatic demographic and economic changes that lie before us, our future may be much poorer. Instead of stepping into an easy retirement, many retirees will tumble into a retirement marked by bankrupt government social programs and declining asset values that will quickly deplete their cherished nest eggs.

This forecast is not based on an unpredictable future but on events that have already transpired. Aside from immigration, we know almost exactly how many people over the next 20 years are going to reach the working age of 20 and the retirement age of 65. "Demography," as the great management sage Peter Drucker once remarked, "is the future that has already happened."²⁰

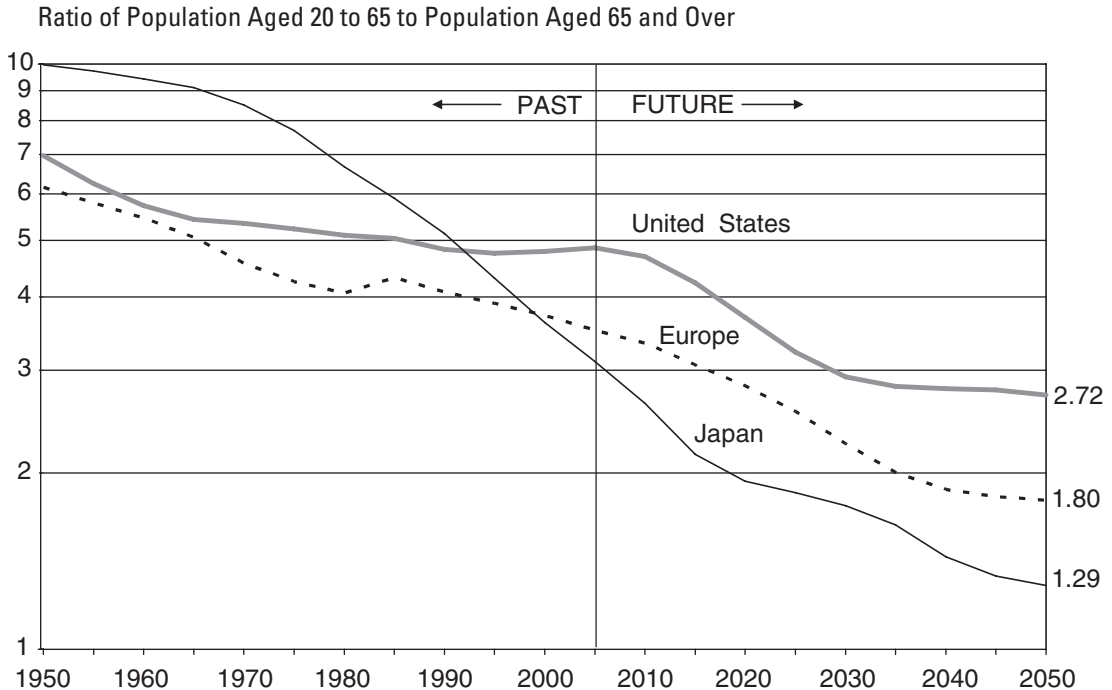
²⁰ This quote was the title of Peter F. Drucker's *Harvard Business Review* (HBR) article published in HBR's September 1997 edition marking its seventy-fifth anniversary year. Drucker's article was part of the journal segment "Looking Ahead: Implications of the Present."

Demography Is Destiny

The latest data from the U.N. Demographic Commission, displayed in Figure 8-3, show clearly the aging of the developed world. In the United States in 1950 there were seven people of working age (20 to 65) for every retiree, and even today, there are almost five. But by 2030, when the last of the baby-boom generation retires, that ratio will fall by nearly one-half, down below three to one.

The aging of the population in Europe and Japan is even more extreme than in the United States. In Japan by midcentury, the ratio of workers aged 20 to 65 to retirees will fall to just over one for one. At that time the most populated five-year age segment in Japan will be those aged 75 to 80, and the same will be true in such European countries such as Italy. The demands of the retirees from Europe and Japan will raise the prices of goods bought and sold in international markets, so there is no way the United States, despite its younger population, can shield itself from the demands arising from the aging populations abroad.

FIGURE 8-3



SOURCE: Data obtained from the U.N. Demographic Commission.

The Bankruptcy of Government *and* Private Pension Systems

Although it is widely known that our Social Security and Medicare programs are threatened by these demographic trends, there are many who believe that they have accumulated sufficient private wealth to fund their retirement.

But this may not be so. The same crisis that strikes the public pension programs can overwhelm private pensions as well. Since there will not be enough workers earning income, there will not be enough savings generated to purchase the assets the retirees must sell to finance their retirement.

The reasons why retirees cannot turn their savings into consumption is because the assets of wealth can be transformed into goods and services only if they are sold to those willing to defer their consumption. In a modern economy, wealth does not represent “stored consumption,” such as a cache of acorns that squirrels bury to bide them through a long winter. You cannot consume your stock certificates but must sell them to someone else who wants a chance to consume at a later date. If there is a shortage of these savers, this may cause a long and painful bear market in stocks, bonds, and real estate that will leave retirees with insufficient assets to enjoy retirement.

There are some who maintain that so much wealth in stocks is passed on through bequests that the lack of demand from future workers will not have much impact. But the heirs and foundations who are bequeathed these fortunes often spend their wealth far faster than did their wealthy benefactors, and this spending often requires the sale of substantial stock. Furthermore, the large volume of bank accounts, bonds, and other fixed-income securities that must be liquidated to finance the retirements of ordinary retirees could sharply raise interest rates and depress equity prices.

Reversal of a Century-Long Trend

Without enough demand and too much supply, asset prices will sink and the long-standing trend to an earlier retirement will be halted dead in its tracks. When Social Security was passed in 1935, the average retirement age was 69. That age fell to 67 by 1950, and to 62 today. In 2003, for the first time, more Americans chose the reduced Social Security benefits at age 62 than the full benefit that starts at 65. Despite improving health, surveys indicate that the bulk of Americans and Europeans want to retire *earlier*, not later.

But that will not be possible. Because of our aging population, it is most likely that future increases in the age of retirement will actually exceed the increase in the life expectancy and will cause—for the first time in history—an absolute reduction in the number of years in retirement.

The Global Solution: An Opportunity to Make a Trade

There is no easy solution. To be sure, rising productivity brings higher income, but it also brings higher benefits in retirement since benefits are based on income earned in the last several working years. Increased immigration of high-income workers would ease the situation, but the numbers would need to be prodigious to keep the retirement age from rising.

Nevertheless, there is a solution that can help aging economies. The developing world has a much younger age profile than the developed world. This difference in age establishes an opportunity to make a trade: goods produced by the younger developing world can be exchanged for assets of the older developed world.

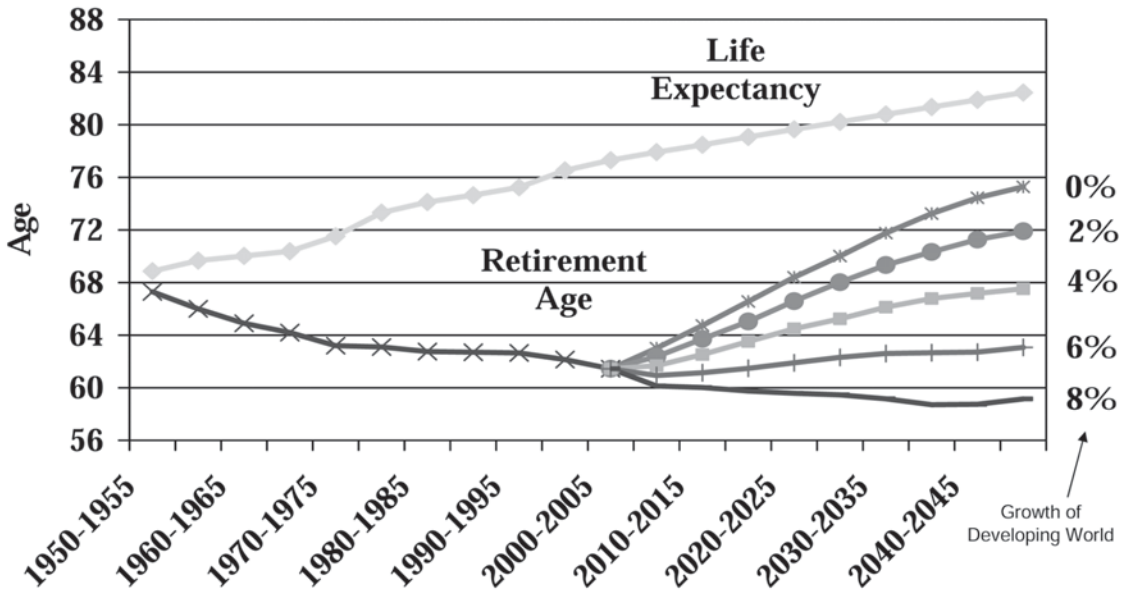
This trade is not new. The transfer of goods for assets has taken place throughout history, first between family members (parents giving to children in exchange for old-age support), and then extending to clans, communities, and finally whole nations. Soon it can be done on a worldwide basis. The developing world has the capability of simultaneously providing us with goods and acquiring our assets, filling the gap left by our aging workers.

I call this the “Global Solution” to the age wave. How effective this solution will be depends on two factors: the growth rate in the developing world and the degree to which world trade and capital markets are kept open. The average retirement and life expectancy in the United States since 1950 and projections that I have made to 2050 are shown in Figure 8-4. Note how crucial the growth rate of the developing world is to future retirees. If the growth in the developing world grinds to a halt, the lack of goods will force the retirement age up to 75, and it will shrink the time in retirement to less than 8 years from nearly 16 today. If the growth rate rises to 2 percent, which is slightly below the rate in the developed world, this will improve matters somewhat, but if growth can proceed at 4 percent or faster, the effect on the retirement age is dramatic.

An overall average growth rate of the developing world of 4 percent is highly likely. China has been growing at 8 to 10 percent for more than 20 years, and India is nearing that rate. Most certainly, as these countries grow richer, their growth rates will slow. Africa and the

FIGURE 8-4

Average Retirement and Life Expectancy in the United States Since 1950 and Projected to 2050



Mideast, outside of oil, have not been growing rapidly. If the entire developing world increases its growth to 6 or even 8 percent, then there would be sufficient productivity in the rest of the world to provide the goods that the baby boomers need and then buy the assets the boomers will have to sell; the retirement age can remain at 62 or even decline, continuing its pattern over the past century.

Attraction of U.S. Capital

Why would the developing world wish to acquire our capital when their countries are expanding so rapidly? At the beginning of this chapter, we learned that the best returns are rarely found in countries that grow the fastest. Witness China’s dismal returns for so many years despite being the fastest-growing country in the last 20 years. Investors can often find better returns in slow-growing countries and industries.

To that end, U.S. capital markets have many attractive attributes. Our country is still viewed as the fountainhead of innovation, discovery, invention, and entertainment, and our institutions of higher education are second to none. Our capital markets are deep, easy to access, and

willing to provide capital to those who wish to innovate. Equally important is that many U.S. brand names have great appeal worldwide so the growth of consumer markets abroad holds high promise for many U.S. firms.

For these capital movements to occur, we must be viewed as receptive to international capital. Although there has already been a large number of cross-country mergers, there has also been increasing opposition, such as the Congressional rebuff of the Chinese National Offshore Oil Company's (CNOOC) bid for Unocal and the Dubai Ports fiasco. Furthermore, some indicate that London is already replacing New York as the world's financial capital. The United States cannot rest; resisting these globalizing trends will lower our future returns and living standards.

CONCLUSION

In this chapter we have shown that faster economic growth in no way guarantees higher returns. In fact, based on the historical data, slow-growing countries, because of their more reasonable valuations, have tended to have higher returns than fast-growing countries.

Higher stock returns follow periods of low price-to-earnings ratios, and lower stock returns follow high price-to-earnings ratios. Although the historical average price-to-earnings ratio is about 15, there are persuasive reasons why future valuation measures may be higher. Lower transactions costs, lower taxes, and increased economic stability argue for higher ratios in the future, although this will ultimately mean lower future stock returns if share prices reach these higher levels. Although these returns may be diminished from the past, there is overwhelming reason to believe stocks will remain the best investment for all those seeking steady long-term gains.

In the far future, the aging of the population is a critical issue impacting financial market returns. We cannot escape from our demographic realities. But we can take actions that will lead to a much brighter outcome. The integration of the world's economies and capital markets is the key to our future well-being. If we shun this path, our future will in no way be as bright as our past.

CHAPTER 9

OUTPERFORMING THE MARKET

The Importance of Size, Dividend Yields, and Price-to-Earnings Ratios

Security analysis cannot presume to lay down general rules as to the “proper value” of any given common stock. . . . The prices of common stocks are not carefully thought out computations, but the resultants of a welter of human reactions.

BENJAMIN GRAHAM AND DAVID DODD, 1940¹

STOCKS THAT OUTPERFORM THE MARKET

What criteria can investors use to choose stocks with superior returns that will outperform the market? Earnings, dividends, cash flows, book values, capitalization, and past performance, among others, have been put forward as important factors for investors to consider.

¹ Benjamin Graham and David Dodd, “Price Earnings Ratios for Common Stocks,” *Security Analysis*, 2d ed., New York: McGraw-Hill, 1940, p. 530.

Yet finance theory has shown that if capital markets are “efficient” in the sense that known valuation criteria are already factored into prices, investing on the basis of these fundamentals factors will not improve returns. In an efficient market, only higher risk will enable investors to receive higher returns. The *capital asset pricing model* (CAPM) has shown that the correct measure of a stock’s risk is the correlation of its return with the overall market, known as *beta*.^{2,3}

Beta can be estimated from historical data, and it represents the fundamental risk of an asset’s return that cannot be eliminated in a well-diversified portfolio and for which investors must be compensated. If beta is greater than 1, the stock requires a return greater than the market, and if it is less than 1, a lesser return is required. Risk that can be eliminated through diversification (called *diversifiable* or *residual risk*) does not warrant a higher return. The “efficient market hypothesis” and the CAPM became the basis for stock return analysis in the 1970s and 1980s.

Unfortunately, as more data were analyzed, beta did not prove successful at explaining the differences in returns among individual stocks or portfolios of stocks. In 1992, Eugene Fama and Ken French wrote an article, published in the *Journal of Finance*, which determined that there are two factors, one relating to the size of the stocks and the other to the valuation of stocks, that are far more important in determining a stock’s return than the beta of a stock.⁴

After further analyzing returns, they claimed that the evidence against the CAPM was “compelling” and that “the average return anomalies . . . are serious enough to infer that the [CAPM] model is not a useful approximation” of a stock’s return, and they suggested researchers investigate “alternative” asset pricing models or “irrational asset pricing stories.”⁵

² The capital asset pricing model was developed by William Sharpe and John Lintner in the 1960s. See William Sharpe, “Capital Asset Prices: A Theory of Market Equilibrium under Conditions of Risk,” *Journal of Finance*, vol. 19, no. 3 (September 1964), p. 442, and John Lintner, “The Valuation of Risk Assets and the Selection of Risky Investment in Stock Portfolios and Capital Budgets,” *Review of Economics and Statistics*, vol. 47, no. 1 (1965), pp. 221–245.

³ Greek letters are used to designate the coefficients of regression equations. Beta, the second coefficient, is calculated from the correlation of an individual stock’s (or portfolio’s) return with a capitalization-weighted market portfolio. The first coefficient, alpha, is the average historical return on the stock or portfolio above the return on the market.

⁴ Eugene Fama and Ken French, “The Cross Section of Expected Stock Returns,” *Journal of Finance*, vol. 47 (1992), pp. 427–466.

⁵ Eugene Fama and Ken French, “The CAPM Is Wanted, Dead or Alive,” *Journal of Finance*, vol. 51, no. 5 (December 1996), pp. 1947–1958.

Fama and French's findings have prompted financial economists to classify the stock universe along two dimensions: *size*, measured by the market value of the stock, and *valuation*, or the price relative to "fundamentals" such as earnings and dividends. The emphasis on valuation to gain an investment edge did not originate with Fama and French. Valuation formed the cornerstone of the principles that Benjamin Graham and David Dodd put forth more than 70 years ago in their investment classic *Security Analysis*.⁶

SMALL- AND LARGE-CAP STOCKS

Cracks in the capital asset pricing model's predictions of stock returns appeared well before Fama and French's research. In 1981, Rolf Banz, a graduate student at the University of Chicago, investigated the returns on stocks using the database that had been recently compiled by the Center for Research in Security Prices (CRSP) located at the university. He found that small stocks systematically outperformed large stocks, even after adjusting for risk as defined within the framework of the capital asset pricing model.⁷

To illustrate this point, the returns from 1926 through 2006 on 10 groups of 4,252 stocks sorted by market capitalization are shown in Table 9-1. The largest 168 stocks comprising 61.64 percent of total market value had a compound annual return of 9.60 percent, and even though the beta of these stocks was less than 1, the return trailed the CAPM prediction. On the other hand, smaller stocks had a higher beta, but their return increased more than predicted by the CAPM. The smallest 1,744 companies—each of which had a market value less than \$314 million and comprised less than 1½ percent of the market capitalization of all stocks—had a compound return of 14.03 percent, which was 627 basis points above what would have been predicted by the CAPM.⁸

Some maintain that the superior historical returns on small stocks are compensation for the higher transaction costs of acquiring or disposing of these securities, especially in the earlier years of the sample. But for long-term investors, transactions costs should not be of great importance. The outperformances of these small stocks, although variable,

⁶ Benjamin Graham and David Dodd, *Security Analysis*, 1st ed., New York: McGraw Hill, 1934.

⁷ Rolf Banz, "The Relationship between Return and Market Value of Common Stock," *Journal of Financial Economics*, vol. 9 (1981), pp. 3–18.

⁸ These data are adapted from *Stocks, Bonds, Bills, and Inflation (SBBI) 2007 Yearbook*, Chicago: Morningstar Publications, Chap. 7.

TABLE 9-1

Returns on 10 Groups of 4,252 Stocks Sorted by Market Capitalization, 1926 through December 2006

Decile	Number of Companies	Largest Company Cap.	% of Total Cap.	Compound Return	Beta	Excess Return over CAPM
<i>Largest</i>	168	\$371,187,368	61.64%	9.60%	0.91	-0.36%
2	179	\$16,820,566	13.81%	11.00%	1.04	0.65%
3	198	\$7,777,183	7.24%	11.35%	1.10	0.81%
4	184	\$4,085,184	4.02%	11.31%	1.13	1.03%
5	209	\$2,848,771	3.17%	11.69%	1.16	1.45%
6	264	\$1,946,588	2.76%	11.79%	1.18	1.67%
7	291	\$1,378,476	2.15%	11.68%	1.23	1.62%
8	355	\$976,624	1.83%	11.88%	1.28	2.28%
9	660	\$626,955	1.92%	12.09%	1.34	2.70%
<i>Smallest</i>	1,744	\$314,433	1.47%	14.03%	1.41	6.27%
Total	4,252	\$371,187,368	100.00%	10.31%	1.00	0.00%

have persisted over time and are difficult to explain in an efficient market model.

Trends in Small-Cap Stock Returns

Although the historical return on small stocks has outpaced large stocks since 1926, the magnitude of the small-cap stock outperformance has waxed and waned unpredictably over the past 80 years. A comparison of the cumulative returns on small stocks with those of the S&P 500 Index is shown in Figure 9-1.⁹

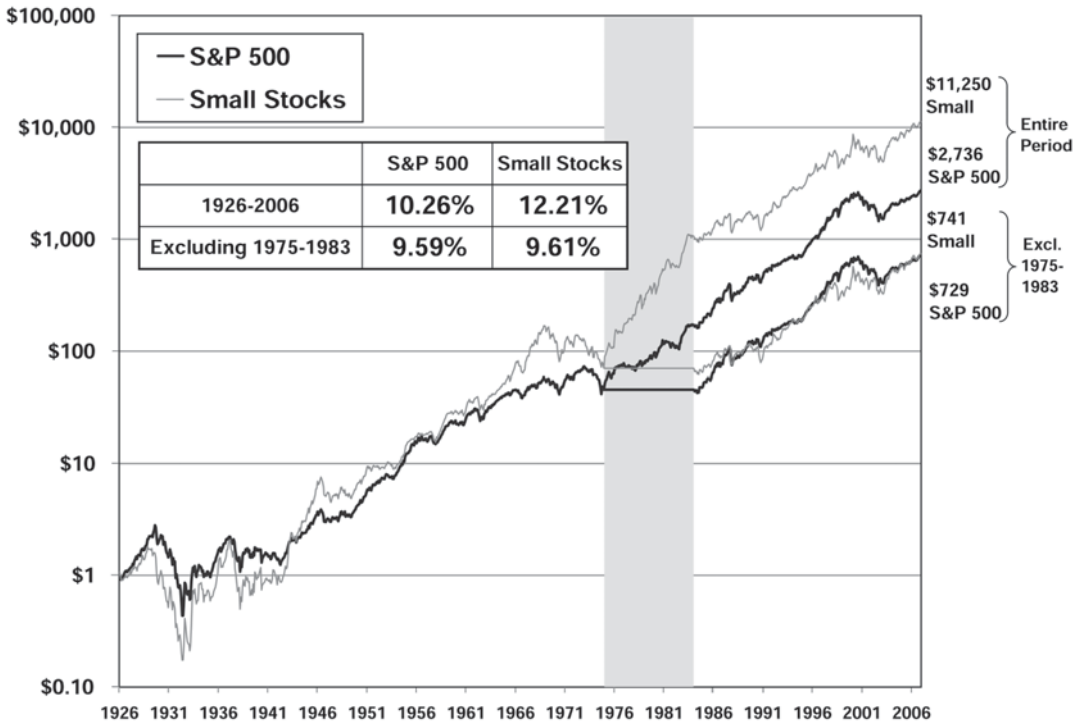
Small stocks recovered smartly from their beating during the Great Depression, but they still underperformed large stocks from the end of World War II until almost 1960. In fact, the cumulative total return on small stocks (measured by the bottom quintile of market capitalization) did not overtake large stocks even once between 1926 and 1959. Even by the end of 1974, the average annual compound return on small stocks exceeded large stocks by only about 0.5 percent per year, not nearly enough to compensate most investors for their extra risk and trading costs.

But between 1975 and the end of 1983, small stocks exploded. During these years, small stocks averaged a 35.3 percent compound annual return, more than double the 15.7 percent return on large stocks. Cumulative returns in small stocks during these nine years exceeded 1,400 percent. Figure 9-1 shows that if the nine-year period from 1975 through

⁹ The small-cap stock index is the bottom quintile (20 percent) size of the NYSE stocks until 1981, then it is the performance of Dimensional Fund Advisors (DFA) Small Company fund from 1982 through 2000, and then it is the Russell 2000 Index from 2001 onward.

FIGURE 9-1

Small Stocks and S&P 500 Returns, 1926 through December 2006 (Including and Excluding 1975–1983)



1983 is eliminated, the total accumulation in large stocks over the entire period from 1926 through 2006 is virtually the same.

After 1983, small stocks hit a long dry period that lasted 17 years as they underperformed large stocks, especially in the late 1990s as the technology boom gained momentum. But when the technology bubble burst, small stocks strongly outperformed once again. From the March 2000 peak through 2006, despite the severe intervening bear market, small stocks enjoyed a 7.2 percent annual return, while large stocks, represented by the S&P 500 Index, returned less than 1 percent per year.

What caused the tremendous performance of small stocks during the 1975 to 1983 and 2000 to 2006 periods? In the earlier period, pension and institutional managers found themselves attracted to smaller stocks following the collapse of the large-growth stocks, known as the “Nifty Fifty,” that were so popular in the preceding bull market. In addition, the enactment of the Employee Retirement Income Security Act (ERISA) by Congress in 1974 made it far easier for pension funds to diversify into small

stocks, boosting their holdings of these issues. The 2000 to 2006 small stock surge followed the collapse of large-cap tech stocks in the bubble of the late 1990s, which again turned investors' attention to smaller issues.

Whatever the reasons for the small stock surges, the trendiness of small stock returns does not mean that investors should avoid these firms. Small- and mid-cap stocks not in a big capitalization index such as the S&P 500 Index constitute about 20 percent of the market value of all U.S. stocks. One should be warned, however, that the existence of the small stock premium does not mean that small stocks will outperform large stocks every year, or even every decade.

VALUATION

Value Stocks Offer Higher Returns Than Growth Stocks

The second dimension along which stocks are classified is by *valuation*—that is, factors relating the price of the stock relative to some fundamental metric of firm worth, such as dividends, earnings, book values, and cash flows. Like small-cap stocks, Fama and French determined that stocks that were cheap relative to these fundamentals had higher returns than would be predicted by the capital asset pricing model.

Stocks whose prices are low relative to these fundamentals are called *value* stocks, while those with prices high relative to these fundamentals are called *growth* stocks. Prior to the 1980s, value stocks were often called *cyclical* stocks because low-P-E stocks were often found in those industries whose profits were closely tied to the business cycle. With the growth of style investing, equity managers that specialized in these stocks were uncomfortable with the “cyclical” moniker and greatly preferred the term “value.”

Value stocks generally occur in such industries as oil, motor, finance, and utilities where investors have low expectations of future growth or believe that profits are strongly tied to the business cycle, while growth stocks are generally found in such industries as high technology, brand-name consumer products, and healthcare where investors expect profits either to grow quickly or to be more resistant to the business cycle.

Of the 10 largest U.S.-based corporations by market value at the end of 2006, Exxon Mobil, Citigroup, and Bank of America had a low price relative to fundamentals and were considered “value stocks” while Microsoft, Procter & Gamble, and Johnson & Johnson had higher prices, consistent with “growth stocks.”

Although value stocks might sound unattractive, these stocks should not be shunned by investors. First, investors' expectations of low growth may be incorrect. But, more importantly, even if these expectations are correct, these stocks might offer superior returns if their price is low enough to compensate for the lower growth. In fact, as we shall show below, value stocks generally give investors higher returns than growth stocks.

DIVIDEND YIELDS

Dividends have always been an important criterion for choosing stocks as Graham and Dodd stated in 1940:

Experience would confirm the established verdict of the stock market that a dollar of earnings is worth more to the stockholder if paid him in dividends than when carried to surplus. The common-stock investor should ordinarily require both an adequate earning power and an adequate dividend.¹⁰

Graham and Dodd's claim has been supported by more recent research. In 1978, Krishna Ramaswamy and Robert Litzenberger established a significant correlation between dividend yield and subsequent returns.¹¹ And more recently, James O'Shaughnessy has shown that in the period 1951 through 1994, the 50 highest-dividend-yielding large-capitalization stocks had a 1.7 percentage point higher return than the market.¹²

The historical analysis of the S&P 500 Index supports the case for using dividend yields to obtain higher stock returns. Using December 31 of each year from 1957 onward, I sorted the firms in the S&P 500 Index into five groups (or quintiles) ranked from the highest to the lowest dividend yields, and then I calculated the total returns over the next calendar year.

The striking results are shown in Figure 9-2. In strictly increasing order, the portfolios with higher dividend yields offered investors higher total returns than portfolios of stocks with lower dividend yields. If an investor put \$1,000 in an S&P 500 Index fund at the end of Decem-

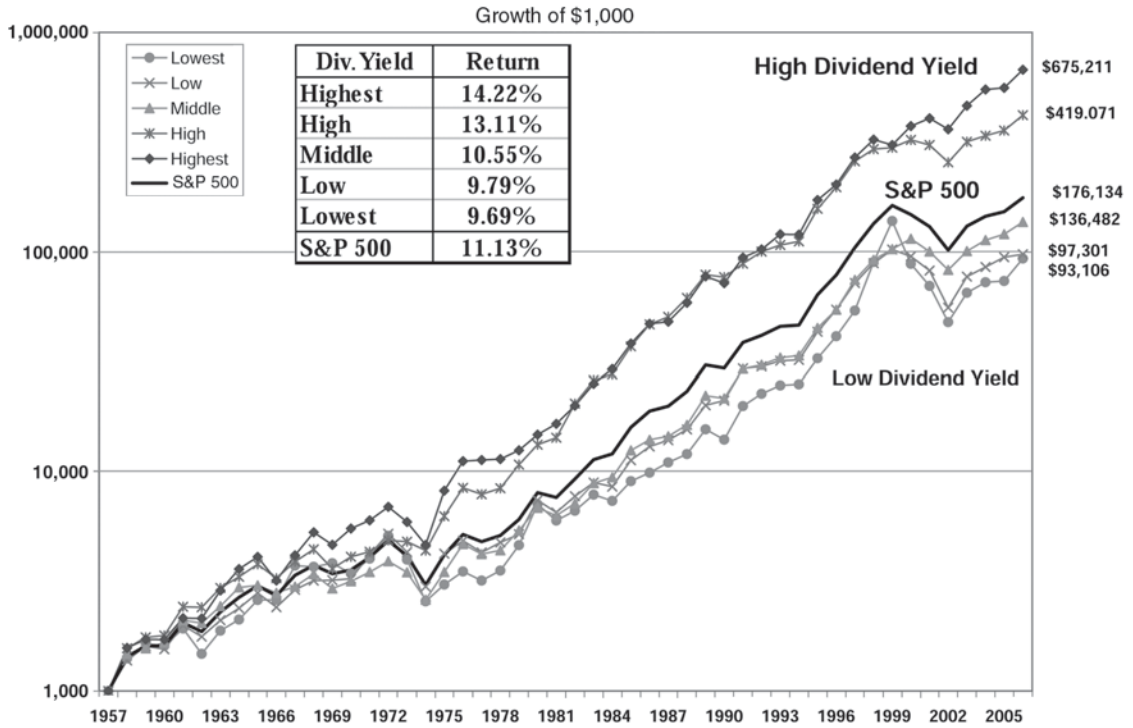
¹⁰ Graham and Dodd, *Security Analysis*, 2d ed., p. 381.

¹¹ See Robert Litzenberger and Krishna Ramaswamy, "The Effects of Personal Taxes and Dividends on Capital Asset Prices: Theory and Empirical Evidence," *Journal of Financial Economics*, 1979, pp. 163–195.

¹² James P. O'Shaughnessy, *What Works on Wall Street*, 3rd ed., New York: McGraw-Hill, 2003.

FIGURE 9-2

Historical Analysis of the S&P 500 Index, 1957 to 2006



ber 1957, she would have accumulated \$176,134 by the end of 2006, for an annual return of 11.13 percent. An identical investment in the 100 highest dividend yielders accumulated to over \$675,000, with a return of 14.22 percent.

The highest dividend yielders also had a beta below unity, indicating these stocks were more stable over market cycles, as shown in Table 9-2. The lowest-dividend-yielding stocks not only had the lowest return but also the highest beta. The annual return of the 100 highest dividend yielders in the S&P 500 Index over the past 50 years was 3.78 percentage points per year above what would have been predicted by the efficient markets model while the return of the 100 lowest dividend yielders would have had a return that was 1.68 percentage points per year lower.

TABLE 9-2

S&P 500 Stocks Sorted by Dividend Yield

Dividend Yield	Geometric Return	Arithmetic Return	Standard Deviation	Beta	Excess Return over CAPM
Highest	14.22%	15.71%	18.81%	0.9336	3.78%
High	13.11%	14.24%	16.22%	0.8559	2.86%
Middle	10.55%	11.71%	16.02%	0.9085	-0.04%
Low	9.79%	11.35%	18.21%	1.0460	-1.36%
Lowest	9.69%	12.20%	23.17%	1.2130	-1.68%
S&P 500	11.13%	12.39%	16.52%	1.0000	0.00%

Other Dividend Yield Strategies

There are other high-dividend-yield strategies that have outperformed the market. A well-known one is called the “Dogs of the Dow,” or the “Dow 10” strategy, and is chosen from high-yielding stocks in the Dow Jones Industrial Average.

The Dow 10 strategy has been regarded by some as one of the simplest and most successful investment strategies of all time. James Glassman of the *Washington Post* claimed that John Slatter, a Cleveland investment advisor and writer, invented the Dow 10 system in the 1980s.¹³ Harvey Knowles and Damon Petty popularized the strategy in their book *The Dividend Investor*, written in 1992, as did Michael O’Higgins and John Downes in *Beating the Dow*.

The strategy calls for investors at year-end to buy the 10 highest-yielding stocks in the Dow Jones Industrial Average and to hold them for the subsequent year and then repeat the process each December 31. These high-yielding stocks are often those that have fallen in price and are out of favor with investors. For this reason the Dow 10 strategy is often called the “Dogs of the Dow.”

Another natural extension of the Dow 10 strategy is to choose the 10 highest-yielding stocks from among the 100 largest stocks in the S&P 500. The 100 largest stocks in the S&P 500 Index comprise a much higher percentage of the entire U.S. market than the 30 stocks in the Dow Jones Industrial Average.

¹³ John R. Dorfman, “Study of Industrial Averages Finds Stocks with High Dividends Are Big Winners,” *Wall Street Journal*, August 11, 1988, p. C2.

Indeed, both of these strategies have excelled, as Figure 9-3 shows.¹⁴ The Dow 10 strategy returned 14.08 percent per year over the past half century, and the S&P 10 returned a dramatic 15.71 percent per year, more than 3 and 4½ percentage points a year above their respective benchmarks. And both these strategies have a lower beta than either the Dow Jones Industrial Average or the S&P 500 Index, as shown in Table 9-3.

The worst year for both the Dow 10 and S&P 10 strategies relative to the benchmark indexes was 1999, when the high-capitalization tech stocks reached their bubble peak. The Dow 10 underperformed the S&P 500 Index by 16.72 percent that year, and the S&P 10 underperformed by over 17 percentage points. It is during the later stages of a bull market,

¹⁴ Interestingly, an equal investment in the 30 Dow Jones Industrial stocks beats the performance of the S&P 500 Index from 1957 through 2006 by 73 basis points even though the Dow's beta is less than 1. The managing editor of the *Wall Street Journal* has the primary responsibility for the selection of the Dow stocks. As noted in Chapter 4, the companies in the S&P 500 Index are chosen primarily on the basis of market value, assuming that the firm is profitable.

FIGURE 9-3

Dow and S&P 500 High-Dividend Yield Strategies

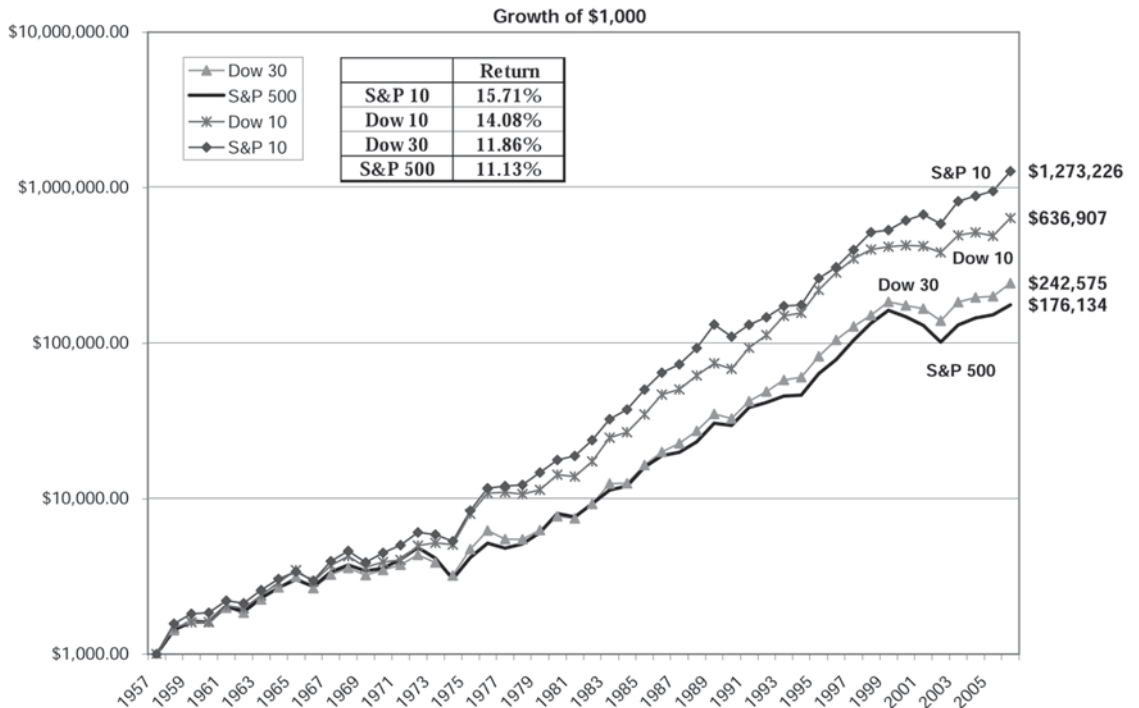


TABLE 9-3

Dow and S&P 500 High-Dividend Strategies

High-Yield Strategy	Geometric Return	Arithmetic Return	Standard Deviation	Beta	Excess Return Over CAPM
S&P 10	15.71%	17.00%	17.53%	0.9092	5.25%
Dow 10	14.08%	15.32%	17.06%	0.8532	3.95%
Dow 30	11.86%	13.05%	16.31%	0.9341	1.12%
S&P 500	11.13%	12.39%	16.52%	1.0000	0.00%

when growth stocks catch the eye of speculative investors, that these value-based strategies will underperform capitalization-weighted strategies.

But these strategies have gained these back—and more—during subsequent bear markets. The Dow 30 was down by 26.5 percent, and the S&P 500 Index was down 37.3 percent during the 1973 to 1974 bear markets. But the S&P 10 strategy fell only 12 percent while the Dow 10 strategy actually gained 2.9 percent in these two years.

These dividend strategies also resisted the 2000 to 2002 bear market. From the end of 2000 through the end of 2002, when the S&P 500 Index fell by more than 30 percent, the Dow 10 strategy fell by only less than 10 percent, and the S&P 10 strategy fell by less than 5 percent.¹⁵ These high-dividend strategies have provided investors with higher returns and lower volatility over the past five decades.

PRICE-TO-EARNINGS (P-E) RATIOS

Another important metric of value that can be used to formulate a winning strategy is the P-E ratio, or the price of a stock relative to its earnings. The research into P-E ratios began in the late 1970s, when Sanjoy Basu, building on the work of S. F. Nicholson in 1960, discovered that stocks with low price-to-earnings ratios have significantly higher returns than stocks with high price-to-earnings ratios, even after accounting for risk.¹⁶

¹⁵ After 2003 the Dow 10 strategy lagged the Dow 30 for several years, mostly because of the poor performance of General Motors, which continued to pay a dividend until it was cut in half in 2005.

¹⁶ S. F. Nicholson, "Price-Earnings Ratios," *Financial Analysts Journal*, July/August 1960, pp. 43–50, and Sanjoy Basu, "Investment Performance of Common Stocks in Relation to Their Price-Earnings Ratio: A Test of the Efficient Market Hypothesis," *Journal of Finance*, vol. 32 (June 1977), pp. 663–682.

Again, these results would not have surprised the value investors Graham and Dodd, who, in their classic 1934 text *Security Analysis*, stated the following:

Hence we may submit, as a corollary of no small practical importance, that people who habitually purchase common stocks at more than about 16 times their average earnings are likely to lose considerable money in the long run.^{17,18}

In a manner analogous to the research on dividend yields among S&P 500 stocks, I computed the P-E ratios for all 500 firms in the index on December 31 of each year by dividing the last 12 months of earnings by the year-end prices. I then ranked these firms by P-E ratios and divided them into five quintiles, computing their subsequent return over the next 12 months.¹⁹

The results of this research are similar to that reported on the dividend yield and are shown in Figure 9-4. Stocks with high P-Es (or low earnings yields) are, on average, overvalued and have given lower returns to investors. A portfolio of the highest-P-E stocks had a cumulative return of \$65,354, earning an annual return of 8.90 percent, while the lowest-P-E stocks had a return of 14.30 percent and accumulated to almost \$700,000.

In addition to a higher yield, the standard deviation of low-P-E stocks was lower, and the beta was much lower than that of the S&P 500 Index stocks, as shown in Table 9-4. In fact, the return on the 100 lowest-P-E stocks in the S&P 500 Index was about 5½ percentage points per year above what would have been predicted on the basis of the capital asset pricing model.

PRICE-TO-BOOK RATIOS

Price-to-earnings ratios and dividend yields are not the only value-based criteria. A number of academic papers, beginning with Dennis Stattman's in 1980 and later supported by Fama and French, suggested

¹⁷ Graham and Dodd, *Security Analysis*, 1st ed., p. 453. Emphasis theirs.

¹⁸ Yet even Graham and Dodd must have felt a need to be flexible on the issue of what constituted an "excessive" P-E ratio. In their second edition, published in 1940, the same sentence appears with the number 20 substituted for 16 as the upper limit of a reasonable P-E ratio! (Graham and Dodd, *Security Analysis*, 2d ed., p. 533.)

¹⁹ Firms with zero or negative earnings were put into the high-P-E-ratio quintile. Returns were calculated from February 1 to February 1 so that investors could use actual instead of projected earnings for the fourth quarter.

FIGURE 9-4

P-E Ratios for the S&P 500 Index Companies, 1957 through December 2006

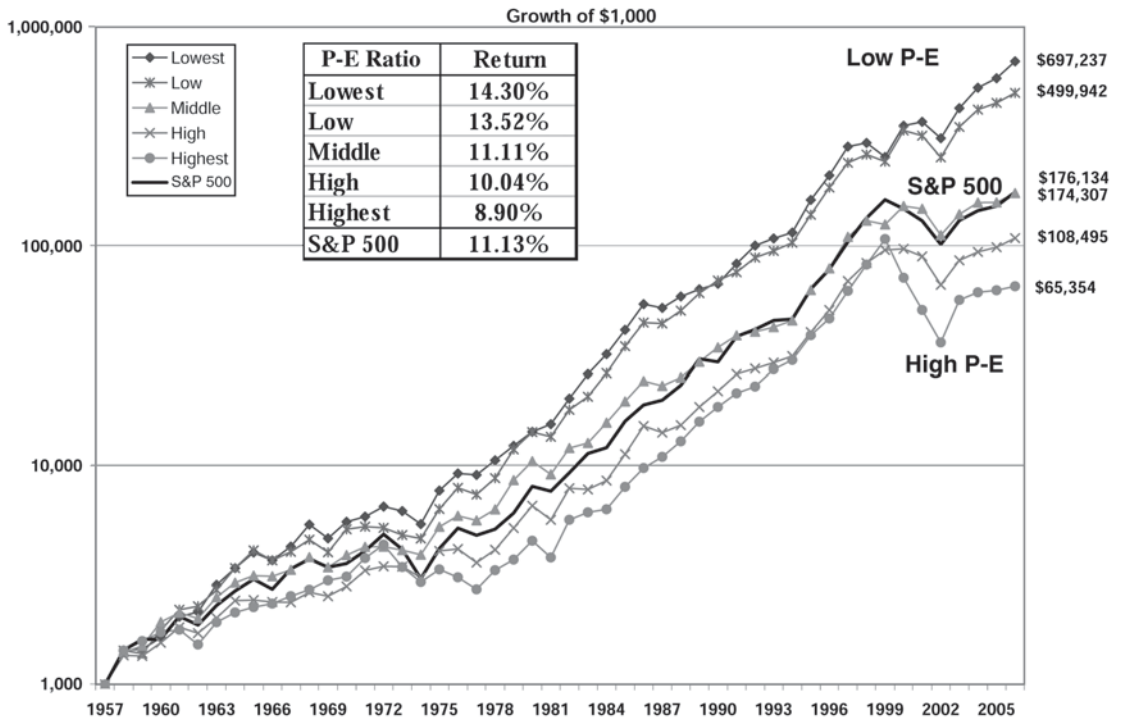


TABLE 9-4

Returns on the S&P 500 Stocks Sorted by P-E Ratios

P-E Ratio	Geometric Return	Arithmetic Return	Standard Deviation	Beta	Excess Return over CAPM
Lowest	14.30%	15.35%	15.50%	0.6347	5.51%
Low	13.52%	13.52%	15.79%	0.6067	4.99%
Middle	11.11%	11.11%	14.59%	0.6230	2.30%
High	10.04%	10.04%	14.95%	0.7077	0.70%
Highest	8.90%	8.90%	18.84%	0.8546	-0.78%
S&P 500	11.13%	12.39%	16.52%	1.0000	0.00%

that price-to-book ratios might be even more important than price-to-earnings ratios in predicting future cross-sectional stock returns.²⁰

Like P-E ratios and dividend yields, Graham and Dodd considered book value to be an important factor in determining returns:

[We] suggest rather forcibly that the book value deserves at least a fleeting glance by the public before it buys or sells shares in a business undertaking. . . . Let the stock buyer, if he lays any claim to intelligence, at least be able to tell himself, first, how much he is actually paying for the business, and secondly, what he is actually getting for his money in terms of tangible resources.²¹

Although Fama and French found that the ratio of book to market value was a slightly better value metric than the dividend yield or P-E ratio in explaining cross-sectional returns in their 1992 research, there are conceptual problems with using book value as a value criterion. Book value does not correct for changes in the market value of assets, nor does it capitalize research and development (R&D) expenditures. In fact, over the time period 1987 through 2006, our studies showed that book value underperformed either dividend yields, P-E ratios, or cash flows in explaining returns.²² Since it is likely that an increasing fraction of a firm's worth will be captured by intellectual property, book value may become an even more imperfect indicator of firm value in the future.

COMBINING SIZE AND VALUATION CRITERIA

The compound annual returns on stocks sorted into 25 quintiles along size and book-to-market ratios from 1958 through 2006 are summarized in Table 9-5.²³ Historical returns on value stocks have surpassed growth stocks, and this outperformance is especially true among smaller stocks. The smallest value stocks returned 19.59 percent per year, the highest of any of the 25 quintiles analyzed, while the smallest growth stocks returned only 5.97 percent, the lowest of any quintile. As firms become larger, the difference between the returns on value and growth stocks be-

²⁰ Dennis Stattman, "Book Values and Expected Stock Returns," unpublished MBA honors paper, University of Chicago, and Fama and French, "Cross Section of Expected Stock Returns."

²¹ Graham and Dodd, *Security Analysis*, 1st ed., pp. 493-494.

²² Unpublished work estimating the alpha from quintile selection of value strategies from 1987 through 2006 using the data on the Fama-French Web site http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html.

²³ These data come from the Fama-French Web site cited in the preceding footnote.

TABLE 9-5

Compound Annual Returns by Size and Book-to-Market Ratio, January 1, 1958, to December 31, 2006

Entire Period		Size Quintiles				
		Small	2	3	4	Large
Book-to-Market Quintiles	Value	19.59%	18.29%	17.58%	16.10%	13.17%
	2	18.37%	17.53%	16.20%	16.15%	12.25%
	3	15.06%	16.00%	13.90%	14.72%	12.16%
	4	13.90%	12.78%	13.92%	11.43%	11.11%
	Growth	5.97%	8.30%	8.85%	10.62%	9.87%

Excluding 1975-1983		Size Quintiles				
		Small	2	3	4	Large
Book-to-Market Quintiles	Value	15.52%	14.86%	14.64%	13.67%	12.04%
	2	14.80%	13.98%	13.49%	14.50%	10.69%
	3	10.91%	13.23%	10.92%	12.43%	11.18%
	4	9.61%	9.11%	10.75%	9.26%	9.94%
	Growth	1.46%	4.62%	5.91%	8.73%	9.56%

comes much smaller. The largest value stocks returned 13.17 percent per year while the largest growth stocks returned about 9.87 percent.

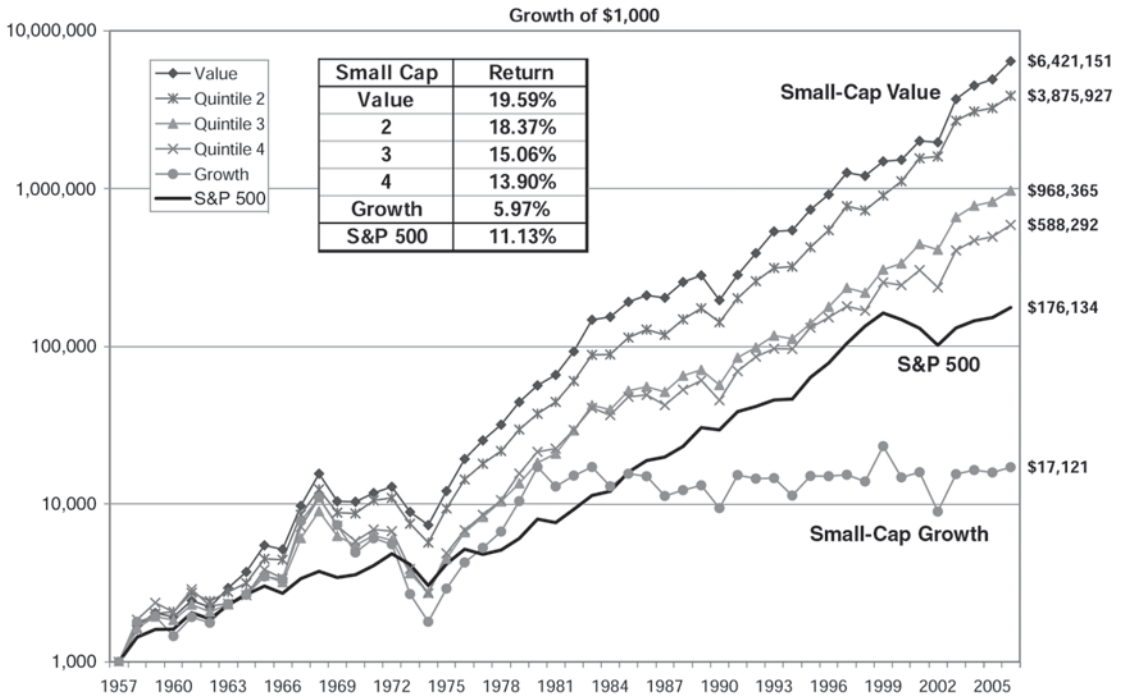
When the 1975 to 1983 period is removed, the return to small stocks shrinks, as expected. But it is noteworthy that the *difference* in the returns to small value and growth stocks remains large and virtually unchanged.

The dramatic difference in the cumulative return to smallest quintile growth and value stocks over the period from 1957 through 2006 are shown in Figure 9-5. Small growth stocks have a cumulative return of only 5.97 percent per year over the period, and \$1,000 invested in December 1957 accumulated to \$17,121 by the end of 2006. In contrast, small value stocks have a cumulative return of 19.59 percent per year, and a \$1,000 investment grows to \$6.42 million.

Accentuating the difference in the performance of small growth and value stocks is that the risk measured by the beta of the small-cap value stocks is about 1, while that of the small growth stocks is over 1½.

FIGURE 9-5

Cumulative Returns to Smallest Quintile Growth and Value Stocks, 1957 through December 2006



This means that the historical return to small value stocks is nearly 10 percentage points above the “efficient market” prediction, while the historical return to small growth stocks has been 4.4 percentage points below its predicted level.

INITIAL PUBLIC OFFERINGS: THE DISAPPOINTING OVERALL RETURNS ON NEW SMALL-CAP GROWTH COMPANIES

Some of the most hotly sought after small stocks are initial public offerings (IPOs).

New companies are launched with enthusiasm that excites investors, who dream that the upstarts will turn into the next Microsofts or Intels. The large demand for IPOs causes most IPOs to surge in price after they are released into the secondary market, offering those investors who were able to buy the stock at the offering prices immedi-

ate gains.²⁴ As a result, the vast majority of these IPOs are classified as “growth” stocks.

Certainly there have been some big winners among past IPOs. Wal-Mart, which went public in October 1970, turned a \$1,000 investment into more than \$1,370,000 by the end of 2006. Investors who put \$1,000 into Home Depot and Intel when they went public also turned into millionaires—if they held on to their stock. Cisco Systems was another winner. Floated to the public in February 1990, the networking supplier has delivered an average of 40 percent annual returns to investors through December 2006, although all of the gains were made in the first 10 years.

But can these big winners compensate for all the losers? To determine whether IPOs are good long-term investments, I examined the buy-and-hold returns of almost 9,000 IPOs issued between 1968 and 2001. I calculated the returns whether investors purchased the IPOs either at the end of the first month of trading or at the IPO offer price and held these stocks until December 31, 2003.²⁵

There is no question that the losing IPOs far outnumber the winners. Of the 8,606 firms examined, the returns on 6,796 of these firms, or 79 percent, have subsequently underperformed the returns on a representative small stock index, and almost half the firms have underperformed by more than 10 percent per year.

Unfortunately, the huge winners like Cisco and Wal-Mart *cannot compensate* for the thousands of losing IPOs. The *differences* in the returns to a portfolio that buys an equal dollar amount of all the IPOs issued in a given year and a portfolio in which an investor puts an equivalent dollar amount into a Russell 2000 small-cap stock index are featured in Figure 9-6. Returns are computed from two starting points: (1) from the end of the month when the IPO was first issued and (2) from the usually lower IPO offer price.

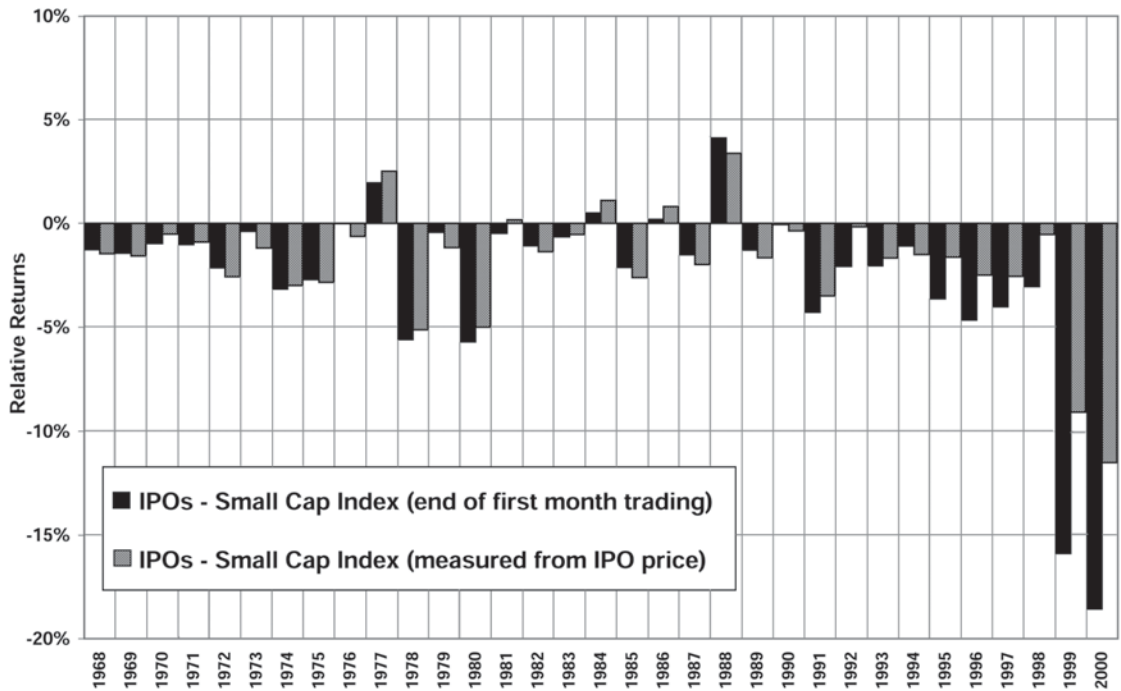
The returns on all yearly IPO portfolios issued from 1968 through 2000 were examined to December 31, 2003, to allow for at least three years of subsequent returns to be calculated. The results are clear. From 1968 through 2000, the yearly IPO portfolios, measured from the end of the price of the first month of trading, underperformed a small-cap stock index in 29 out of 33 years when measured *either* from the last day of trading in the month they were issued *or* from the IPO issue price.

²⁴ Obtaining IPOs at the offering prices, especially ones that are in great demand, is very difficult as investment banks and brokerage firms ration these shares to their best customers.

²⁵ About one-third of these firms survived in their current corporate form through December 31, 2003. If they did not, I substituted the return on the Ibbotson small-cap stock index (see footnote 9).

FIGURE 9-6

Buy-and-Hold Returns of Almost 9,000 IPOs Issued between 1968 and 2001



Even in years such as 1971 when the big-winning stocks Southwest Airlines, Intel, and The Limited Stores all went public, a portfolio of all the IPOs issued that year trailed the returns on a comparable small-cap stock index when measured through 2003, and the same happened in 1981 when Home Depot went public.

Even in the banner year 1986, when Microsoft, Oracle, Adobe, EMC, and Sun Microsystems all went public and delivered 30 percent plus annual returns over the next 16 years, a portfolio of all the IPOs from that year just barely managed to keep up with the small-cap stock index.

The performance of the mostly technology IPOs issued in the late 1990s were disastrous. The yearly IPO portfolios in 1999 and 2000 underperformed the small-cap stock index by 8 and 12 percent per year, respectively, if measured from the IPO price and 17 and 19 percent per year if measured from the end of the first month of trading.

Even stocks that doubled or more on the opening of trading were very poor long-term investments. Corvis Corporation, which designs

products for the management of Internet traffic, went public on July 28, 2000. At the time of the offering, the firm had never sold a dollar's worth of goods and had \$72 million in operating losses. Nevertheless, Corvis had a market value of \$28.7 billion at the end of the first trading day, a capitalization that would place it in the top 100 most valuable firms in the United States.

It is sobering to contrast Corvis Corporation with Cisco Systems, which went public 10 years earlier. By the time of its IPO in February 1990, Cisco had already been a profitable company, earning healthy profits of \$13.9 million on annual sales of \$69.7 million. The market value of Cisco's IPO at the end of the first trading day was \$287 million, exactly one-hundredth of the market value of Corvis Corporation, which at the time had not yet had either sales or profits. Cisco would be classified as a "growth" company in 1990 with a higher-than-average P-E ratio, but Corvis was a "hypergrowth" company.

Corvis Corporation, with an IPO price of \$360 (split adjusted) on July 28, 2000, opened trading at \$720 and later rose to \$1,147 in early August. Subsequently the stock fell to \$3.46 in April 2005.

THE NATURE OF GROWTH AND VALUE STOCKS

When choosing "growth" and "value" stocks, investors should keep in mind that these designations are not inherent in the product the firm produces or the industry that the firm is in. The designations depend solely on the market value relative to some fundamental measure of enterprise value, such as earnings or dividends.

Therefore, a firm in the technology sector, which is considered to be an industry with high growth prospects, could actually be classified as a value stock if it is out of favor with investors and sells for a low price relative to fundamentals. Alternatively, a promising auto manufacturer in a mature industry with limited growth potential could be classified a growth stock if its stock is in favor with investors and priced high relative to fundamentals. In fact, over time many firms and even industries are alternately characterized as "value" or "growth" as their market price fluctuates.

EXPLANATIONS OF SIZE AND VALUATION EFFECTS

There have been many attempts to explain the size and valuation factors in the data. Fama and French had hypothesized that there might be unusual financial stresses in value stocks that only appear during periods

of extreme crisis, and that investors demand a premium to hold value stocks in case those circumstances arise. Indeed, value stocks did underperform growth stocks during the Great Depression and the stock market crash of 1929 through 1932. But since then, value stocks have actually done *better* than growth stocks during both bear markets and economic recessions, so it is doubtful this is the answer.²⁶

Another possible reason why value stocks outperform growth stocks is that the use of beta to summarize the risk of a stock is too narrow. Beta is derived from the capital asset pricing theory, a static pricing model that depends on an unchanged set of investment opportunities. In a dynamic economy, real interest rates proxy changes in the opportunity set for investors, and stock prices will respond not only to earnings prospects but also to changes in interest rates.

In an article entitled “Good Beta, Bad Beta,” John Campbell separates the beta related to interest rate fluctuations (which he called “good beta”) from the beta related to business cycles (which he called “bad beta”)²⁷ based on historical evidence. But recent data are not supportive of this theory as growth stocks rose from 1997 to 2000 when real interest rates were rising and fell subsequently as real interest rates dropped.

Another theory about why growth stocks have underperformed value stocks is behavioral: investors get overexcited about the growth prospects of firms with rapidly rising earnings and bid them up excessively. “Story stocks” such as Intel or Microsoft, which in the past provided fantastic returns, capture the fancy of investors, while those firms providing solid earnings with unexciting growth rates are neglected.²⁸

The Noisy Market Hypothesis

A more general theory for the outperformance of value stocks is that stock prices are constantly being impacted by buying and selling that is unrelated to the fundamental value of the firm. These buyers and sellers are called “liquidity” or “noise” traders in the academic literature. Their transactions may be motivated by taxes, fiduciary responsibilities, rebalancing of their portfolio, or other personal reasons. In order to explain the value

²⁶ John Y. Campbell (with Jens Hilscher and Jan Szilagyi), “In Search of Distress Risk,” revision of National Bureau of Economic Research (NBER) Working Paper No. 12362, Cambridge, Mass., March 2007.

²⁷ John Y. Campbell and Tuomo Vuolteenaho, “Bad Beta, Good Beta,” *American Economic Review*, vol. 94, no. 5 (December 2004), pp. 1249–1275.

²⁸ Behavioral finance is the topic of Chapter 19.

and size effects we see in the historical data, another assumption needs to be added: that price movements caused by these liquidity traders are not *immediately* reversed by those trading on fundamental information.

This assumption is a deviation from the efficient markets hypothesis that claims that at all times the price of a security is the best unbiased estimate of the underlying value of the enterprise. I have called the alternative assumption the “noisy market hypothesis” because the actions of noise or liquidity traders often obscure the fundamental value of the firm.²⁹

The noisy market hypothesis can provide an explanation for the size and value effects.³⁰ A positive liquidity shock raises the price of the stock above its fundamental value and makes that stock more likely to be classified as a “large” or “growth” stock. When this positive shock disappears, these large growth stocks decline in price and thus have lower returns. On the other hand, a negative liquidity shock lowers the price and makes it more likely a stock will belong to the “small” or “value” category, which is likely to be underpriced relative to its fundamentals. When the negative shock disappears, these value stocks have higher returns.

CONCLUSION

Historical research shows that investors can achieve higher long-term returns without taking on increased risk by focusing on the factors relating to the size and valuation of companies. Dividend yield has been one such factor and the price-to-earnings ratio has been another. Over time, portfolios of stocks with higher dividend yields and lower P-E ratios have outperformed the market more than would be predicted by the efficient markets hypothesis or the capital asset pricing model.

Nevertheless, investors should be aware that there is no strategy that will outperform the market all the time. Small stocks exhibit periodic surges that have enabled their long-term performance to beat that of large stocks, but most of the time their performance has fallen behind large stocks. Furthermore, value stocks have tended to do very well in bear markets, but often underperform growth stocks in the latter stages of bull markets. This means that investors must exercise patience if they decide to pursue these return-enhancing strategies.

²⁹ See Jeremy Siegel, “The Noisy Market Hypothesis,” *Wall Street Journal*, June 14, 2006.

³⁰ See Robert Arnott, Jason Hsu, Jun Liu, and Harry Markowitz, “Does Noise Create the Size and Value Effects?” unpublished manuscript, September 2006.

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CHAPTER

GLOBAL INVESTING AND THE RISE OF CHINA, INDIA, AND THE EMERGING MARKETS

Today let's talk about a growth industry. Because investing world-wide is a growth industry. The great growth industry is international portfolio investing.

JOHN TEMPLETON, 1984¹

Chapter 1 demonstrated that the superior long-term returns of stocks were not unique to the United States. Investors in many other countries have accumulated substantial wealth in equities. Until the late 1980s, however, foreign markets were almost exclusively the domains of native investors and were considered too remote or risky to be entertained by outsiders.

But no longer. The *globalization* of financial markets is not just a prediction for the future; it is a fact right now. The United States, once the unchallenged giant of capital markets, is today only one of many coun-

¹ Transcript of address delivered to the Annual Conference of the Financial Analysts Federation, May 2, 1984.

tries in which investors can accumulate wealth. At the end of World War II, U.S. stocks comprised almost 90 percent of the world's equity capitalization; in 1970, they still comprised two-thirds. But today, the U.S. market constitutes considerably less than half of the world's stock value, and that fraction is shrinking. To invest only in the United States is to ignore the majority of the world's equity capital.

THE WORLD'S POPULATION, PRODUCTION, AND EQUITY CAPITAL

Despite the growth abroad, the equity markets are still heavily represented by the developed countries in the world.² The lopsidedness of the world economy is illustrated in Figures 10-1a through 10-1c. The developed world contains less than 15 percent of the world's population. Yet it produces over 50 percent of the world's goods and headquarters over 93 percent of the world's equity capital.³

² North America (the United States and Canada); Western Europe; Japan; Australia and New Zealand; Singapore, South Korea, and Taiwan; and Hong Kong.

³ The equity capital is based on the free float shares, and for China only those shares issued in Hong Kong.

FIGURE 10-1a

The 2005 World Population

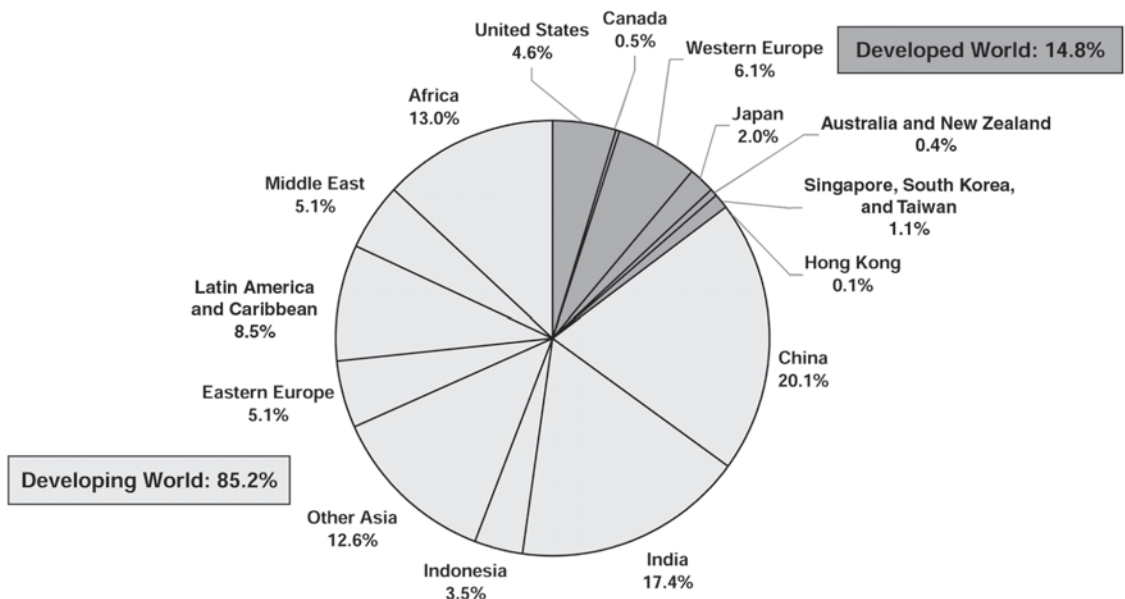


FIGURE 10-1b

The 2006 World GDP

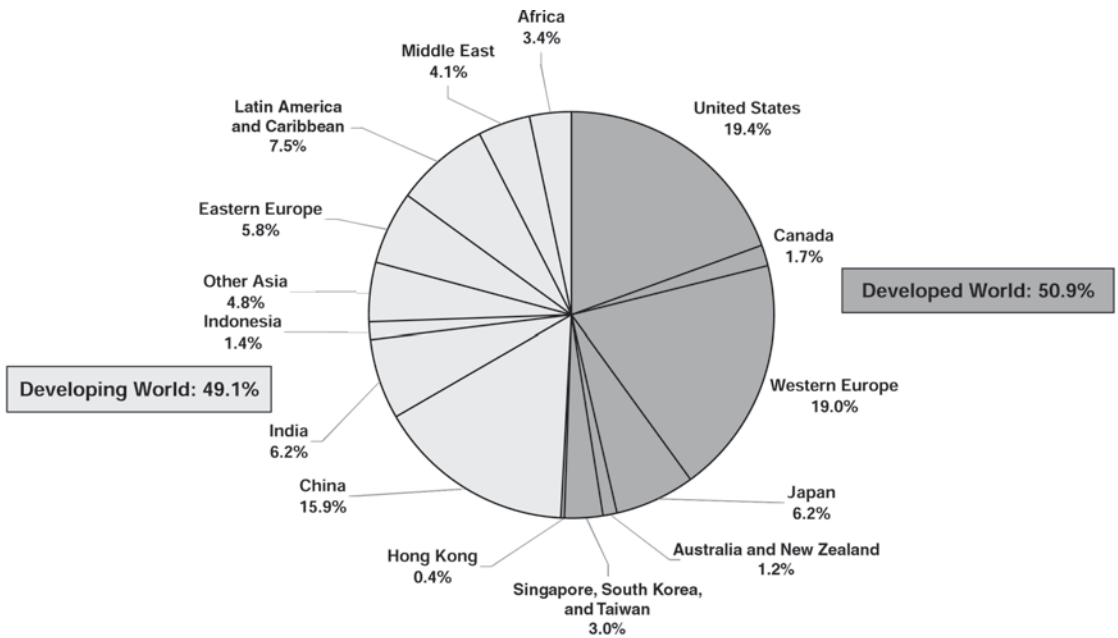
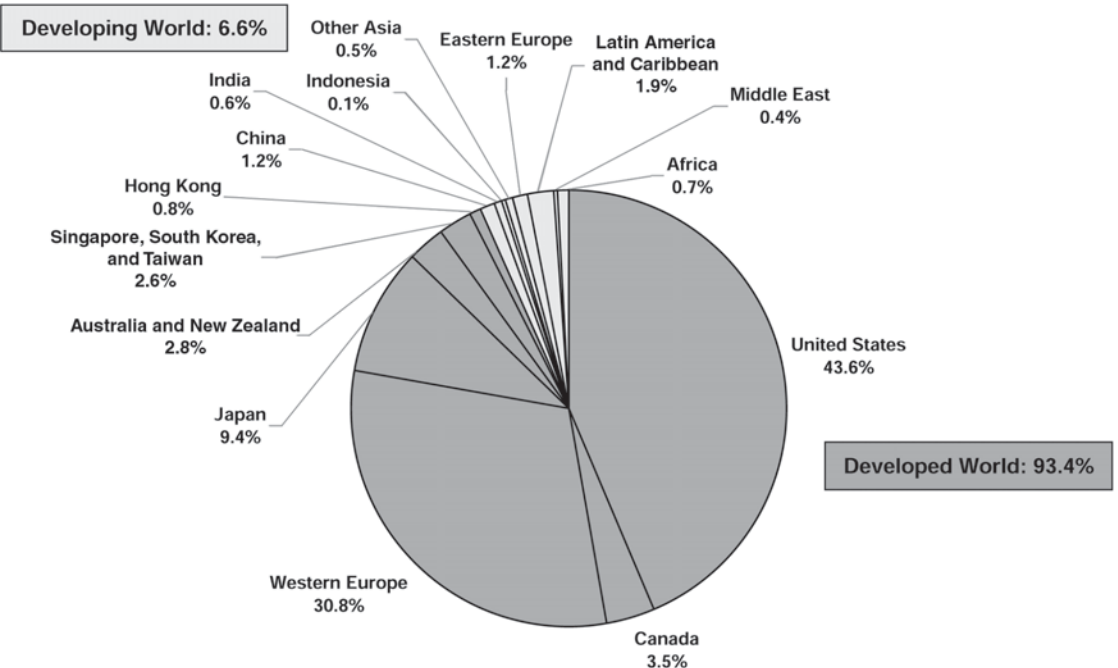


FIGURE 10-1c

The 2007 World Equity



But this very unequal distribution of output and capital will not last. The emerging nations' share of output and equity capital has been rising rapidly and will continue to do so. As we shall see, the forces unleashed by the communications revolution and market capitalism will push countries such as China and India to the forefront of the world economy.

Nevertheless, investors should not become too enchanted with economic growth. We learned in Chapter 8 that growth does not guarantee good returns. A look at history shows that there have been many times when investor hopes of superior returns were dashed by subsequent events.

CYCLES IN FOREIGN MARKETS

In the past, strong U.S. markets were often coupled with weak foreign markets and vice versa. In the 1970s and 1980s, U.S. stock returns lagged behind both Europe and Japan, then surged to the head of the pack in the 1990s, only to lag behind again this decade, as shown in Table 10-1.

TABLE 10-1

Compound Annual Dollar Returns in World Stock Markets, 1970 through December 2006 (Standard Deviations in Parentheses)

Country or Region	1970-2006	1970-1979	1980-1989	1990-1999	2000-2006
World*	10.81% (17.07)	6.96% (18.09)	19.92% (14.59)	11.96% (13.94)	4.65% (20.76)
EAFE†	11.57% (21.93)	10.09% (22.77)	22.77% (23.28)	7.33% (16.93)	7.08% (23.85)
USA	10.84% (17.10)	4.61% (19.01)	17.13% (12.52)	19.01% (14.39)	2.45% (18.35)
Europe	12.27% (20.95)	8.57% (20.97)	18.49% (25.89)	14.50% (12.71)	7.34% (24.33)
Japan	11.47% (34.69)	17.37% (45.41)	28.66% (28.57)	-0.69% (28.90)	4.28% (25.71)

*World = Morgan Stanley Capital International (MSCI) Value-Weighted World Index.

†EAFE is the MSCI index for Europe, Australasia, and the Far East.

These differences in returns emphasize the importance of maintaining a well-diversified world portfolio.

The Japanese Market Bubble

The 1980 bull market in Japan stands as one of the most remarkable bubbles in world stock market history. In the 1970s and 1980s, Japanese stock returns averaged more than 10 percentage points per year above U.S. returns and surpassed those from every other country. The bull market in Japan was so dramatic that by the end of 1989, for the first time since the early 1900s, the market value of the American stock market was no longer the world's largest. Japan, a country whose economic base was totally destroyed in World War II and had only half the population and 4 percent of the land mass of the United States, became the home to the world's most highly valued stock market.

The superior returns in the Japanese market attracted billions of dollars of foreign investment. By the end of the 1980s, valuations on many Japanese stocks reached stratospheric levels. Nippon Telephone and Telegraph, or NTT, the Japanese version of America's former telephone monopoly AT&T, was priced at a P-E ratio above 300. This company alone had a market valuation of hundreds of billions of dollars, dwarfing the aggregate stock values of all but a handful of countries. Valuations reached and in some cases exceeded those attained in the great technology bubble of 2000 and were far above anything known in the U.S. or European markets.

During his travels to Japan in 1987, Leo Melamed, president of the Chicago Mercantile Exchange, asked his hosts how such remarkably high valuations could be warranted. "You don't understand," they responded. "We've moved to an entirely new way of valuing stocks here in Japan." And that is when Melamed knew Japanese stocks were doomed, for it is when investors cast aside the lessons of history that those lessons come back to haunt them.⁴

The Nikkei Dow Jones, which had surpassed 39,000 in December 1989, fell to nearly 14,000 by August 1992 and below 8,000 in 2002—a decline worse than any experienced by the U.S. or European stock markets since the great 1929 to 1932 crash. The shares of NTT fell from 3.2 million yen to under 500,000. The mystique of the Japanese market was broken.

⁴ Martin Mayer, *Markets*, New York: Norton, 1988, p. 60.

The Emerging Market Bubble

The collapse of the Japanese market shifted the emphasis of global enthusiasts to *emerging markets*—markets in developing countries. Investors had already witnessed the stock booms of Taiwan, South Korea, and Thailand. Now India, Indonesia, and even China were set to join the club.

And Asian countries were not the only markets put into play. Latin America, long a backwater of authoritarian, anti-free-market regimes (of both the right and left) had turned full circle and aggressively sought foreign investment. Equity gains were impressive in such countries as Argentina, Brazil, and Mexico.

Even China, the last major country ruled by communist leaders, developed stock markets. The opening of the first Chinese stock market in Shenzhen in 1998 was met with a riot as thousands stood days in lines waiting to be allocated shares in firms in the world's most populated country. And who would have imagined that investors in Hong Kong would beat those in the United States during the last decade, despite the fact that the island nation was handed over to communist China, once the sworn enemy of capitalism?

The term *emerging markets* evokes the image of a beautiful butterfly rising from its chrysalis, ready to soar to the heavens. But a more accurate name might have been "submerging markets." The enthusiasm that greeted these markets far exceeded their performance. Just as birds eat most butterflies soon after they take wing, the bears devoured many of these newly emerging markets soon after investors rushed in.

The year 1997 marked the beginning of the worst collapse in the history of emerging markets. The emergent Asian economies, idolized by many investors who had sent their shares skyward, saw their currencies and equity prices plummet. In 1998, the bearish contagion spread beyond the Pacific Basin to Latin America, Eastern Europe, and Russia.

In that two-year period, virtually no emerging market was safe. Most, if not all, of the countries' stock markets fell by at least 50 percent in dollar terms, and many fell much more. Measured in U.S. dollars, the Indonesian, Thai, and Russian markets fell more than 90 percent, and those in the Philippines and South Korea fell more than 80 percent. Even stocks in the strongest and most advanced of these developing countries, Singapore and Hong Kong, fell 70 percent.

The collapse of these economies dimmed investors' enthusiasm for foreign investing. But troubles were also brewing for U.S. investors seeking gains in the developed markets. As the U.S. stock market and the U.S. dollar soared, the dollar returns in European and Japanese markets fell behind the United States. The advantage that U.S. investors had gained through many years of investing abroad vanished, leaving many questioning the wisdom of international investing.

The New Millennium and the Technology Bubble

The last three years of the twentieth century, marked by the emergence of a huge technology bubble, saw strong gains in all of the world stock markets, with the European and American markets surging to all-time highs. But this was not to last.

A few months into the new millennium, the technology bubble burst and stocks fell into a severe bear market. All of the developed countries' markets fell by at least 50 percent: from March 2000 through October 2002, the U.S. market fell by one-half, matching its record post-Depression decline in the ferocious 1972 to 1974 bear market, while European and Japanese markets, which suffered declines of 60 and 63 percent, respectively, bottomed in March 2003—five months after the U.S. market bottomed and just prior to the U.S.-led invasion of Iraq.

As the world economy recovered from the 9/11 terrorist attacks and the recession, stocks in the United States and Europe pushed upward, and by 2007 they hit new all-time highs. But the dollar changed direction sharply. After appreciating strongly from 1995 through 2001, the greenback sank precipitously, falling by one-third of its value through the end of 2004. As a result, dollar-based investors saw their international stocks far outperform their domestic holdings in a reversal of the pattern set in the previous decade.

Emerging stock markets, which usually fare far worse than developed markets in downturns, held up surprisingly well in the 2000 to 2002 bear market, a good portent for future performance. Indeed, when the world economy had recovered, emerging markets soared once again, surpassing their highs of a decade earlier.

What have these market cycles taught us about international stocks? No single market is always dominant, and the globalization of the world markets affords investors more opportunities for spreading their risk than are available in the domestic markets.

DIVERSIFICATION IN WORLD MARKETS

Principles of Diversification

It might surprise investors that the principal motivation for investing in foreign stocks is not that foreign countries are growing faster and therefore will provide investors with better returns. We learned in Chapter 8 that faster growth in no way guarantees superior returns.

Rather, the reason for investing internationally is to diversify your portfolio and reduce risk.⁵ Foreign investing provides diversification in the same way that investing in different sectors of the domestic economy provides diversification. It would not be good investment policy to pin your hopes on just one stock or one sector of the economy. Similarly it is not a good policy to buy the stocks only in your own country, especially when developed economies are becoming an ever smaller part of the world's market.

International diversification reduces risk because the stock prices of one country often rise at the same time those of another country fall, and this asynchronous movement of returns dampens the volatility of the portfolio. However, in recent years, world markets have moved more in sync with each other, particularly in the short run, which I will discuss later in this chapter.

An asset with a low correlation with the rest of the market provides better diversification than an asset with a high correlation. The correlation of returns between stocks or portfolios of stocks is measured by the *correlation coefficient*. A good case for investors is if there is no correlation between the stock returns of two countries, and the correlation coefficient is equal to zero. In this case, an investor who allocates his or her portfolio equally between each country can reduce his or her risk by almost one-third, compared to investing in a single country. As the correlation coefficient increases, the gains from diversification dwindle, and if there is perfect synchronization of returns, the correlation coefficient equals 1 and there is no gain (but no loss) from diversification.

“Efficient” Portfolios: Formal Analysis

How do you determine how much should be invested at home and abroad? As the above analysis suggests, the amount invested in each country can be derived from one's assessment of the expected risk and

⁵ Risk here is defined as the standard deviation of the returns on the portfolio.

expected return in each country and the expected correlation between returns of the U.S. market and these emerging countries. One way of estimating these expected returns, risks, and correlations is by analyzing the historical return data. Once these expectations have been determined, the “best” or most “efficient” risk-return portfolio can be determined by mathematical techniques of formal portfolio analysis.

The historical risks and returns for U.S. and foreign markets are shown in Table 10-2. One can see that from 1970 through 2006, the dollar returns on Morgan Stanley’s EAFE Index, an index of the developed world stocks,⁶ actually surpassed that of the United States, offering dollar-based investors compound annual returns of 11.57 versus 10.84 percent in U.S. stocks.

Although the return was higher in foreign stocks, the risk was also higher. The risk of these returns to dollar investors in foreign markets is composed of two sources: fluctuations in foreign stock markets themselves, called *local risk*, and fluctuations in the exchange rate that translates foreign returns back to dollars, or *exchange-rate risk*.

It is very important to note that the total risk of holding foreign equities is substantially less than the sum of the local and exchange-rate

⁶ The countries in the EAFE portfolio are Australia, Austria, Belgium, Denmark, Finland, France, Germany, Greece, Hong Kong, Ireland, Italy, Japan, the Netherlands, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, and the United Kingdom.

TABLE 10-2

Dollar Returns and Risks in Stocks, January 1970 through December 2006

Country or Region	U.S. \$ Returns		Domestic Risk	Exchange Risk	Total Risk	Correlation Coefficient*
	Compound	Arithmetic				
World	10.81%	12.17%	16.57%	5.07%	17.07%	84.27%
EAFE	11.57%	13.64%	19.30%	10.25%	21.93%	57.42%
USA	10.84%	12.21%	17.10%	—	17.10%	100.00%
Europe	12.27%	14.10%	20.18%	11.27%	20.95%	70.57%
Japan	11.47%	16.05%	28.34%	12.71%	34.69%	29.90%

*Correlation between U.S. dollar returns and foreign market U.S. dollar returns.

risks. This is because these variables are not perfectly correlated, so movements in the exchange rate and the local stock market frequently offset each other.

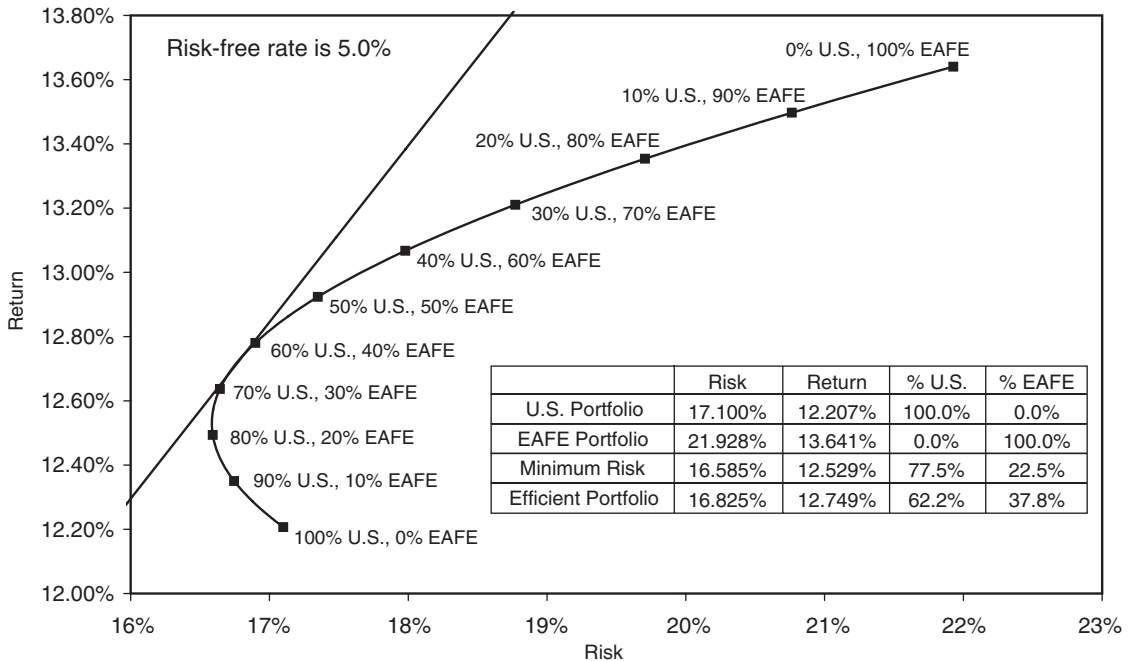
The standard deviation of dollar returns in foreign markets is nearly 22 percent, about 5 percentage points higher than found in the U.S. market. The historical correlation between the annual returns in U.S. and non-U.S. markets has been about 57 percent, which means that 57 percent of the variation in non-U.S. markets is also seen in U.S. stock returns.

Using these historical data allows us to construct Figure 10-2, which shows the risk-return trade-off (called the *efficient frontier*) for dollar-based investors depending on varying the proportions that are invested in foreign markets (measured by the EAFE Index) and U.S. markets. The minimum risk for this world portfolio occurs when 22.5 percent is allocated to EAFE stocks and thus 77.5 percent to U.S. stocks.

But the “best” risk-return portfolio, called the *efficient portfolio*, is not the one with the lowest risk but the one that optimally balances risk and return. This “best” portfolio is found at a much higher 37.8 percent foreign stock allocation.⁷ For comparison, in July 2007 the EAFE stocks

FIGURE 10-2

Portfolio Allocation between U.S. and EAFE Stocks



represented about 57 percent, and the U.S. stocks represented 43 percent of this world portfolio based on market values.

The estimation of the best combination of U.S. and foreign stocks is very dependent on the risk and return assumptions. For example, if foreign exchange risk is ignored, as might be justified for an investor or institution that buys goods in many different countries, so that translation back to dollars is not necessary, the optimal foreign portfolio rises to 52.6 percent, just slightly short of the 2007 market value weight.

The impact of changes in the risk and return assumptions on the allocation between U.S. and foreign stocks is shown in Table 10-3. For every increase of 100 basis points in U.S. expected returns—or fall in expected returns in the EAFE Index—there is about an 11.1 percentage point rise in the allocation to U.S. stocks. For every percentage point increase in the expected risk of U.S. returns or decrease in the expected risk of EAFE returns, the U.S. allocation falls 6.5 percentage points. And a 0.10 increase in the correlation coefficient between EAFE and U.S. returns will lower the EAFE allocation by just over 2 percentage points.⁸

⁷ Readers who wish to understand risk-return analysis can go to Richard A. Brealey, Stewart C. Myers, and Franklin Allen, *Principles of Corporate Finance*, 8th ed., New York: McGraw-Hill, 2006.

⁸ The impact of a change in the correlation coefficient is highly nonlinear. If the correlation rises to 0.77, the U.S. allocation will rise over 6 percentage points; if it rises to 0.87, the U.S. share will rise by over 17 percentage points.

TABLE 10-3

Efficient Portfolio for Varying Assumptions

	U.S. Share	EAFE Share	Shift to (+) from (-) US
Historical Data*	62.20%	37.80%	-
Add 100 bps to US Return	73.30%	26.70%	+11.10%
Add 100 bps to EAFE Return	52.30%	47.70%	-9.90%
Add 100 bps to US Risk	55.70%	44.30%	-6.50%
Add 100 bps to EAFE Risk	67.10%	32.90%	+4.90%
Add 10% to Corr. Coefficient	64.50%	35.50%	+2.30%

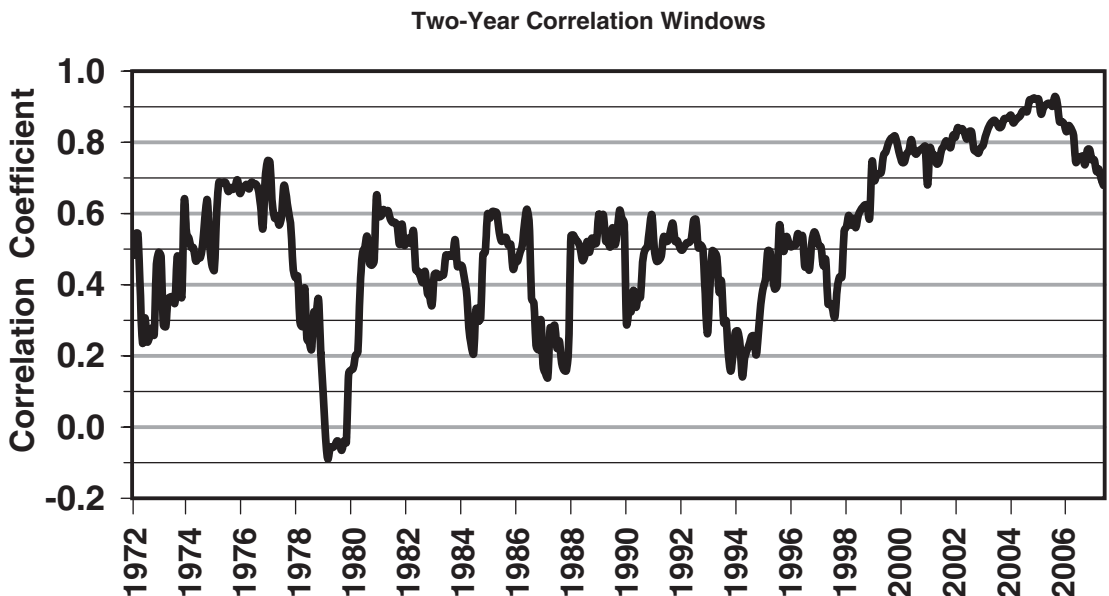
*U.S. Return = 12.21%, U.S. Risk = 17.10%, EAFE Return = 13.64%,
EAFE Risk = 21.93%, Correlation = 57.42%

This last result is of particular note. Using historical data, an increase in correlation between U.S. and EAFE returns lowers the attractiveness of foreign investing. And there is evidence that the short-run correlations between U.S. and foreign markets have been increasing. A two-year moving average of the correlation coefficient between the United States and the EAFE is shown in Figure 10-3. The correlation rose dramatically in the early 2000s, and it has dropped a bit since. Critics of foreign investing often cite high correlations as a reason to keep foreign stock exposure low.

But this is not necessarily so. The impact of increased correlation on the allocation can be reversed with only a slight change in assumptions. If EAFE returns are expected to be only 60 basis points higher than their historical average, or the expected risk of foreign stocks slightly lower, then an increased correlation will actually *raise* your foreign allocation. This occurs because under these altered assumptions, investors would be receiving a better risk-return trade-off in foreign stocks than they receive in U.S. stocks. Hence, the more correlated foreign and U.S. markets, the less attractive U.S. stocks are.

FIGURE 10-3

The Correlation between U.S. and EAFE Stock Returns



Should You Hedge Foreign Exchange Risk?

Since foreign exchange risk does add to the dollar risk of holding foreign securities, it could be desirable for an investor in foreign markets to hedge against currency movements. *Currency hedging* means entering into a currency contract that offsets unexpected changes in the price of foreign currency relative to the dollar.

Although currency hedging seems like an attractive way to offset exchange risk, in the long run it is often unnecessary and could be detrimental. This is because the cost of hedging depends on the difference between the interest rate in the foreign country and the domestic country, and that could be high.

For example, the British pound depreciated from \$4.80 to about \$2.00 over the past century. But since British interest rates were, on average, substantially higher than interest rates in the United States, the cost of hedging exceeded the depreciation in the pound. Thus investors' dollar returns were higher if they owned British stocks without hedging them than their dollar returns if they owned British stocks and paid to hedge them.

Furthermore, for investors with long-term horizons, hedging currency risk in foreign stock markets is not important. In fact, there is some evidence that in the long run, currency hedges might actually increase the volatility of dollar returns.⁹ In the long run, exchange-rate movements are determined primarily by differences in inflation between countries, a phenomenon called *purchasing power parity*. Since equities are claims on real assets, their long-term returns have compensated investors for changes in inflation and thus protected investors from exchange-rate risk. Therefore, it is not worth the cost for long-term stock investors to hedge their currency risk.

Sector Diversification

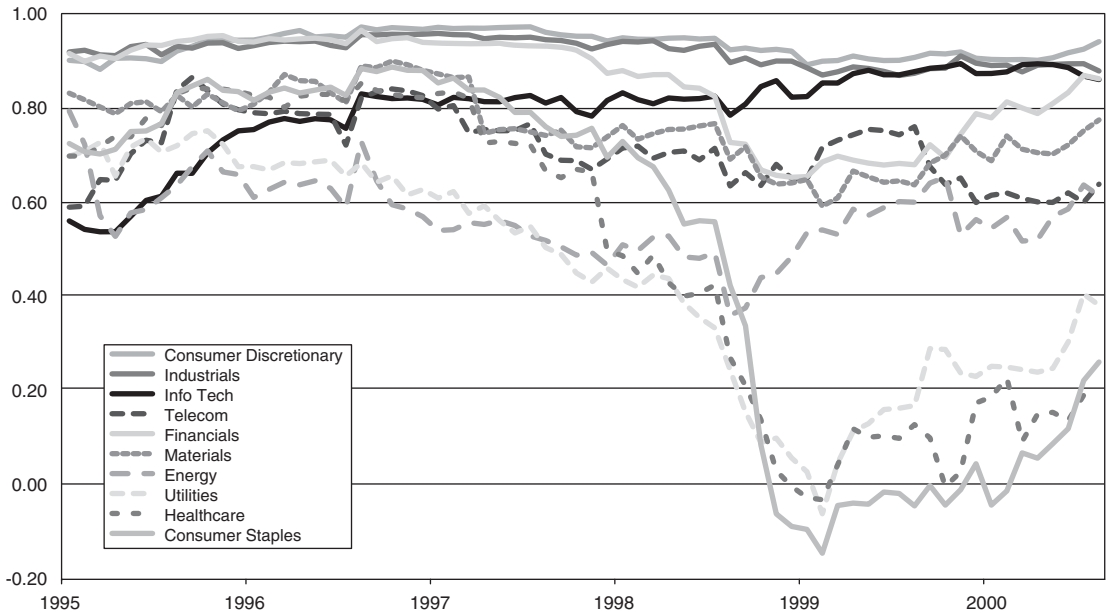
Although the returns between foreign and U.S. stocks might be increasingly correlated, the returns between international industrial sectors are not becoming more correlated. The trends in correlations between the major world industry sectors as classified by the Morgan Stanley Capital Market Indexes are shown in Figure 10-4.

Sector correlation sunk rapidly in the late 1990s and reached a low point in 2000 when the technology stocks soared while other sectors fell

⁹ See Kenneth A. Froot, "Currency Hedging over Long Horizons," National Bureau of Economic Research (NBER) Working Paper No. 4355, Cambridge, Mass.: NBER, May 1993.

FIGURE 10-4

Correlations of International Sectors and World Stock Returns



in price. But even after the tech bubble popped, sector correlations were lower than before. One reason for the decreased correlation between sectors is the moderation of the business cycle, which means that shifts in sector demands, rather than changes in the overall economy, become the primary sources of changes in firm profitability. What does it mean that sector returns are not as correlated as in the past?

I believe that a sector approach to international investing may supplant a country approach in coming years. It is true that government regulations and legal structures will still matter, even when most of the firm's sales, earnings, and production come from abroad. But these home-country influences will very likely diminish as globalization advances. In fact, I envision a future of *international incorporations*, where firms choose to be governed by a set of international rules agreed upon among nations. This will be similar to the growing popularity of the accounting standards adopted by the International Accounting Standards Board (IASB) over country-based standards. If international incorporation gained prominence, there would be no meaning to "headquartered country," and investment allocations would have to be made on the

basis of global sectors, or by regions of production and distribution. In that case, a U.S.-only portfolio would be very narrow indeed.

Sector Allocation around the World

Let's take a closer look at the importance of these industrial sectors by region and by country. The 10 Global International Classification (GIC) industrial sectors in five geographic regions (United States, EAFE, Europe, Japan, and the emerging markets)¹⁰ are shown in Table 10-4, by the respective weight of each industrial sector. The 20 largest firms by market value headquartered in and outside the United States are shown in Table 10-5.¹¹

The financial sector is the largest sector in *every* region of the world. This demonstrates how commercial and investment banks, insurance companies, and brokerages are critical to economic growth. The largest share of the financial market value sector is found in Europe, belonging to companies such as HSBC, UBS, and the Royal Bank of Scotland. The partial privatization of the Bank of China, the Industrial and Commercial Bank, and the China Construction Bank have also made this sector the largest in the emerging markets. In the United States, the largest financial firms are Citigroup, Bank of America, and AIG.

¹⁰ The United States is represented by the S&P 500 Index, and the non-U.S.-developed regions are represented by the EAFE Index (described in footnote 6), Europe (iShares S&P Europe 350, symbol IEU), and the emerging market (iShares MSCI Emerging Markets Index, symbol EEM).

¹¹ The chapter appendix gives a brief discussion of the 10 largest non-U.S.-based stocks, ranked by market capitalization. All these are ranked by total market value, including all government holdings.

TABLE 10-4

Sector Allocation in World Regions

	S&P 500	EAFE	Europe	Japan	Emerging Markets
Consumer Discretionary	10.2%	12.0%	9.0%	20.0%	4.3%
Consumer Staples	9.4%	7.9%	9.2%	4.5%	3.8%
Energy	10.6%	7.2%	9.9%	1.1%	15.2%
Financials	21.3%	29.2%	31.1%	20.7%	21.1%
Healthcare	11.8%	6.4%	7.4%	5.5%	2.0%
Industrials	11.3%	12.0%	8.4%	18.4%	4.8%
Information Technology	15.2%	5.3%	3.5%	12.7%	16.2%
Materials	3.1%	9.4%	8.2%	9.8%	15.3%
Telecommunication Services	3.8%	5.3%	6.4%	3.0%	12.5%
Utilities	3.5%	5.4%	6.9%	4.3%	4.8%

TABLE 10-5

Top 20 U.S. and Foreign Companies by Total Market Value in June 2007

Rank	American Companies	Sector	Market Cap (Bil. US\$)	Foreign Companies	Sector	Country	Market Cap (Bil. US\$)
1	Exxon Mobil	Energy	505	PetroChina	Energy	China	282
2	General Electric	Industrial	413	Gazprom	Energy	Russia	272
3	Microsoft	Info. Tech.	287	Royal Dutch Shell	Energy	The Netherlands	271
4	Citigroup	Financial	258	BP	Energy	United Kingdom	237
5	AT&T	Telecom	248	China Mobile	Telecom	China	233
6	Bank of America	Financial	220	Toyota	Consumer Disc.	Japan	227
7	Wal-Mart	Consumer Staples	201	Ind. and Comm. Bank of China	Financial	China	226
8	Procter & Gamble	Consumer Staples	199	HSBC	Financial	United Kingdom	218
9	Chevron	Energy	198	Total S.A.	Energy	France	205
10	Johnson & Johnson	Healthcare	185	EDF	Utilities	France	198
11	Pfizer	Healthcare	183	Vodafone	Telecom	United Kingdom	175
12	AIG	Financial	181	China Construction	Financial	China	168
13	Cisco	Info. Tech.	181	Bank of China	Financial	China	160
14	Google	Info. Tech.	172	Roche	Healthcare	Switzerland	159
15	Berkshire Hathaway	Financial	170	Nestle	Consumer Staples	Switzerland	158
16	JPMorgan Chase	Financial	170	ENI	Energy	Italy	156
17	IBM	Info. Tech.	162	GlaxoSmithKline	Healthcare	United Kingdom	152
18	Intel	Info. Tech.	151	Novartis	Healthcare	Switzerland	150
19	Altria	Consumer Staples	150	Petrobras	Energy	Brazil	141
20	ConocoPhillips	Energy	142	Sinopec	Energy	China	136

In the consumer discretionary sector, Japan has by far the highest weight of all geographic regions, primarily because of the presence of Toyota Motors, one of the largest non-U.S.-based corporations in the world. This sector covers companies that produce products that consumers generally buy with discretionary income. Sony Corporation, Honda Motor, and Matsushita Electric Industrial also contribute to this sector. In the United States, the largest firms in the consumer discretionary sector are Comcast, Time Warner, and Home Depot while in Europe DaimlerChrysler is the largest.

The United States has the largest weight in the consumer staples sector, closely followed by Europe. Here the big firms in the United States are Procter & Gamble, Altria, and Wal-Mart, while in Europe the dominant firms are Nestlé, Unilever, and British American Tobacco. The emerging markets have few entries in this sector while Japan has virtually no presence relative to the size of its market.

The energy sector has a large value everywhere but in Japan, which has very little in energy resources. In the United States the integrated oil producers such as Exxon Mobil, Chevron, and ConocoPhillips dominate, while in Europe the largest firms are BP (British Petroleum), Total in France, and ENI in Italy. Energy firms in the emerging markets are dominated by the Chinese PetroChina, the largest foreign firm, and Russian Gazprom, the second largest. Both these firms are only partially privatized.

Healthcare has the largest share of U.S. firms and the smallest share in the emerging markets. In the United States, the largest firms are Pfizer, Johnson & Johnson, and Merck; in Europe, GlaxoSmithKline, AstraZeneca, Roche, and Novartis; while in Japan, Takeda Pharmaceutical is predominant.

The share of industrial firms is largest in Japan and smallest in the emerging markets. Mitsubishi and Mitsui dominate in Japan; Siemens and Deutsche Post in Europe, and General Electric in the United States.

Information technology has the highest share in the emerging markets, but this is almost entirely due to the Asian giants Samsung Electronic from South Korea and Taiwan Semiconductor. If we exclude firms from South Korea and Taiwan, then India has nearly 80 percent of the remaining market value of technology firms with Infosys and Wipro being the largest.

By far the largest sector share for telecommunications firms is found in the emerging markets, due to Chunghwa Telecom of Taiwan, América Móvil, S.A.B. de C.V. of Mexico, and China Mobile. In Europe Vodafone is the largest telecommunications firm, followed by the Spanish Telefonica and Deutsche Telekom. In the United States the largest firms are AT&T and Verizon.

Finally, utility firms have a small share of only 3½ percent in the U.S. market (led by Exelon Corp.), an electric utilities firm, to nearly 7 percent in Europe led by Enel of Italy and Electricité de France, the tenth-largest foreign firm.

Private and Public Capital

Exxon Mobil may be the largest company by market value in the world, and it has the largest reserves of oil and gas (20 billion barrels) of any

private company. But if one includes government-owned companies, this U.S. giant is only the fourteenth largest.¹² Saudi Arabia's Aramco and Iran's NIOC have reserves of about 300 billion barrels! If one were to value these reserves at only \$3.30 a barrel, or 5 percent of the 2007 price, that would make each company worth about \$1 trillion. That shows how much wealth is still owned by governments around the world. In many countries, gas, electric, and water facilities are still owned and operated by government, and in many other industries, governments have a large, if not a controlling, interest.

Even in such privatized countries as the United States, the federal, state, and local governments own trillions of dollars of wealth in such forms as land, natural resources, roads, dams, schools, and parks. There is strong disagreement about how much of this wealth, if any, should be privatized. But there is increasing awareness that privatized firms often do experience efficiency gains. Growth of the world's capital stock will come not only from private entrepreneurs but from the privatization of many government-owned assets.

THE WORLD IN 2050

We began this chapter with a look at the distribution of population, output, and equity capital worldwide. Through most of the twentieth century, the developed world produced most of the world's output and generated an even larger share of its capital.

But this dominance will not last. The success of market-oriented economies in the last century provided a blueprint for the next. Twenty-five years ago, China came around to accept the benefits of a market economy. Fifteen years later, India did the same. The collapse of communism in the former Soviet Union and Eastern Europe has broadened the list even further. And many countries in Latin America, although not all, have adopted the free-market principles that have given Chile the second highest per capita income on the continent.

The Middle East and Africa have most certainly lagged. The Middle East is addicted to oil revenue and sectarian strife, and Africa is slowly emerging from a dark period of misrule and exploitation. But here too there has been some progress: the remarkable growth of Dubai has shown the Arab world that oil need not be the cornerstone of prosperity, and Africa is experiencing increased economic activity. There is

¹² From Steve Forbes, "Fact and Comment," *Forbes*, April 16, 2007, pp. 33–34.

even a freshly minted acronym for this region: MENA, or Middle East and North Africa.

These developments will lead the world to be a very different place by midcentury. By making conservative projections of productivity growth throughout the world and combining these assumptions with the population data compiled by the U.N. Demographic Commission, we can project the distribution of population, GDP, and equity capital by midcentury, as shown in Figures 10-5a, b, and c.¹³

As one can see in Figure 10-5b, the share of economic output in the developed world will shrink dramatically: from more than one-half of the world’s output to about one-quarter by midcentury. The United States’ share will shrink from 19 to 12 percent, Western Europe’s from 19 to 9 percent, and Japan’s from 6 to 2 percent. Well before midcentury,

¹³ Average productivity growth from 2006 through 2050 in the developed world, 2.5 percent ; China and Indonesia, 5.0 percent; India, 5.5 percent; other Asia and Eastern Europe, 4.5 percent; Latin America and Caribbean, 4.0 percent; Middle East and Africa, 3.5 percent. The value of equity was determined by regression analysis of equity markets against the GDP.

FIGURE 10-5a

The 2050 World Population

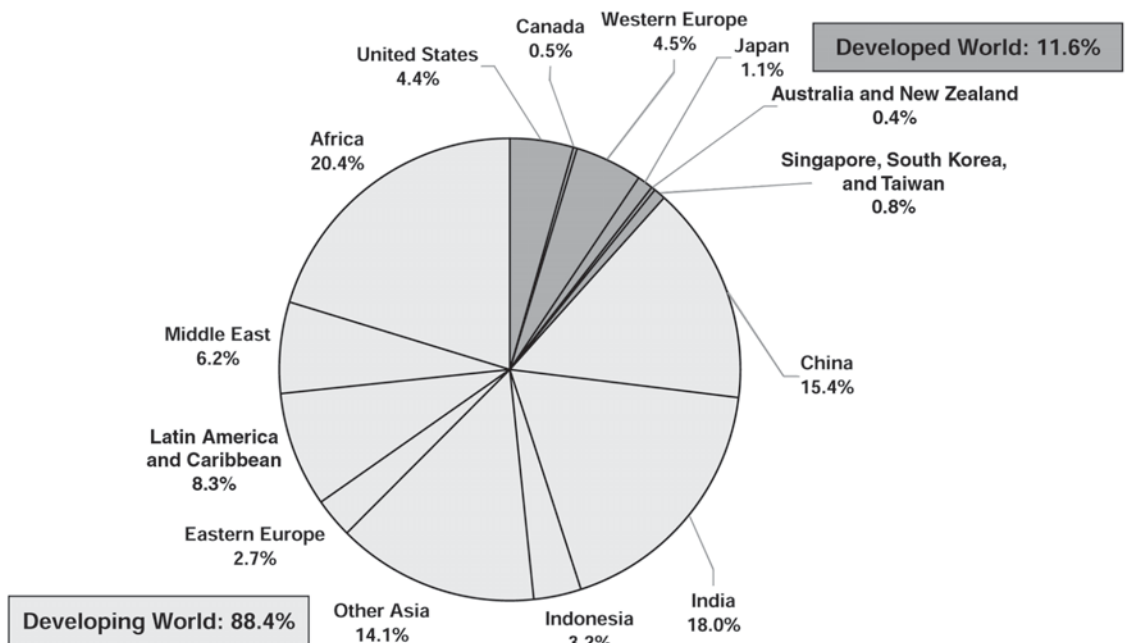


FIGURE 10-5b

The 2050 World GDP

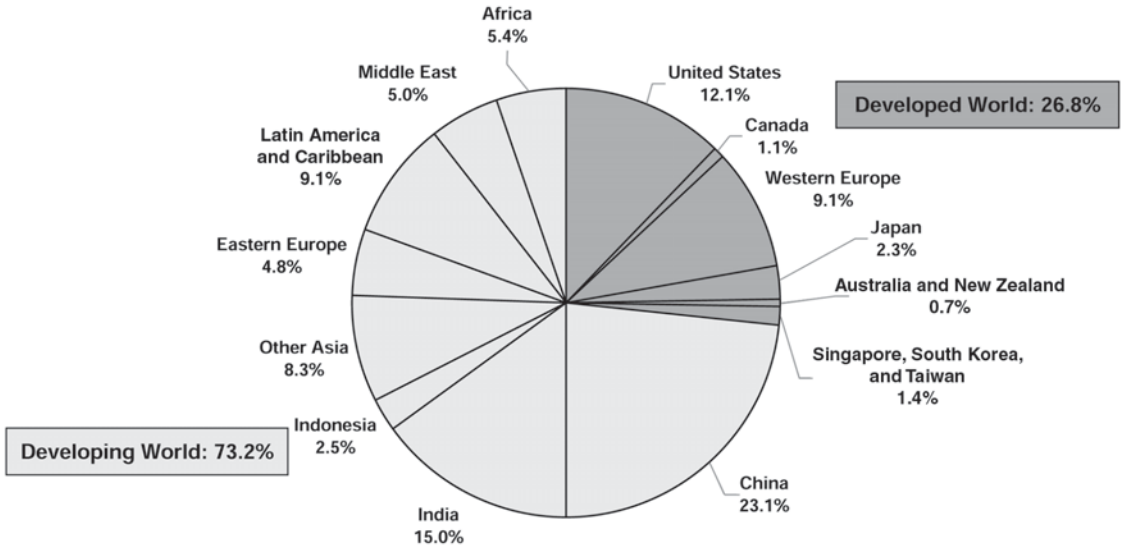
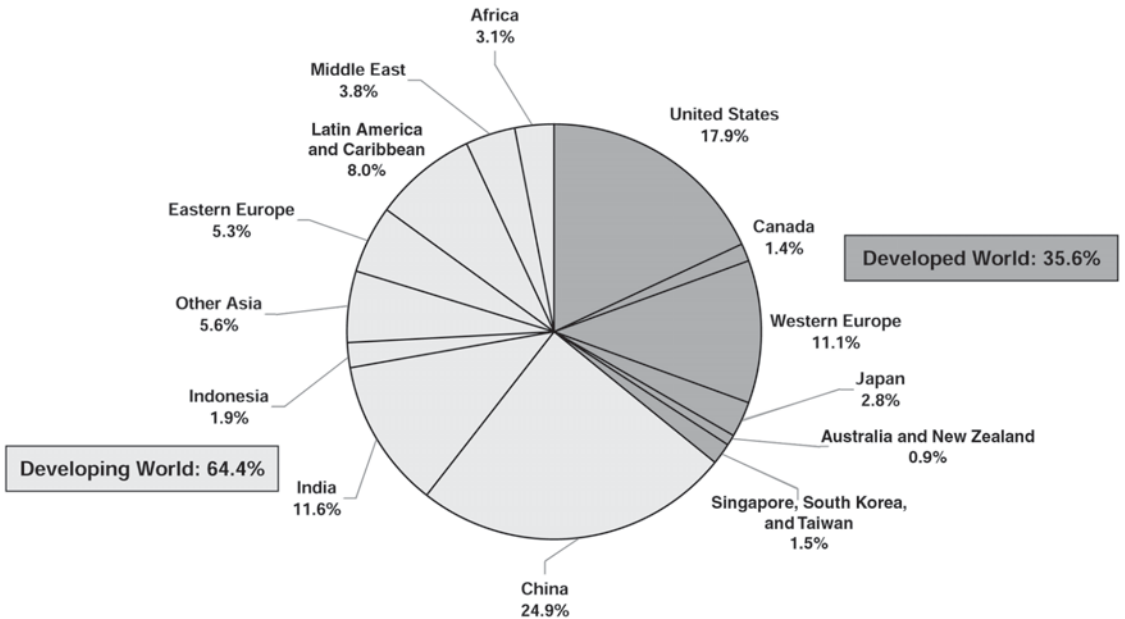


FIGURE 10-5c

The 2050 World Equity



China will become the world's largest economy (projections range from 2025 to 2030), and in 2050, it will command 23 percent of the world's output, equal to the combined production of the United States, Western Europe, and Japan. India will not be far behind with an economic share of 15 percent, and India and China will be producing more than one-third of the world's output.

Although the overall economy of China will eclipse that of the West, this does not mean that the average Chinese worker will be better off than the average European, Japanese, or American. China's population is projected to be about $3\frac{1}{2}$ times that of the United States, and its *per capita income* at about one-half that level. If Chinese productivity growth exceeds expectations and per capita income rises to 60 percent of the U.S. level, China's GDP will increase to over 25 percent of the world total.

The astounding rise of China and India will bring the distribution of output more in line with the distribution of population. It has been estimated by economic historians that in the seventeenth and eighteenth centuries, the combined economies of India and China were about one-third that of the entire world.¹⁴ But for political reasons, both these giants went into eclipse, while the Industrial Revolution began in Europe and was exported to the United States. Now India and China may once again become economic leaders of the twenty-first century.

The radical shift in the distribution of output will also bring about a redistribution of capital. Based on my analysis of the relation between the size of a country's equity markets and its GDP, I was able to project where the world's equity capital will be headquartered at midcentury.

The developed world, which now comprises over 90 percent of the world's total stock market value, will shrink to slightly more than one-third. Not only will large amounts of capital be created abroad but, as noted in the last chapter, Western capital will be sold to the emerging nations in exchange for the goods that aging economies will need.

Investors should be warned that the increase in a country's share of world capital shown from Figure 10-1c to Figure 10-5c does not necessarily represent capital appreciation of existing shares. Rather, most of the increases come from the flotation of new capital as well as the acquisition of old capital. As we learned in the last chapter, economic growth does not guarantee good returns, and in fact, the evidence indicates that investors pay too high a price for stocks in fast-growing countries.

¹⁴ Angus Maddison, *Chinese Economic Performance in the Long Run*, Organisation for Economic and Co-operation Development, Paris: OECD Development Centre, 1998.

CONCLUSION

The inexorable trend toward integration of the world's economies and markets will certainly continue in this new millennium. No country will be able to dominate every market, and industry leaders are apt to emerge from any place on the globe. The globalization of the world economy means that the strength of management, product lines, and marketing will be far more important factors in achieving success than where the firm is domiciled.

Sticking only to U.S. equities is a risky strategy for investors. No advisor would recommend investing only in those stocks whose name begins with the letter A. But sticking only to U.S. equities would be just such a bet since U.S.-based equity will likely shrink to less than 18 percent of the world market by midcentury. And equity in China and India will grow to more than one-third of the world's equity market and be twice the size of the United States. Only those investors who have a fully diversified world portfolio will be able to reap the best returns with the lowest risk.

APPENDIX: THE LARGEST NON-U.S.-BASED COMPANIES

Table 10-5 lists the top 20 U.S. and non-U.S. companies by total market value, based on *all* shares outstanding (not float adjusted, whether partially owned by the government or not).

1. *PetroChina (China)*

PetroChina is a subsidiary of the state-owned China National Petroleum Corporation, and it produces two-thirds of China's oil and gas. The company has 11.5 billion barrels of oil reserves and has interests in over 15,900 gas stations. PetroChina was created in 2000 to manage China's domestic petroleum production. As of October 2007, its market value has soared to \$438 billion, second in the world to Exxon Mobil.

2. *GAO Gazprom (Russia)*

Gazprom, Russia's largest company, is an oil and gas giant that controls 25 percent of the world oil reserves. Its revenues account for 25 percent of the Russian government's tax revenues. Initially a state-owned natural gas monopoly, Gazprom was converted into a joint-stock company in

1993. The state first had a 40 percent share, which was boosted to 51 percent in 2003. Gazprom offered 1 percent of its stock to foreigners in 1996.

3. Royal Dutch Shell (the Netherlands)

The company known today as Royal Dutch Shell was formed from the merger of two global oil conglomerates in 2003—Royal Dutch Petroleum (founded by a Dutchman in 1890) and Shell Transport and Trading (founded by an Englishman in 1897)—that have been in a close relationship for over a century. Royal Dutch has oil and gas operations in over 27 countries, and it sells its products to over 130 companies. Its 2006 sales were over \$320 billion.

4. BP (British Petroleum) (United Kingdom)

Like its competitors Royal Dutch Shell, Exxon Mobil, and ConocoPhillips, today's BP comes from the recent merger in 1993 of two massive oil conglomerates—British Petroleum, founded in 1911, and Amoco, a spin-off of the Standard Oil Trust in 1911. BP is a multinational, earning 29 percent of its revenue from its native United Kingdom, 31 percent from the United States, and 22 percent from Continental Europe. As Britain has very few oil reserves, production is accomplished almost entirely abroad. Its 2006 sales were over \$260 billion.

5. China Mobile (China)

China Mobile serves almost 300 million subscribers in China, and it enjoys a 67 percent market share. It's the world's leading wireless company by subscribers. Like many other modern Chinese corporations, China Mobile was once part of a state-owned monopoly but is now publicly traded. As of October 2007, its total market value soared to \$370 billion.

6. Toyota Motor Corporation (Japan)

The largest foreign company by market value is Toyota Motor, founded in 1926 as Toyoda Loom Works by Sakichi Toyoda. In 1950 the company was reorganized into Toyota Motor Corporation, and in 2008 it will overtake General Motors as the leading automobile manufacturer in the world. Toyota, which has recently expanded into financial services, produces automobiles in 27 different countries, and only 37 percent of its automobiles are produced in Japan.

7. Industrial and Commercial Bank of China (ICBC) (China)

For most of its history, ICBC was the state-owned commercial bank in the People's Republic of China. On October 28, 2005, ICBC was transformed from a state-owned enterprise to a shareholding company, with the Chinese Ministry of Finance and SAFE Investments Limited each holding 124 billion shares. In 2006, ICBC set the record for the largest initial public offering in history, with a \$21.9 billion sale on the Hong Kong and Shanghai exchanges; 83.5 percent of the shares are still government owned.

8. HSBC Holdings (United Kingdom)

HSBC was founded as the Hong Kong and Shanghai Bank by a group of Hong Kong businessmen led by Thomas Sutherland in 1865. In 1955 the Shanghai office was closed, and in 1993 the bank moved its official headquarters to London in anticipation of the Chinese takeover of Hong Kong. HSBC has over 10,000 offices in over 80 countries and assets of over \$1.8 trillion.

9. Total (France)

The French oil company Total began in 1924 as the Compagnie Française des Pétroles (CFP). It created the brand name Total in 1954 and adopted it as the name of the company in 1991. Total is a vertically integrated oil company with reserves in Indonesia, Argentina, Colombia, and the North Sea. The oil company has operations in over 130 companies and earns less than one-quarter of its revenue from France.

10. Electricité de France (EDF) (France)

EDF was formed from the nationalization of private utilities in 1946. The French government sold 15 percent of EDF to the public in 2005, and it deregulated 70 percent of the market. EDF was primarily a hydroelectric producer, but it now operates many nuclear power plants. The company earns 63 percent of its revenues from France and about one-third from other European countries, including the United Kingdom.

PART
3

**HOW THE ECONOMIC
ENVIRONMENT
IMPACTS STOCKS**

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11

CHAPTER

GOLD, MONETARY POLICY, AND INFLATION

In the stock market, as with horse racing, money makes the mare go. Monetary conditions exert an enormous influence on stock prices.

MARTIN ZWEIG, 1990¹

If Fed Chairman Alan Greenspan were to whisper to me what his monetary policy was going to be over the next two years, it wouldn't change one thing I do.

WARREN BUFFETT, 1994²

On September 20, 1931, the British government announced that England was going off the gold standard. It would no longer exchange gold for an account at the Bank of England or for British currency, the pound sterling. The government insisted that this action was only “temporary,” that it had no intention of forever abolishing its commitment to exchange its money for gold. Nevertheless, it was to mark the beginning of

¹ Martin Zweig, *Winning on Wall Street*, updated ed., New York: Warner Books, 1990, p. 43.

² Linda Grant, “Striking Out at Wall Street,” *U.S. News & World Report*, June 30, 1994, p. 59.

the end of both Britain's and the world's gold standard—a standard that had existed for over 200 years.

Fearing chaos in the currency market, the British government ordered the London Stock Exchange closed. New York Stock Exchange officials decided to keep the U.S. exchange open but also braced for panic selling. The suspension of gold payments by Britain, the second-greatest industrial power, raised fears that other industrial countries might be forced to abandon gold. Central bankers called the suspension “a world financial crisis of unprecedented dimensions.”³ For the first time ever, the New York Exchange banned short selling in an effort to shore up stock share prices.

But much to New York's surprise, stocks rallied sharply after a short sinking spell, and many issues ended the day higher. Clearly, British suspension was not seen as negative for American equities.

Nor was this “unprecedented financial crisis” a problem for the British stock market. When England reopened the exchange on September 23, prices soared. The AP wire gave the following colorful description of the reopening of the exchange:

Swarms of stock brokers, laughing and cheering like schoolboys, invaded the Stock Exchange today for the resumption of trading after the two-day compulsory close-down—and their buoyancy was reflected in the prices of many securities.⁴

Despite the dire predictions of government officials, shareholders viewed casting off the gold standard as good for the economy and even better for stocks. As a result of the gold suspension, the British government could expand credit by lending reserves to the banking system, and the fall in the value of the British pound would increase the demand for British exports. The stock market gave a ringing endorsement to the actions that shocked conservative world financiers. In fact, September 1931 marked the low point of the British stock market, while the United States and other countries that stayed on the gold standard continued to sink into depression. The lessons from history: liquidity and easy credit feed the stock market, and the ability of the central banks to provide liquidity at will is a critical plus for stock values.

A year and a half later, the United States joined Britain in abandoning the gold standard, and finally every nation eventually went to a fiat, paper money standard. But despite the new standard's inflationary bias,

³ “World Crisis Seen by Vienna Bankers,” *New York Times*, September 21, 1931, p. 2.

⁴ “British Stocks Rise, Pound Goes Lower,” *New York Times*, September 24, 1931, p. 2.

the world has become comfortable with the new standard and enjoys the flexibility it accords policymakers.

MONEY AND PRICES

In 1950, President Truman startled the nation in his State of the Union address with a prediction that the typical American family income would reach \$12,000 by the year 2000. Considering that median family income was about \$3,300 at the time, \$12,000 seemed like a princely sum and implied that America was going to make unprecedented economic progress in the next half century. In fact, President Truman's prediction has proved quite modest. The median family income in 2000 was \$41,349. However, that sum buys less than \$6,000 in 1950 prices, a testament to the inflation of the last half-century. So instead of the typical family income soaring over 12 times, from \$3,300 to \$41,349 in roughly half a century, real incomes have only doubled, from \$3,300 to \$6,000, because of the inflation bite.

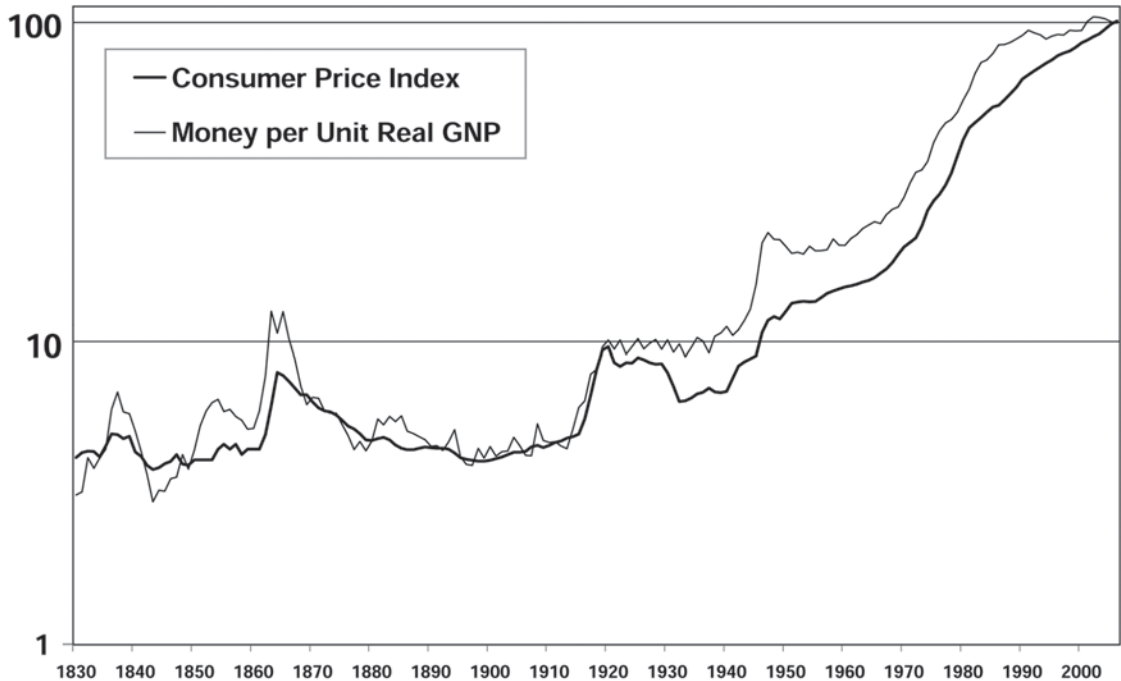
Inflation and deflation, which is defined as falling prices, have characterized economic history as far back as economists have gathered data. However, in the last 60 years there has never been a single year in which the U.S. consumer price index has declined. What has changed over the past half century that makes inflation the rule rather than the exception? The answer is simple: control of the money supply has shifted from gold to the government. With this shift, a whole new system has come into being that connects money, government deficits, and inflation.

The overall price level in the United States and Great Britain over the last 200 years is displayed in Figure 1-3 in Chapter 1. It is striking how similar the general trends are in these two countries: no overall inflation until World War II and then protracted inflation after. Before the Great Depression, inflation occurred only because of war, crop failures, or other crises. But the behavior of prices in the postwar period has been entirely different. The price level has almost never declined: the only question is at what rate will prices rise.

Economists have long known that one variable is paramount in determining the price level: the amount of money in circulation. The robust relation between money and inflation is strongly supported by the evidence. Take a look at Figure 11-1, which displays money and prices in the United States since 1830. The overall trend of the price level has closely tracked that of the money supply normalized for the level of output.

FIGURE 11-1

Money and Price Indexes in the United States, 1830 through December 2006



The strong relation between the money supply and consumer prices is a worldwide phenomenon. No sustained inflation is possible without continuous money creation, and every hyperinflation in history has been associated with an explosion of the money supply. There is overwhelming evidence that countries with high monetary growth experience high inflation, while countries with restrained money growth have low inflation.

Why is the quantity of money so closely connected to the price level? Because the price of money, like any good, is determined by supply and demand. The supply of dollars is printed by the central bank. The demand for dollars is derived from the demand of households and firms transacting billions of dollars of goods and services in a complex economy. If the supply of dollars increases more than the number of goods produced, this leads to inflation. The classic description of the inflationary process—“too many dollars chasing too few goods”—is as apt today as ever.

THE GOLD STANDARD

For the nearly 200 years prior to the Great Depression, most of the industrialized world was on a gold standard. This meant that, for example, the U.S. government was obligated to exchange dollars for a fixed amount of gold. To do this, the U.S. and other governments had to keep gold reserves in sufficient quantity to assure money holders that they would always be able to make good on this exchange. Since the total quantity of gold in the world was fixed—new gold discoveries were relatively small and contributed insignificantly to the world's total gold supply—prices of goods generally remained relatively constant.

The only times the gold standard was suspended was during crises, such as wars. Great Britain suspended the gold standard during both the Napoleonic Wars and World War I, but in both cases it returned to the gold standard with the original parity price. Similarly, the United States temporarily suspended the gold standard during the Civil War, but it returned to the standard after the war ended.⁵

The adherence to the gold standard is the reason why the world experienced no overall inflation during the nineteenth and early twentieth centuries. But overall price stability was not achieved without a cost. By equating the money in circulation to the quantity of gold available, the government essentially relinquished control over monetary conditions. This meant that the central bank was unable to provide additional money during economic or financial crises or when the economy grew in size. In the 1930s, adherence to the gold standard turned from being an exercise in government restraint and responsibility to being a strait-jacket from which the government sought to escape.

THE ESTABLISHMENT OF THE FEDERAL RESERVE

Periodic liquidity crises caused by strict adherence to the gold standard prompted Congress in 1913 to pass the Federal Reserve Act that created the Federal Reserve System (the Fed) to be the country's central bank. The responsibilities of the Fed were to provide an "elastic" currency, which meant that in times of banking crises the Fed would become the lender of last resort. In trying times, the central bank would provide

⁵ When the government issued non-gold-backed money during the Civil War, the notes were called "greenbacks" because the only "backing" was the green ink printed on the notes. Yet just 20 years afterward, the government redeemed each and every one of those notes in gold, completely reversing the inflation of the Civil War period.

currency to enable depositors to withdraw their deposits without forcing banks to liquidate loans and other assets.

In the long run, money creation by the Fed was still constrained by the gold standard since the government's paper currency, or Federal Reserve notes, promised to pay a fixed amount of gold. But in the short run, the Federal Reserve was free to create money as long as it did not threaten the convertibility of Federal Reserve notes to gold at the exchange rate of \$20.67 per ounce. Yet the Fed was never given any guidance by Congress or by the Federal Reserve Act on how to conduct monetary policy and determine the right quantity of money.

THE FALL OF THE GOLD STANDARD

This lack of guidance had disastrous consequences just two decades later. In the wake of the stock crash of 1929, the world economies entered a severe downturn. Falling asset prices and failing businesses made depositors suspicious of banks' assets. When word was received that a few banks were having problems meeting depositors' withdrawals, this started a bank panic.

In an astounding display of institutional ineptitude, the Federal Reserve failed to provide extra reserves in order to stem the banking panic and prevent a crash of the financial system, even though the Fed had the explicit power to do so under the Federal Reserve Act. In addition, those depositors who did receive their money sought even greater safety by turning their notes back to the Treasury in exchange for gold, a process that put extreme pressure on the government's gold reserves. The banking panic soon spread from the United States to Great Britain and Continental Europe.

To prevent a steep loss of gold, Great Britain took the first step and abandoned the gold standard on September 20, 1931, suspending the payment of gold for sterling. Eighteen months later, on April 19, 1933, the United States also suspended the gold standard as the Depression and financial crisis worsened.

The financial markets loved the government's new-found flexibility, and the reaction of the U.S. stock market to gold's overthrow was even more enthusiastic than that in Great Britain. Stocks soared over 9 percent on April 19 and almost 6 percent the next day. This constituted the greatest two-day rally in stock market history. Investors felt the government could now provide the extra liquidity needed to stabilize commodity prices and stimulate the economy, which they regarded as a boon for stocks. Bonds, however, fell, as investors feared the inflationary

consequences of leaving the gold standard. *BusinessWeek*, in a positive editorial on the suspension, asserted:

With one decisive gesture, [President Roosevelt] throws out of the window all the elaborate hocus-pocus of “defending the dollar.” He defies an ancient superstition and takes his stand with the advocates of managed money. . . . The job now is to manage our money effectively, wisely, with self-restraint. It can be done.⁶

POSTDEVALUATION MONETARY POLICY

Ironically, while the right to redeem dollars for gold was denied U.S. citizens, it was soon reinstated for foreign central banks at the devalued rate of \$35 per ounce. As part of the Bretton Woods agreement, which set up the rules of international exchange rates after the close of World War II, the U.S. government promised to exchange all dollars for gold held by foreign central banks at the fixed rate of \$35 per ounce as long as these countries fixed their currency to the dollar.

In the postwar period, as inflation increased and the dollar bought less and less, gold seemed more and more attractive to foreigners. U.S. gold reserves began to dwindle, despite official claims that the United States had no plans to change its gold exchange policy at the fixed price of \$35 per ounce. As late as 1965, President Johnson stated unequivocally in the *Economic Report of the President*:

There can be no question of our capacity and determination to maintain the gold value of the dollar at \$35.00 per ounce. The full resources of the Nation are pledged to that end.⁷

But this was not so. As the gold reserves dwindled, Congress removed the gold-backing requirement for U.S. currency in 1968. In next year’s *Economic Report of the President*, President Johnson declared:

Myths about gold die slowly. But progress can be made—as we have demonstrated. In 1968, the Congress ended the obsolete gold-backing requirement for our currency.⁸

Myths about gold? Obsolete gold-backing requirement? What a turnabout! The government finally admitted that domestic monetary policy would not be subject to the discipline of gold, and the guiding

⁶ “We Start,” *BusinessWeek*, April 26, 1933, p. 32.

⁷ *Economic Report of the President*, Washington, D.C.: Government Printing Office, 1965, p. 7.

⁸ *Economic Report of the President*, Washington, D.C.: Government Printing Office, 1969, p. 16.

principle of international finance and monetary policy for almost two centuries was summarily dismissed as a relic of incorrect thinking.

Despite the removal of gold backing, the United States continued to redeem gold at \$35 an ounce for foreign central banks, although individuals were paying over \$40 in the private markets. Seeing that the end of this exchange option was near, foreign central banks accelerated their exchange of dollars for gold. The United States, which held almost \$30 billion of gold at the end of World War II, was left with \$11 billion by the summer of 1971, and hundreds of millions more were being withdrawn each month.

Something dramatic had to happen. On August 15, 1971, President Nixon, in one of the most extraordinary actions since Roosevelt's 1933 declaration of a Bank Holiday, announced the "New Economic Policy": Freezing wages and prices and closing the "gold window" that was enabling foreigners to exchange U.S. currency for gold. The link of gold to money was permanently—and irrevocably—broken.

Although conservatives were shocked at that action, few investors shed a tear for the gold standard. The stock market responded enthusiastically to Nixon's announcement, which was also coupled with wage and price controls and higher tariffs, by jumping almost 4 percent on record volume. But this should not have surprised those who studied history. Suspensions of the gold standard and devaluations of currencies have witnessed some of the most dramatic stock market rallies in history. Investors agreed that gold was a monetary relic.

POSTGOLD MONETARY POLICY

With the dismantling of the gold standard, there was no longer any constraint on monetary expansion, either in the United States or in foreign countries. The first inflationary oil shock from 1973 to 1974 caught most of the industrialized countries off guard, and all suffered significantly higher inflation as governments vainly attempted to offset falling output by expanding the money supply.

Because of the inflationary policies of the Federal Reserve, the U.S. Congress tried to control monetary expansion by passing a congressional resolution in 1975 that obliged the central bank to announce monetary growth targets. Three years later, Congress passed the Humphrey-Hawkins Act, which forced the Fed to testify on monetary policy before Congress twice annually and establish monetary targets. It was the first time since the passage of the Federal Reserve Act that Congress instructed the central bank to take the control of the stock of

money. To this day, the financial markets closely watch the Fed chairman's biannual testimony, which takes place in February and July.⁹

Unfortunately, the Fed largely ignored the money targets it set in the 1970s. The surge of inflation in 1979 brought increased pressure on the Federal Reserve to change its policy and seriously control inflation. On Saturday, October 6, 1979, Paul Volcker, who had been appointed in April to succeed G. William Miller as chairman of the board of the Federal Reserve System, announced a radical change in the implementation of monetary policy. No longer would the Federal Reserve set interest rates to guide policy. Instead, it would exercise control over the supply of money without regard to interest rate movements. The market knew that this meant sharply higher interest rates.

The prospect of sharply restricted liquidity was a shock to the financial markets. Although Volcker's Saturday night announcement (later referred to as the "Saturday Night Massacre") did not immediately capture the popular headlines—in contrast to the abundant press coverage devoted to Nixon's 1971 New Economic Policy that froze prices and closed the gold window—it roiled the financial markets. Stocks went into a tailspin, falling almost 8 percent on record volume in the 2½ days following the announcement. Stockholders shuddered at the prospect of sharply higher interest rates that would be necessary to tame inflation.

The tight monetary policy of the Volcker years eventually broke the inflationary cycle. European central banks and the Bank of Japan joined the Fed in calling inflation "public enemy number 1," and they consequently geared their monetary policies toward stable prices. Restricting money growth proved to be the only real answer to controlling inflation.

THE FEDERAL RESERVE AND MONEY CREATION

The process by which the Fed changes the money supply and controls credit conditions is straightforward. When the Fed wants to increase the money supply, it buys a government bond in the *open market*—a market where billions of dollars in bonds are transacted every day. What is unique about the Federal Reserve is that when it buys government bonds in what is called an *open market purchase*, it pays for them by crediting the reserve account of the bank of the customer from whom the Fed bought the bond—thereby creating money. A *reserve account* is a deposit

⁹ In 2000, Congress allowed to lapse the Humphrey-Hawkins Act, but legislation still required the Federal Reserve chairman to report biannually to Congress.

a bank maintains at the Federal Reserve to satisfy reserve requirements and facilitate check clearing.

If the Federal Reserve wants to reduce the money supply, it sells government bonds from its portfolio. The buyer of these bonds instructs his or her bank to pay the seller (the Fed) from his or her account. The bank then instructs the Fed to debit the bank's reserve account bank, and that money disappears from circulation. This is called an *open market sale*. The buying and selling of government bonds are called *open market operations*.

HOW THE FED'S ACTIONS AFFECT INTEREST RATES

We have seen that when the Federal Reserve buys and sells government securities, it influences the amount of reserves in the banking system. There is an active market for these reserves among banks, where billions of dollars are bought and sold each day. This market is called the *federal funds market*, and the interest rate at which these funds are borrowed and lent is called the *federal funds rate*.

Although this market is called the "federal funds market," the market is not run by the government, nor does it trade government securities. The fed funds market is a private lending market among banks where rates are dictated by supply and demand. However, the Federal Reserve has powerful influence over the federal funds market. If the Fed buys securities, then the supply of reserves is increased and the interest rate on federal funds goes down because banks then have ample reserves to lend. Conversely, if the Fed sells securities, the supply of reserves is reduced and the federal funds rate goes up because banks scramble for the remaining supply.

Although federal funds are lent overnight so the funds rate is an overnight rate, the interest rate on federal funds forms the anchor to all other short-term interest rates. These include the prime rate, which is the benchmark for most consumer and much commercial lending, as well as short-term Treasury securities. The federal funds rate is the basis of literally trillions of dollars of loans and securities.

Interest rates are an extremely important influence on stock prices because interest rates discount the future cash flows from stocks. Therefore, bonds compete with stocks in investment portfolios. Bonds become more attractive when interest rates rise, so investors sell stocks until the returns on stocks again become attractive relative to the returns on bonds. The opposite occurs when interest rates fall.

Over most of the past 50 years, changes in the fed funds rates have been a very good predictor of future stock prices. This is shown in Table 11-1,

TABLE 11-1

Federal Funds Rates and Subsequent Stock Returns (Number of Changes in Parentheses)

<i>1955-2006</i>	3-month	6-month	9-month	12-month
Increases (116)	1.4%	3.3%	6.0%	7.4%
Decreases (108)	5.0%	9.5%	11.8%	15.3%
Benchmark*	2.9%	5.8%	8.8%	11.8%
<i>1955-1959</i>				
Increases (18)	5.0%	7.0%	10.1%	11.8%
Decreases (8)	6.4%	17.4%	27.8%	36.0%
Benchmark*	3.3%	6.4%	8.9%	11.4%
<i>1960-1969</i>				
Increases (22)	-1.2%	1.2%	1.4%	2.6%
Decreases (17)	3.5%	6.1%	7.4%	8.6%
Benchmark*	2.2%	4.1%	6.2%	8.4%
<i>1970-1979</i>				
Increases (29)	-1.9%	-1.2%	3.7%	4.8%
Decreases (26)	6.5%	11.1%	13.8%	17.7%
Benchmark*	1.9%	4.3%	6.7%	9.3%
<i>1980-1989</i>				
Increases (16)	3.9%	4.2%	9.1%	8.6%
Decreases (23)	6.5%	12.9%	14.9%	21.1%
Benchmark*	4.3%	8.8%	13.0%	16.9%
<i>1990-1999</i>				
Increases (11)	3.3%	8.8%	13.4%	20.2%
Decreases (22)	6.1%	10.6%	14.3%	17.6%
Benchmark*	4.5%	9.0%	13.9%	18.9%
<i>2000-2006</i>				
Increases (20)	2.7%	4.7%	4.1%	4.6%
Decreases (12)	-1.7%	-3.2%	-7.4%	-9.8%
Benchmark*	0.6%	1.0%	1.2%	1.9%

* Average of all time periods in selected sample

which displays the return on the S&P 500 Index from the beginning of the month after the fed funds rate has been changed to a date 3, 6, 9, and 12 months later.

The effects of Fed actions on stock prices are dramatic: following increases in the fed funds rate, the subsequent returns on stocks are significantly less than average; when the fed funds rate is decreased, stock returns are significantly higher than average. Since 1955, the total return on stocks has been 7.5 percent in the 12 months following the 112 increases in the fed funds rate, while it has been 15.3 percent following the 108 times the fed funds rate has been reduced. This compares to an average 12-month return over the period of 11.8 percent. If these results persist in the future, investors could significantly beat a buy-and-hold strategy by increasing their stock holdings when the Fed is easing credit conditions and reducing stocks when the Fed is tightening.

But this may not be the case. Although this strategy has worked well from the 1950s through the 1990s, since 2000, the impact of Fed rate changes on the stock market has been the absolute opposite of the historical record. The market has experienced negative returns following interest rate decreases and positive returns after increases.

This is what has happened. To slow the rate of increasing inflation, the Fed initiated a series of rate hikes in June 1999 that extended through May 2000. But the stock market ignored these increases, and it did not start falling in earnest until September 2001, more than 15 months after the Fed began raising rates. As the economy suddenly slowed, the Fed began easing in January 2001, but the market continued downward and didn't bottom until October 2002. The Fed eased a final 25 basis points (bps) in June 2003, to reach a 50-year low of 1 percent, which it maintained for one year.

The market moved upward strongly in 2003, but in June 2004, as the economy was recovering, the Fed began the first of 17 consecutive ¼-point increases that ended in the summer of 2006. Despite these increases, stocks continued to rise. Buying when the Fed begins to ease and selling when they start to tighten has been a poorly performing strategy over the past decade.

There could be a number of reasons why stocks are not reacting to Fed rate movements as they have in the past. Perhaps investors have become so geared to watching and anticipating Fed policy that the effect of its tightening and easing is already discounted in the market so that the impact of Fed actions extend over a period of a few days rather than over several months. If investors expect the Fed to do the right thing to stabilize the economy, this will be built into stock prices far before the

Fed even begins to take its stabilizing actions. Whatever the reasons, Fed policy actions, at least since 2000, have not evoked the same responses in the equity market as they had in the past.

STOCKS AS HEDGES AGAINST INFLATION

Although the central bank has the power to moderate (but not eliminate) the business cycle, its policy has the greatest influence on inflation. As noted above, the inflation of the 1970s was due to the overexpansion of the money supply, which was an action the central bank took in the vain hope that it could offset the contractionary effect of the OPEC oil supply restrictions. This expansionary monetary policy brought inflation to double-digit levels in most industrialized economies peaking at 13 percent per year in the United States and exceeding 24 percent in the United Kingdom.

In contrast to the returns of fixed-income assets over long periods of time, the historical evidence is convincing that the returns on stocks over the same time periods have kept pace with inflation. Since stocks are claims on the earnings of real assets—assets whose value is intrinsically related to labor and capital—it is reasonable to expect that their long-term returns will not be influenced by inflation. For example, the 60-year period since World War II has been the most inflationary long-term period in our history, yet the real returns on stocks have exceeded that of the previous 150 years. The ability of an asset such as stocks to maintain its purchasing power during periods of inflation makes equities an *inflation hedge*.

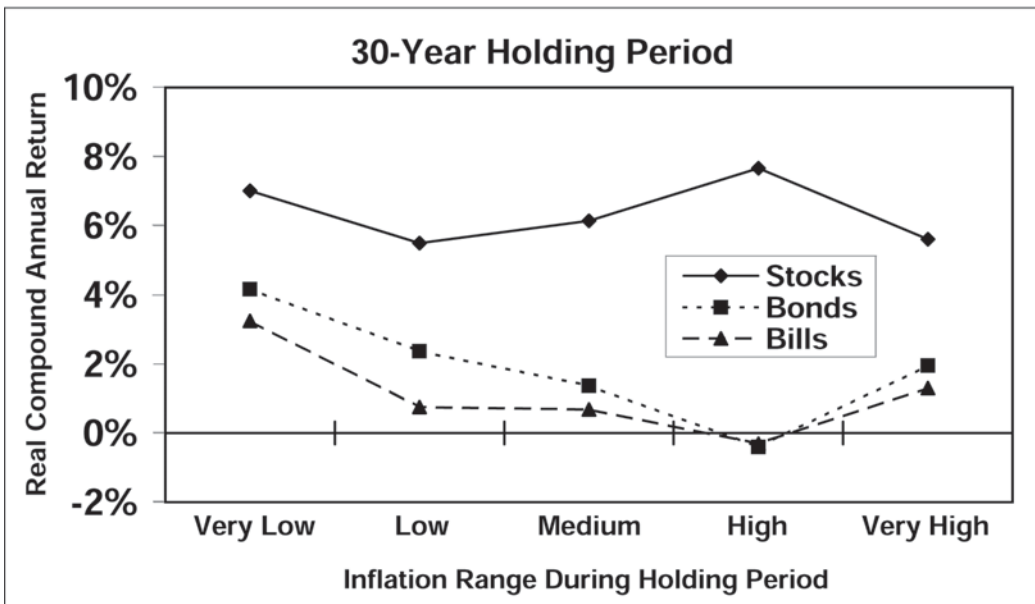
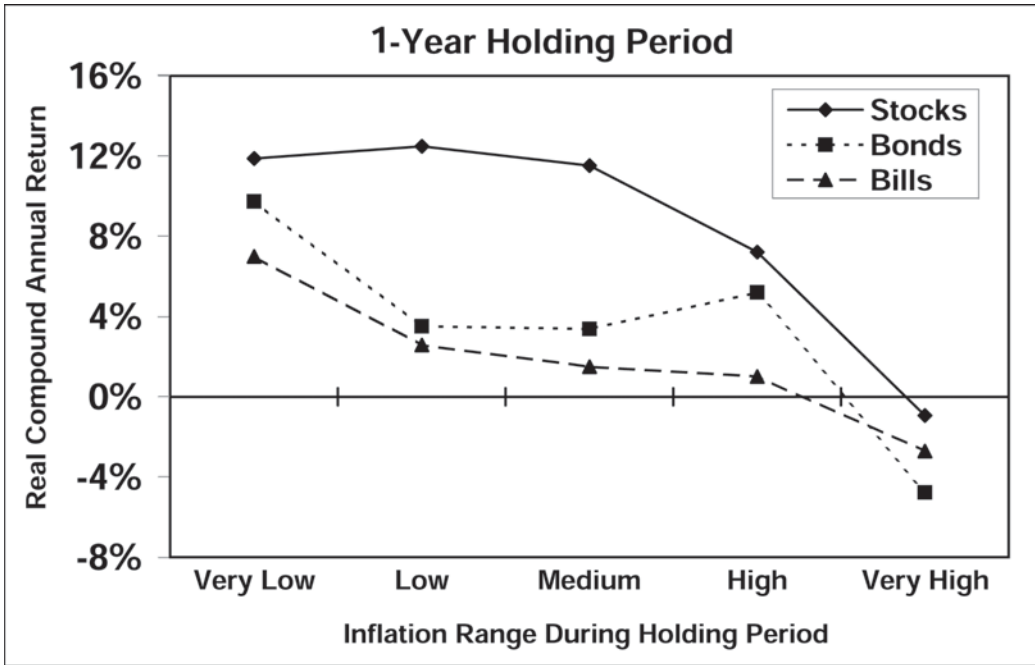
Indeed, stocks were widely praised in the 1950s as hedges against rising consumer prices. As noted in Chapter 7, many investors stayed with stocks, despite seeing the dividend yield on equities fall below the interest rate on long-term bonds for the first time. In the 1970s, however, stocks were ravaged by inflation, and it became unfashionable to view equity as an effective hedge against inflation.

What does the evidence say about the effectiveness of stocks as an inflation hedge? The annual compound returns on stocks, bonds, and Treasury bills against inflation over 1-year and 30-year holding periods from 1871 to 2006 are shown in Figure 11-2.

These figures indicate that neither stocks nor bonds nor bills are good short-term hedges against inflation. Short-term real returns on these financial assets are highest when the inflation rates are low, and their returns fall as inflation increases. But the real returns on stocks are virtually unaffected by the inflation rate over longer horizons. Bonds, on

FIGURE 11-2

Holding-Period Returns and Inflation, 1871 through December 2006



the other hand, have not matched the returns on stocks over any holding period.

This was the principal conclusion of Edgar L. Smith's 1924 book *Common Stocks as Long Term Investments*. He showed that stocks outperform bonds in times of falling as well as rising prices, taking the period after the Civil War up to just before the turn of the century as his test case. Smith's results are robust and have held up to more than 80 years of subsequent data.

WHY STOCKS FAIL AS A SHORT-TERM INFLATION HEDGE

Higher Interest Rates

If stocks represent real assets, why do they fail as a short-term inflation hedge? A popular explanation is that inflation increases interest rates on bonds, and higher interest rates on bonds depress stock prices. In other words, inflation must send stock prices down sufficiently to increase their dividends or earnings yields to match the higher rates available on bonds. Indeed, this is the rationale of the "Fed model" described in Chapter 7.

However, this explanation is incorrect. Certainly, expectations of rising prices do increase interest rates. Irving Fisher, the famous early-twentieth-century American economist, noted that lenders seek to protect themselves against inflation by adding the expected inflation to the real interest rate that they demand from borrowers. This proposition has been called the *Fisher equation*, after its discoverer.¹⁰

But higher expected inflation also raises the expected future cash flows available to stockholders. Stocks are claims on the earnings of real assets, whether these assets are the products of machines, labor, land, or ideas. Inflation raises the costs of inputs and consequently the prices of outputs (and those prices are in fact the measure of inflation). Therefore, future cash flows will also rise with the rise in price levels.

It can be shown that when inflation impacts input and output prices equally, the present value of the future cash flows from stocks is not adversely affected by inflation even though interest rates rise. Higher future cash flows will offset higher interest rates so that, over time, the price of stocks—as well as earnings and dividends—will rise at

¹⁰ See Irving Fisher, *The Rate of Interest*, New York: Macmillan, 1907. The exact Fisher equation for the nominal rate of interest is the sum of the real rate plus the expected rate of inflation plus the cross product of the real rate and the expected rate of inflation. If inflation is not too high, this last term can often be ignored.

the rate of inflation. In theory the returns from stocks will keep up with rising prices and stocks will be a complete inflation hedge.

Nonneutral Inflation: Supply-Side Effects

The invariance of stock prices to the inflation rate holds when inflation is purely monetary in nature, influencing costs and profits equally. But there are many circumstances in which earnings cannot keep up with inflation. Stocks declined during the 1970s because the restriction in OPEC oil supplies dramatically increased energy costs. Firms were not able to raise the prices of their output by as much as the soaring cost of their energy inputs.

Earlier in the chapter it was noted that the inflation of the 1970s was the result of bad monetary policy trying to offset the contractionary effect of OPEC's oil price hikes. Yet one should not minimize the harm done by OPEC's policies on U.S. corporate profits. U.S. manufacturers, who for years had thrived on low energy prices, were totally unprepared to deal with surging energy costs. The recession that followed the first OPEC oil squeeze pummeled the stock market. Productivity plummeted, and by the end of 1974 real stock prices, measured by the Dow Jones averages, had fallen 65 percent from the January 1966 high—the largest decline since the crash of 1929. Pessimism ran so deep that nearly half of all Americans in August 1974 believed the economy was heading toward a depression such as the one the nation had experienced in the 1930s.¹¹

Inflation can also harm stock prices since it increases investors' fears that the central bank will take restrictive action by raising short-term real interest rates. Such restrictive policies are often followed by an economic slowdown, which also depresses stock prices. This is another good rationale for investors to take stock prices down when inflation rises.

Looking at international markets, inflation, especially in less-developed countries, is also closely linked with large government budget deficits and excessive government spending. Inflation therefore often signals that the government is taking too large a role in the economy, which leads to lower growth, lower corporate profits, and lower stock prices. In short, there are many good economic reasons why stock prices should fall in response to increased inflation.

Taxes on Corporate Earnings

Another very important reason why stocks are poor short-term hedges against inflation is the tax code. There are two significant areas in which

¹¹ Gallup poll taken August 2 to 5, 1974.

the U.S. tax code works to the detriment of shareholders during inflationary times: corporate profits and capital gains.

Earnings are distorted by standard and accepted accounting practices that do not properly take into account the effects of inflation on corporate profits. This distortion shows up primarily in the treatment of depreciation, inventory valuation, and interest costs.

Depreciation of plant, equipment, and other capital investments is based on *historical* costs. These depreciation schedules are not adjusted for any change in the price of capital that might occur during the life of the asset. During inflation, the cost of replacing capital rises, but reported depreciation does not make any adjustment for this. Therefore, depreciation allowances are understated since adequate allowances for the rising cost of replacing capital are not reported. As a result, reported depreciation is understated, and reported and taxable earnings are overstated.

But depreciation is not the only source of bias in reported earnings. In calculating the cost of goods sold, firms must use the historical cost, with either “first-in-first-out” or “last-in-first-out” methods of inventory accounting. In an inflationary environment, the gap between historical costs and selling prices widens, producing inflationary profits for the firm. These “profits” do not represent an increase in the real earning power of the firm; instead, they represent just that part of the firm’s capital—namely, the inventory—that turns over and is realized as a monetary profit. The accounting for inventories differs from the firm’s other capital, such as plant and equipment, which are not revalued on an ongoing basis for the purpose of calculating earnings.

The Department of Commerce, the government agency responsible for gathering economic statistics, is well aware of these distortions and has computed both a depreciation adjustment and an inventory valuation adjustment in the National Income and Product Accounts going back to 1929. But the Internal Revenue Service does not recognize any of these adjustments for tax purposes. Firms are required to pay taxes on reported profits, even when these profits are biased upward by inflation. These biases reduce the quality of the earnings that firms report to stockholders.

Inflationary Biases in Interest Costs

There is another inflationary distortion to corporate profits that is not reported in government statistics. This distortion is based on the inflationary component of interest costs, and, in contrast to depreciation and

inventory profits, it leads to a *downward bias* in reported corporate earnings during periods of inflation.

Most firms raise some of their capital by issuing fixed-income assets such as bonds and bank loans. This borrowing leverages the firm's assets since any profits above and beyond the debt service go to the stockholders. In an inflationary environment, nominal interest costs rise, even if real interest costs remain unchanged. But corporate profits are calculated by deducting *nominal* interest costs, which overstates the real interest costs to the firm. Hence, reported corporate profits are depressed compared to true economic profits.

In fact, the firm is paying back debt with depreciated dollars, so the higher nominal interest expense is exactly offset by the reduction in the real value of the bonds and loans owed by the firm. But this reduction in the real indebtedness is not reported in any of the earnings reports released by the firm. Unfortunately, it is not easy to quantify this earnings bias because it is not easy to separate the share of interest cost due to inflation from that due to real interest rates.

Capital Gains Taxes

In the United States, capital gains taxes are paid on the difference between the cost of an asset and the sale price, with no adjustment made for the impact of inflation on the amount of the real gain. Thus, if asset values rise with inflation, the investor accrues a tax liability that must be paid when the asset is sold, whether or not the investor has realized a real gain. This means that an asset that appreciates by less than the rate of inflation—meaning the investor is worse off in real terms—will still be taxed upon sale.

Chapter 5 showed that the tax code has a dramatic impact on investors' realized after-tax real returns. For even a moderate inflation rate of 3 percent, an investor with a five-year average holding period suffers a 31-basis-point (hundredths of a percentage point) reduction in average after-tax real returns compared with the after-tax returns that he or she would have realized if the rate of inflation had been zero. If the rate of inflation rises to 6 percent, the loss of returns is more than 65 basis points.

The inflation tax has a far more severe effect on realized after-tax real returns when the holding period is short than when it is long. This is because the more frequently an investor buys and sells assets, the more the government can capture the tax on nominal capital gains. Nevertheless, even for long-term investors, the capital gains tax reduces real returns in inflationary times.

CONCLUSION

This chapter documents the role of money supply in the economy and financial markets. Before World War II, persistent inflation in the United States and in most industrialized countries was nonexistent. But when during the Great Depression the gold standard was dethroned, the control of the money supply passed directly to the central banks. And with the dollar or other major currencies no longer being pegged to gold, it was inflation, and not deflation, that proved to be the evil that central banks sought to control.

The message of this chapter is that stocks are not good hedges against increased inflation in the short run. However, no financial asset is. In the long run, stocks are extremely good hedges against inflation, while bonds are not. Stocks are also the best financial asset if you fear rapid inflation since many countries with high inflation can still have quite viable, if not booming, stock markets. Fixed-income assets, on the other hand, cannot protect investors from excessive government issuance of money.

Inflation, although kinder to stocks than bonds, is still not good for equity holders. Fear that the Fed will fight inflation by tightening credit and raising real interest rates causes traders to sell stocks. Inflation also overstates corporate profits and increases the taxes firms have to pay. Furthermore, because the U.S. capital gains tax is not indexed, inflation causes investors to pay higher taxes than they would pay in a noninflationary environment.

Fortunately for shareholders, central bankers around the world are committed to keeping inflation low, and they have largely succeeded. But if inflation again rears its head, investors will do much better in stocks than in bonds.

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12

CHAPTER

STOCKS AND THE BUSINESS CYCLE

The stock market has predicted nine out of the last five recessions!

PAUL SAMUELSON, 1966¹

I'd love to be able to predict markets and anticipate recessions, but since that's impossible, I'm as satisfied to search out profitable companies as Buffett is.

PETER LYNCH, 1989²

A well-respected economist is about to address a large group of financial analysts, investment advisors, and stockbrokers. There is obvious concern in the audience. The stock market has been surging to new all-time highs almost daily, driving down dividend yields to record lows and sending price-to-earnings ratios skyward. Is this bullishness justified? The audience wants to know if the economy is really going to do well enough to support these high stock prices.

This chapter is an adaptation of my paper "Does It Pay Stock Investors to Forecast the Business Cycle?" in *Journal of Portfolio Management*, vol. 18 (Fall 1991), pp. 27–34. The material benefited significantly from discussions with Professor Paul Samuelson.

¹ "Science and Stocks," *Newsweek*, September 19, 1966, p. 92.

² Peter Lynch, *One Up on Wall Street*, New York: Penguin Books, 1989, p. 14.

The economist's address is highly optimistic. He predicts that the real gross domestic product of the United States will increase over 4 percent during the next four quarters, a very healthy growth rate. There will be no recession for at least three years, and even if one occurs after that, it will be very brief. Corporate profits, one of the major factors driving stock prices, will increase at double-digit annual rates for at least the next three years. To boot, he predicts that a Republican will easily win the White House in next year's presidential elections, a situation obviously comforting to the overwhelmingly conservative audience. The crowd obviously likes what it hears. Their anxiety is quieted, and many are ready to recommend that their clients increase their stake in stocks.

The time of this address is the summer of 1987, with the stock market poised to take one of its sharpest falls in history, including the record-breaking 23 percent decline on October 19, 1987. In just a few weeks, most stocks can be bought for about half the price paid at the time of the address. But the biggest irony of all is that the economist is dead right in each and every one of his bullish economic predictions.

The lesson is that the markets and the economy are often out of sync. It is not surprising that many investors dismiss economic forecasts when planning their market strategy. The substance of Paul Samuelson's famous words, cited at the beginning of this chapter, still remains true more than 40 years after they were first uttered.

But do not dismiss the business cycle too quickly when examining your portfolio. The stock market still responds quite powerfully to changes in economic activity. The reaction of the S&P 500 Index to the business cycle is displayed in Figure 12-1. Although there were many "false alarms" when a substantial market decline was not followed by a recession, stocks almost always fell prior to a recession and rallied rigorously at signs of an impending recovery. If you can predict the business cycle, you can beat the buy-and-hold strategy that has been advocated throughout this book.

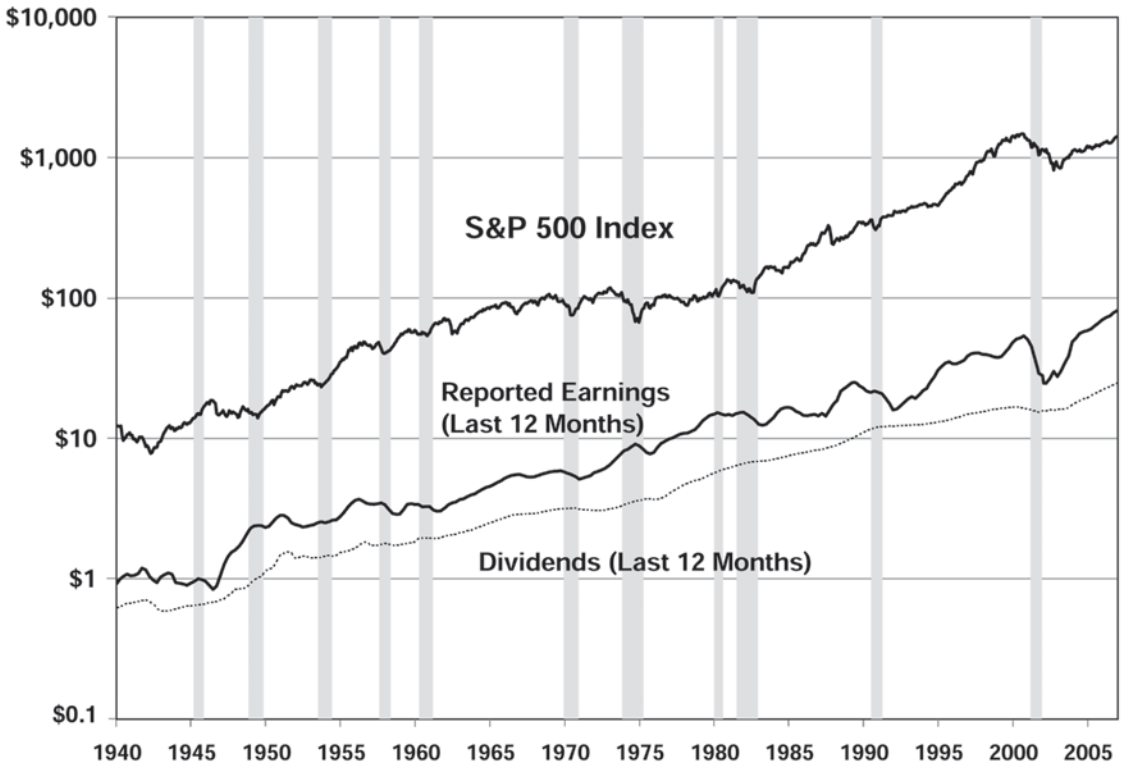
But this is no easy task. To make money by predicting the business cycle, one must be able to identify peaks and troughs of economic activity *before* they actually occur, a skill very few if any economists possess. Yet business cycle forecasting is a popular Wall Street endeavor not because it is successful—most of the time it is not—but because the potential gains are so large.

WHO CALLS THE BUSINESS CYCLE?

It is surprising to many that the dating of business cycles is not determined by any of the myriad government agencies that collect data on

FIGURE 12-1

S&P 500 Index, Earnings, and Dividends during the Business Cycle, 1940 through December 2006



the economy. Instead, the task falls to the National Bureau of Economic Research (the NBER), a private research organization founded in 1920 for the purpose of documenting business cycles and developing a series of national income accounts. In the early years of its existence, the bureau's staff compiled comprehensive chronological records of the changes in economic conditions in many of the industrialized economies. In particular, the bureau developed monthly series on business activity for the United States and Great Britain back to 1854.

In a 1946 volume entitled *Measuring Business Cycles*, Wesley C. Mitchell, one of the founders of the bureau, and Arthur Burns, a renowned business cycle expert who later headed the Federal Reserve Board, gave the following definition of a *business cycle*:

Business cycles are a type of fluctuation found in the aggregate economic activity of nations that organize their work mainly in business enterprises:

a cycle consists of expansion occurring at about the same time in many economic activities, followed by similarly general recessions, or contractions, and revivals that merge into the expansion phase of the next cycle; this sequence of changes is recurrent but not periodic; in duration business cycles vary from more than one year to ten or twelve years and they are not divisible into shorter cycles of similar character.³

It is commonly assumed that a recession occurs when real gross domestic product (GDP), the most inclusive measure of economic output, declines for two consecutive quarters. But this is not necessarily so. Although this criterion is a reasonable rule of thumb for indicating a recession, there is no single rule or measure used by the NBER. Rather the bureau focuses on four different series to determine the turning points in the economy: employment, industrial production, real personal income, and real manufacturing and trade sales.

The Business Cycle Dating Committee of the National Bureau of Economic Research confirms the business cycle dates. This committee consists of academic economists who are associated with the bureau and who meet to examine economic data whenever conditions warrant. Over the entire period from 1802 through 2006, the United States has experienced 46 recessions, and these recessions have averaged nearly 19 months in length, while expansions have averaged 34 months.⁴ This means that, over these 205 years, almost slightly over one-third of the time the economy has been in a recession. However, since World War II, there have been 10 recessions, averaging 10 months in length, while the expansions have averaged 66 months. So in the postwar period, the economy has been in a recession less than one-seventh of the time, far less than the prewar average.

The dating of the business cycle is of great importance. The designation that the economy is in a recession or an expansion has political as well as economic implications. For example, when the bureau called the onset of the 1990 recession in July rather than August, it raised quite a few eyebrows in Washington. This was so because the Bush administration had told the public that the Iraqi invasion of Kuwait and the surge in oil prices were responsible for the economic recession. This explanation was undermined when the bureau actually dated the onset of the re-

³ Wesley C. Mitchell and Arthur Burns, "Measuring Business Cycles," *NBER Reporter*, 1946, p. 3.

⁴ The data from 1802 through 1854 are taken from Wesley C. Mitchell, *Business Cycles: The Problem and Its Setting*, Studies in Business Cycles No. 1, Cambridge, Mass.: National Bureau of Economic Research (NBER), 1927, p. 444. The data on U.S. recessions are taken from the NBER's Web site (www.nber.org), which lists business cycles from 1854 onward.

cession a month earlier. Similarly the 2001 recession began in March when technology spending dropped sharply and well before the 9/11 terrorist attacks.

The Business Cycle Dating Committee is in no rush to call the turning points in the cycle. Never has a call been reversed because of new or revised data that have become available—and the NBER wants to keep it that way. As Robert E. Hall, current chair of the seven-member Business Cycle Dating Committee indicated, “The NBER has not made an announcement on a business cycle peak or trough until there was almost no doubt that the data would not be revised in light of subsequent availability of data.”⁵

Recent examples of the NBER’s dating make the point: The July 1981 peak was not called until early January 1982, while the November trough was not dated until July 1983. The July 1990 peak of the expansion was not officially called until 9 months later. The March 1991 trough was not designated until December 1992, 21 months later, and the March 2001 peak was not called until late in November. And the trough of that recession in November 2001 was not called until July 2003. Clearly, waiting for the bureau to designate business cycles is far too late to be of any use in timing the market.

STOCK RETURNS AROUND BUSINESS CYCLE TURNING POINTS

Almost without exception, the stock market turns down prior to recessions and rises before economic recoveries. In fact, out of the 46 recessions from 1802, 42 of them, or more than 9 out of 10, have been preceded (or accompanied) by declines of 8 percent or more in the total stock returns index. Two exceptions followed World War II: the 1948 to 1949 recession that immediately followed the war and the 1953 recession, when stocks fell just shy of the 8 percent criterion.

The return behaviors for the 10 post–World War II recessions are summarized in Table 12-1. You can see that the stock return index peaked anywhere from 0 to 13 months before the beginning of a recession. The recessions that began in January 1980 and July 1990 are among the very few in U.S. history for which the stock market gave no advance warning of the economic downturn.

As the Samuelson quote at the beginning of this chapter indicates, the stock market is also prone to false alarms, and these have increased in the postwar period. Excluding the war years, when declining stock

⁵ Robert Hall, “Economic Fluctuations,” *NBER Reporter*, Summer 1991, p. 1.

TABLE 12-1

Recessions and Stock Returns

Recession	Peak of Stock Index (1)	Peak of Business Cycle (2)	Lead Time Between Peaks (3)	Decline in Stock Index from (1) to (2) (4)	Maximum 12 Month Decline in Stock Index (6)
1948-1949	May 1948	Nov 1948	6	-8.91%	-9.76%
1953-1954	Dec 1952	Jul 1953	7	-4.26%	-9.04%
1957-1958	Jul 1957	Aug 1957	1	-4.86%	-15.32%
1960-1961	Dec 1959	Apr 1960	4	-8.65%	-8.65%
1970	Nov 1968	Dec 1969	13	-12.08%	-29.16%
1973-1975	Dec 1972	Nov 1973	11	-16.29%	-38.80%
1980	Jan 1980	Jan 1980	0	0.00%	-9.55%
1981-1982	Nov 1980	Jul 1981	8	-4.08%	-13.99%
1990-1991	Jul 1990	Jul 1990	0	0.00%	-13.84%
2001	Aug 2000	Mar 2001	7	-22.94%	-26.55%
		Average	5.7	-8.21%	-17.47%

markets coincided with expanding war economies, there have been 12 episodes since 1802 when the cumulative returns index for stocks fell by 8 percent or more, but the drop was not then followed by a recession within the next 12 months. This happened five times in the nineteenth century and seven times in the twentieth century. All the occasions in this century have occurred since World War II.

Declines greater than 10 percent in the Dow Jones Industrial Average during the postwar period that were not followed by recessions are listed in Table 12-2. The 1987 decline of 35.1 percent from August through early December is the largest decline in the near-200-year history of stock returns data after which the economy did not fall into a recession. Chapter 16 will discuss the 1987 stock crash and explain why it did not lead to an economic downturn.

The trough in the stock return index and the trough in the NBER business cycle are compared in Table 12-3. The average lead time between a market upturn and an economic recovery has been 4.8 months, and in 8 of the 10 recessions, the lead time has been in an extremely narrow range of 4 to 6 months. This compares to an average of 5.7 months that the peak in the market precedes the peak in the business cycle; this peak market to peak economy lead time also has shown much greater

TABLE 12-2

False Alarms by Stock Market (Postwar Declines of 10 Percent or More in the Dow Jones Industrial Average When No Recession Followed within 12 Months)

Peak of Stock Index	Trough of Stock Index	% Decline
May 29, 1946	May 17, 1947	-23.2%
Dec 13, 1961	Jun 26, 1962	-27.1%
Jan 18, 1966	Sept 29, 1966	-22.3%
Sept 25, 1967	Mar 21, 1968	-12.5%
Apr 28, 1971	Nov 23, 1971	-16.1%
Aug 17, 1978	Oct 27, 1978	-12.8%
Nov 29, 1983	Jul 24, 1984	-15.6%
Aug 25, 1987	Dec 4, 1987	-35.1%
Aug 6, 1997	Oct 27, 1997	-13.3%
Jul 17, 1998	Aug 31, 1998	-19.3%
Mar 19, 2002	Oct 9, 2002	-31.5%

variability and less predictability than the market trough to economy trough lead time.

There are two ways to treat the 2000 to 2002 bear market. The first interpretation is that there was one bear market that peaked on a total return basis on September 1, 2000, and bottomed on October 9, 2002, for a loss of 47.4 percent, or there were two bear markets: a drop of 35.7 percent from September 1, 2000, through September 21, 2001, 10 days after the 9/11 terrorist attacks, then a subsequent rally of 22.1 percent to March 19, 2002, and finally another bear market of 33.0 percent, ending in October.

The second interpretation is more in line with the economic data, which show that the 2001 recession that began in March ended in November, two months after the stock market began its rebound. Under this interpretation, however, the second leg of the bear market was the second largest decline in U.S. history (after the 35.1 percent drop that accompanied the stock crash of 1987), which did not end in a recession.⁶

⁶To be sure, there was some controversy about the NBER timing of the 2001 recession. The economy did bounce back from the September 2001 terrorist attacks by year-end, but in the ensuing months the recovery was very weak by historical norms and GDP growth in the fourth quarter of 2002 was essentially zero. As noted earlier in this chapter, the NBER did not indicate that November 2001 ended the 2001 recession until July 2003, when the economy had noticeably picked up. The stock market rally that began in October 2002 did precede the subsequent acceleration of economic growth, but it did not signal the end of the NBER-dated recession.

TABLE 12-3

Expansion and Stock Returns, 1948 through December 2001

Recession	Trough of Stock Index (1)	Trough of Business Cycle (2)	Lead Time between Troughs (3)	Rise in Stock Index from (1) to (2) (4)
1948-1949	May 1949	Oct 1949	5	15.59%
1953-1954	Aug 1953	May 1954	9	29.13%
1957-1958	Dec 1957	April 1958	4	10.27%
1960-1961	Oct 1960	Feb 1961	4	21.25%
1970	Jun 1970	Nov 1970	5	21.86%
1973-1975	Sep 1974	Mar 1975	6	35.60%
1980	Mar 1980	Jul 1980	4	22.60%
1981-1982	Jul 1982	Nov 1982	4	33.13%
1990-1991	Oct 1990	Mar 1991	5	25.28%
2001	Sep 2001	Nov 2001	2	9.72%
		Average	4.8	22.44%
		Std. Dev.	1.81	8.81%

It is important to note that by the time the economy has reached the end of the recession, the stock market has risen 22.4 percent on average. Therefore, an investor waiting for tangible evidence that the business cycle has hit bottom has already missed a very substantial rise in the market.

GAINS THROUGH TIMING THE BUSINESS CYCLE

The excess returns of investors who can time their investment strategy in relation to the peaks and troughs in economic activity are displayed in Table 12-4. Since stocks fall prior to a recession, investors want to switch out of stocks and into Treasury bills before the business downturn begins—if they can identify the turning point—and return to stocks when prospects for economic recovery look good. *Switching returns* are defined as the returns to an investor who switches from stocks to bills a given number of months before (or after, if his or her predictions are not accurate) a business cycle peak and switches back to stocks a given num-

ber of months before (or after) a business cycle trough. *Buy-and-hold returns* are defined as the returns from holding the market through the entire business cycle. *Excess returns* are defined as switching returns minus the returns from the buy-and-hold strategy.⁷

Over the entire period from 1802 through 2006, the excess returns are minimal over a buy-and-hold strategy if investors switch into bills exactly at the business cycle peak and into stocks exactly at the business cycle trough. In fact, investors switching into bills just one month after the business cycle peak and back into stocks just one month after the business cycle trough would have lost 0.6 percent per year compared to the benchmark buy-and-hold strategy.

Interestingly, it is more important to be able to forecast troughs of the business cycle than it is peaks. An investor who buys stocks before the trough of the business cycle gains more than an investor who sells stocks an equal number of months before the business cycle peak.

The maximum excess return of 4.8 percent per year is obtained by investing in bills four months before the business cycle peaks and in stocks four months before the business cycle troughs. The strategy of switching between bills and stocks gains almost 30 basis points ($\frac{30}{100}$ of a

⁷ The returns of the buy-and-hold strategy are adjusted to reflect the same level of market risk as the buy-and-hold strategy.

TABLE 12-4

Switching Returns (Percent) Minus Buy-and-Hold Returns (Percent) around Business Cycle Turning Points, 1802 through December 2006

		Switching from Stocks to Bills before Peaks				At Peak	Switching from Stocks to Bills after Peaks			
		4 month	3 month	2 month	1 month		1 month	2 month	3 month	4 month
Switching from Bills to Stocks before Trough	4 month	4.8	4.0	4.2	4.1	3.3	2.7	2.1	2.2	1.9
	3 month	4.0	3.3	3.5	3.3	2.6	1.9	1.4	1.5	1.3
	2 month	3.3	2.6	2.8	2.6	1.9	1.2	0.7	0.8	0.7
	1 month	2.5	1.8	2.0	1.8	1.1	0.5	0.0	0.1	0.0
At Trough		1.9	1.2	1.4	1.2	0.5	-0.2	-0.7	-0.6	-0.7
Switching from Bills to Stocks after Trough	1 month	1.5	0.8	1.0	0.8	0.1	-0.6	-1.1	-1.0	-1.1
	2 month	0.9	0.2	0.4	0.2	-0.5	-1.1	-1.7	-1.6	-1.7
	3 month	0.5	-0.2	0.0	-0.2	-0.9	-1.5	-2.1	-2.0	-2.1
	4 month	0.3	-0.4	-0.2	-0.3	-1.1	-1.7	-2.2	-2.1	-2.2

percentage point) in average annual returns for each week during the four-month period in which investors can predict the business cycle turning point.

The extra returns from successfully forecasting the business cycle are impressive. An increase of 1.8 percent per year in returns, achieved by predicting the business cycle peaks and troughs only one month before they occur, will increase your wealth by over 60 percent over any buy-and-hold strategy over 30 years. If you can predict four months in advance, the annual increase of 4.8 percent in your returns will more than triple your wealth over the same time period compared to a buy-and-hold strategy.

HOW HARD IS IT TO PREDICT THE BUSINESS CYCLE?

Billions of dollars of resources are spent trying to forecast the business cycle. The previous section showed that it is not surprising that Wall Street economists desperately try to predict the next recession or upturn since doing so dramatically increases returns. But the record of predicting exact business cycle turning points is extremely poor.

Stephen McNees, vice president of the Federal Reserve Bank of Boston, has done extensive research into the accuracy of economic forecasters' predictions. He claims that a major factor in forecast accuracy is the time period over which the forecast was made. He concludes, "Errors were enormous in the severe 1973–1975 and 1981–1982 recessions, much smaller in the 1980 and 1990 recessions, and generally quite minimal apart from business cycle turning points."⁸ But it is precisely these business cycle turning points that turn a forecaster into a successful market timer.

The 1974 to 1975 recession was particularly tough for economists. Almost every one of the nearly two dozen of the nation's top economists invited to President Ford's anti-inflation conference in Washington in September 1974 was unaware that the U.S. economy was in the midst of its most severe postwar recession to date. McNees, studying the forecasts issued by five prominent forecasters in 1974, found that the median forecast overestimated GNP growth by 6 percentage points and underestimated inflation by 4 percentage points. Early recognition of the 1974 recession was so poor that many economists "jumped the gun" on the

⁸ Stephen K. McNees, "How Large Are Economic Forecast Errors?" *New England Economic Review*, July/August 1992, p. 33.

next recession, which didn't strike until 1980 while most economists thought it had begun early in 1979.

From 1976 to 1995, Robert J. Eggert and subsequently Randell Moore have documented and summarized the economic forecasts of a noted panel of economic and business experts. These forecasts are compiled and published in a monthly publication entitled *Blue Chip Economic Indicators*.

In July 1979, the *Blue Chip Economic Indicators* report said that a strong majority of forecasters believed that a recession had already started—forecasting negative GNP growth in the second, third, and fourth quarters of 1979. However, the NBER declared that the peak of the business cycle did not occur until January 1980 and that the economy expanded throughout 1979.

By the middle of the next year, forecasters were convinced that a recession had begun. But as late as June 1980 the forecasters believed that the recession had started in February or March and would last about a year, or about one month longer than the average recession. This prediction was reaffirmed in August, when the forecasters indicated that the U.S. economy was about halfway through the recession. In fact, the recession had ended the month before, in July, and the 1980 recession turned out to be the shortest in the postwar period.

Forecasters' ability to predict the severe 1981 to 1982 recession, when unemployment reached a postwar high of 10.8 percent, was no better. The headline of the July 1981 *Blue Chip Economic Indicators* report read, "Economic Exuberance Envisioned for 1982." Instead, 1982 was a disaster. By November 1981 the forecasters realized that the economy had faltered, and optimism turned to pessimism. Most thought that the economy had entered a recession (which it had done four months earlier), nearly 70 percent thought that it would end by the first quarter of 1982 (which it would not, instead tying the record for the longest postwar recession, ending in November), and 90 percent thought that it would be mild, like the 1971 recession, rather than severe—wrong again!

In April 1985, with the expansion well underway, forecasters were queried as to how long the economy would be in an expansion. The average response was for another 20 months, which would put the peak at December 1986, more than 3.5 years before the cycle actually ended. Even the most optimistic forecasters picked spring 1988 as the latest date for the next recession to begin. This question was asked repeatedly throughout 1985 and 1986, and no forecaster imagined that the 1980s expansion would last as long as it did.

Following the stock market crash of October 1987, forecasters reduced their GNP growth estimates of 1988 over 1987 from 2.8 percent to 1.9 percent, the largest drop in the 11-year history of the survey. Instead, economic growth in 1988 was nearly 4 percent, as the economy grew strongly despite the stock market collapse.

As the expansion continued, belief that a recession was imminent turned into the belief that prosperity was here to stay. The continuing expansion fostered a growing conviction that perhaps the business cycle had been conquered—by either government policy or the “recession-proof” nature of our service-oriented economy. Ed Yardeni, senior economist at Prudential-Bache Securities, wrote a “New Wave Manifesto” in late 1988, concluding that self-repairing, growing economies were likely through the rest of the decade.⁹ On the eve of one of the worst worldwide recessions in the postwar era, Leonard Silk, senior economics editor of the *New York Times* stated in May 1990 in an article entitled “Is There Really a Business Cycle?”:

Most economists foresee no recession in 1990 or 1991, and 1992 will be another presidential year, when the odds tip strongly against recession. Japan, West Germany, and most of the other capitalist countries of Europe and Asia are also on a long upward roll, with no end in sight.¹⁰

By November 1990, *Blue Chip Economic Indicators* reported that the majority of the panel believed the U.S. economy had already slipped, or was about to slip, into a recession. But by then, not only had the economy been in recession for four months, but the stock market had already hit its bottom and was headed upward. Had investors given in to the prevailing pessimism at the time when the recession seemed confirmed, they would have sold after the low was reached and stocks were headed for a strong three-year rally.

The record 10-year expansion of the U.S. economy from March 1991 through March 2001 again spawned talk of “new era economics” and economies without recession.¹¹ Even in early 2001, the vast majority of forecasters did not see a recession. In fact, in September 2001, just before the terrorist attack, only 13 percent of the economists surveyed by *Blue Chip Economic Indicators* believed the United States was in a recession even though the NBER subsequently indicated that the United States recession had begun six months earlier in March.¹² And by February 2002,

⁹ “New Wave Economist,” *Los Angeles Times*, March 18, 1990, Business Section, p. 22.

¹⁰ Leonard Silk, “Is There Really a Business Cycle?” *New York Times*, May 22, 1992, p. D2.

¹¹ See Steven Weber, “The End of the Business Cycle?” *Foreign Affairs*, July/August 1997.

¹² *Blue Chip Economic Indicators*, September 10, 2001, p. 14.

less than 20 percent thought the recession had ended in 2001 although the NBER eventually dated November 2001 as the end of the recession.¹³ Once again, economists have been unable to call the turning point of the business cycle until well after the date has passed.

CONCLUSION

Stock values are based on corporate earnings, and the business cycle is a prime determinant of changes in these earnings. The gains of being able to predict the turning points of the economic cycle are enormous, yet doing so with any precision has eluded economists of all persuasions. Despite the growing body of economic statistics, predictions are not getting much better over time.

The worst course an investor can take is to follow the prevailing sentiment about economic activity. The reason is that it will lead the investor to buy at high prices when times are good and everyone is optimistic, and sell at the low when the recession nears its trough and pessimism prevails.

The lessons to investors are clear. Beating the stock market by analyzing real economic activity requires a degree of prescience that forecasters do not yet have. Turning points are rarely identified until several months after the peak or trough has been reached. By then, it is far too late to act in the market.

¹³ *Blue Chip Economic Indicators*, February 10, 2002, p. 16.

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13

CHAPTER

WHEN WORLD EVENTS IMPACT FINANCIAL MARKETS

I can predict the motion of heavenly bodies, but not the madness of crowds.

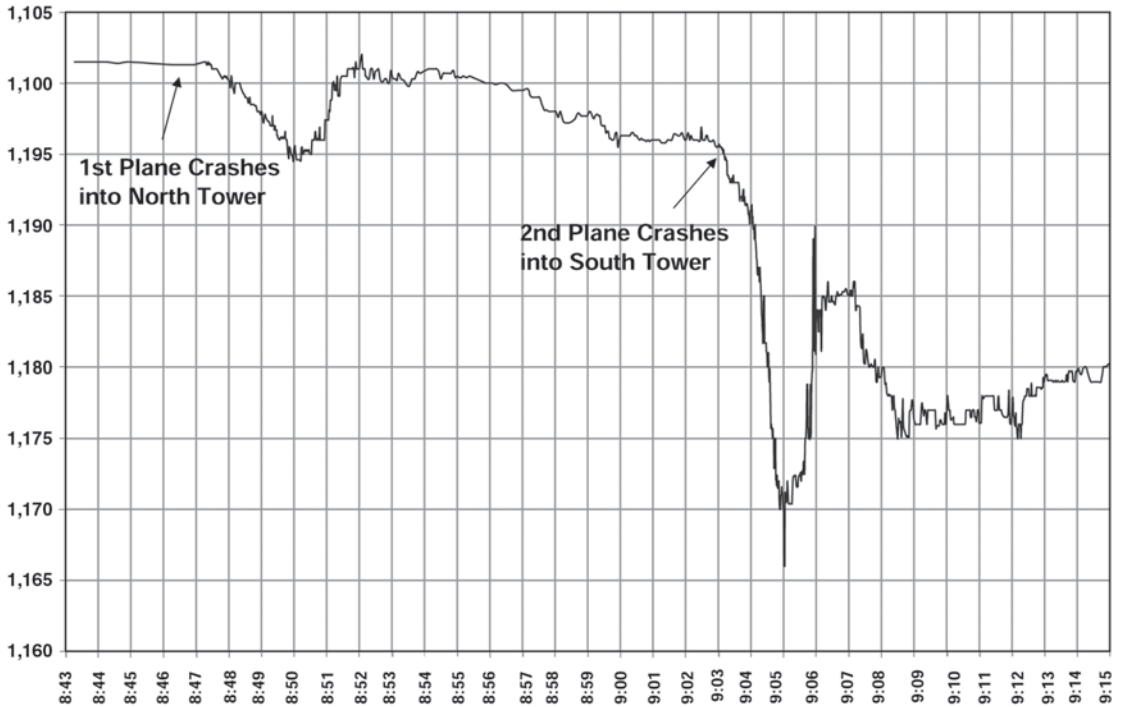
ISAAC NEWTON

As the sun rose over New York City on a beautiful Tuesday morning, September 11, 2001, traders expected a dull day on Wall Street. There was no economic data coming out of Washington, nor any earnings releases scheduled. The previous Friday the markets had fallen on a horrible employment report, but on Monday the markets had bounced back slightly.

The U.S. equity markets had not yet opened, but contracts on the S&P 500 Index futures had been trading all night as usual on the electronic Globex exchange. The futures markets were up, indicating that Wall Street was expecting a firm opening. But then a report came at 8:48 a.m. on what was to be one of the most fateful days in world history: a plane crashed into the World Trade Center Towers. The pattern of trading over the next 27 minutes, before the market closed, is shown in Figure 13-1.

FIGURE 13-1

S&P 500 Futures Market on Tuesday Morning, September 11, 2001



The news of the plane crash spread quickly, but few imagined what had really happened. Was it a large or small plane? Was it an accident? Or was there something more sinister going on? Although nobody knew the answers yet, immediately the stock index futures market traded down a few points, as it often does when uncertainty increases. Within a few minutes, however, buyers reappeared and the index returned to its previous level, as most traders concluded that nothing significant had happened.

Fifteen minutes later, at 9:03, with news cameras focused on the World Trade Center and millions around the world watching, a second plane crashed into the Towers. The entire world changed in that moment. Americans' worst fears had been realized. This was a terrorist attack. For the first time since World War II, America was under direct attack on its own soil.

By 9:05, two minutes after the second crash, the S&P futures plunged 30 points, about 3 percent, indicating that if the exchanges had

been open, nearly \$300 billion would have been wiped off of U.S. stock values. But then, miraculously, buyers did appear. Despite the enormity of the events unfolding, some traders bet that the market overreacted to these attacks and decided that this was a good time to buy stocks. The futures firmed and ended the session at 9:15 down about 15 points, gaining back one-half of the earlier loss.

Despite this comeback, the gravity of this attack quickly sunk in. All the stock, bond, and commodity exchanges first delayed opening and then canceled trading for the day. In fact, stock exchanges in the United States would remain closed for the remainder of the week, the longest closing since FDR declared a “Bank Holiday” in March 1933 to try to restore America’s collapsing banking system.

Foreign stock exchanges, however, remained open. It was 2 p.m. in London and 3 p.m. in Europe when the planes struck. The German DAX index immediately fell over 9 percent and ended the session around that level. London stocks suffered but not as much. There was a feeling that with the world’s financial center, the United States, vulnerable to attack, some business might move to the United Kingdom. The British pound rallied, as did the euro against the dollar. Normally it is the U.S. dollar that gains in international crisis. But this time, with the attack centering on New York, foreign traders were unsure which direction to go.

When the New York Stock Exchange reopened the following Monday, September 17, the Dow Industrials fell 685 points, or 7.13 percent, the fourteenth-largest percentage drop in its history. The Dow continued to fall during the week and closed Friday, September 21, at 8,236—down more than 14 percent from its September 10 close and nearly 30 percent from its all-time high of 11,723 reached on January 14, 2000.

WHAT MOVES THE MARKET?

It was vividly clear why the markets fell after the terrorist attacks. But it might surprise investors that in the vast majority of cases, major market movements are *not* accompanied by any news that explains why prices change. Since 1885, when the Dow Jones averages were first formulated, there have been 126 days when the Dow Jones Industrial Average has changed by 5 percent or more. Of these, only 30 of these major moves can be identified with a specific world political or economic event, such as wars, political changes, or governmental policy shifts. That means that less than 1 in 4 major market moves can be clearly linked to a specific world event. A ranking of the 51 largest changes is shown in Table 13-1a, and market changes greater than 5 percent that are associated

TABLE 13-1a

Daily Changes over 5 Percent in the Dow Jones Industrial Average (Negative Changes Are Boldface, and Asterisks Denote Changes Associated with News Items; Excludes 15.34 Percent Change from March 3 to 15, 1933, for U.S. Bank Holiday)

Rank	Date	Change	Rank	Date	Change	Rank	Date	Change
1	Oct 19, 1987	-22.61%	18	Aug 12, 1932	-8.40%	35	Jan 8, 1988	-6.85%
2*	Oct 6, 1931	14.87%	19	Mar 14, 1907	-8.29%	36	Oct 14, 1932	6.83%
3	Oct 28, 1929	-12.82%	20	Oct 26, 1987	-8.04%	37	Nov 11, 1929	-6.82%
4	Oct 30, 1929	12.34%	21	Jun 10, 1932	7.99%	38*	May 14, 1940	-6.80%
5	Oct 29, 1929	-11.73%	22	Jul 21, 1933	-7.84%	39	Oct 5, 1931	-6.78%
6	Sep 21, 1932	11.36%	23	Oct 18, 1937	-7.75%	40*	May 21, 1940	-6.78%
7	Oct 21, 1987	10.15%	24*	Sep 5, 1939	7.26%	41	Mar 15, 1907	6.70%
8	Nov 6, 1929	-9.92%	25*	Feb 1, 1917	-7.24%	42*	Jun 20, 1931	6.64%
9	Aug 3, 1932	9.52%	26*	Oct 27, 1997	-7.18%	43	Jul 24, 1933	6.63%
10*	Feb 11, 1932	9.47%	27	Oct 5, 1932	-7.15%	44*	Jul 26, 1934	-6.62%
11*	Nov 14, 1929	9.36%	28*	Sep 17, 2001	-7.13%	45	Dec 20, 1895	-6.61%
12	Dec 18, 1931	9.35%	29	Jun 3, 1931	7.12%	46*	Sep 26, 1955	-6.54%
13	Feb 13, 1932	9.19%	30	Jan 6, 1932	7.12%	47	Jun 19, 1933	6.38%
14*	May 6, 1932	9.08%	31	Sep 24, 1931	-7.07%	48	May 10, 1901	6.36%
15*	Apr 19, 1933	9.03%	32	Jul 20, 1933	-7.07%	49	Oct 23, 1929	-6.33%
16	Dec 18, 1899	-8.72%	33*	Oct 13, 1989	-6.91%	50	Aug 6, 1932	6.33%
17	Oct 8, 1931	8.70%	34*	Jul 30, 1914	-6.90%	51*	Jul 26, 1893	-6.31%

with specific events are shown in Table 13-1b.¹ Monetary policy is the biggest single driver of these massive market outbreaks of euphoria or fear. Out of the 5 largest moves in the stock market over the past century for which there is a clearly identifiable cause, 4 have been directly associated with changes in monetary policy.

If you focus in on just the 10 largest daily market moves since 1885, only 2 can be attributed to a specific news event. The record 22.6 percent one-day fall in the stock market on October 19, 1987, is not associated with any one readily identifiable news event. In more recent years, since 1940, there have been only four days of big moves where the cause is identified: the 7.13 percent drop on September 17, 2001, when the markets reopened after the terrorist attacks; the 7.18 percent drop on October 27, 1997, when there was an attack on the Hong Kong dollar; the 6.91 percent drop on Friday, October 13, 1989, when the leveraged buyout of United Airlines collapsed; and the 6.54 percent drop on September 26, 1955, when President Eisenhower suffered a heart attack. The decline in October 1989, although often attributed to the collapse of the leveraged

¹ This expands the research originally published in David M. Cutler, James M. Poterba, and Lawrence H. Summers, "What Moves Stock Prices," *Journal of Portfolio Management*, Spring 1989, pp. 4-12.

TABLE 13-1b

Largest News-Related Movements in the Down Jones Industrial Average (Negative Changes Are Boldface)

Rank	Date	Change	News Headline
2	Oct 6, 1931	14.87%	Hoover Urges \$500M Pool to Help Banks
10	Feb 11, 1932	9.47%	Liberalization of Fed discount policy
11	Nov 14, 1929	9.36%	Fed Lowers Discount Rate/Tax Cut Proposed
14	May 6, 1932	9.08%	U.S. Steel Negotiates 15% Wage Cut
15	Apr 19, 1933	9.03%	U.S. Drops Gold Standard
24	Sep 5, 1939	7.26%	World War II Begins in Europe
25	Feb 1, 1917	-7.24%	Germany announces unrestricted submarine warfare
26	Oct 27, 1997	-7.18%	Attack on Hong Kong Dollar
28	Sep 17, 2001	-7.13%	World Trade Center and Pentagon Terrorist Attacks
33	Oct 13, 1989	-6.91%	United Airline Buy-out Collapses
34	Jul 30, 1914	-6.90%	Outbreak of World War I
38	May 14, 1940	-6.80%	Germans Invade Holland
40	May 21, 1940	-6.78%	Allied Reverses in France
42	Jun 20, 1931	6.64%	Hoover Advocates Foreign Debt Moratorium
44	Jul 26, 1934	-6.62%	Fighting in Austria; Italy mobilizes
46	Sep 26, 1955	-6.54%	Eisenhower Suffers Heart Attack
51	Jul 26, 1893	-6.31%	Erie Railroad Bankrupt
65	Oct 31, 1929	5.82%	Fed Lowers Discount Rate
66	Jun 16, 1930	-5.81%	Hoover to Sign Tariff Bill
67	Apr 20, 1933	5.80%	Continued Rally on Dropping of Gold Standard
73	May 2, 1898	5.64%	Dewey Defeats Spanish
76	Mar 28, 1898	5.56%	Dispatches of Armistice with Spain
85	Dec 22, 1916	5.47%	Lansing Denies U.S. Near War
88	Dec 18, 1896	-5.42%	Senate votes for Free Cuba
89	Feb 25, 1933	-5.40%	Maryland Bank Holiday
93	Oct 23, 1933	5.37%	Roosevelt Devalues Dollar
95	Dec 21, 1916	-5.35%	Sec. of State Lansing implies U.S. Near War
104	Apr 9, 1938	5.25%	Congress Passes Bill Taxing U.S. Government Bond Interest
125	Oct 20, 1931	5.03%	ICC Raises Rail Rates
126	Mar 31, 1932	-5.02%	House Proposes Stock Sales Tax

buyout, can be questioned since the market was already down substantially on very little news before the collapse was announced.

War is usually the biggest market mover. But the market drop on September 17, 2001, was more than twice the 3.5 percent drop that occurred on the day following the attack on Pearl Harbor, and it was more than that of any other one-day decline during a period when the United States was officially at war.

Even when news has occurred, there can be sharp disagreement over *what* news caused the market change. On November 15, 1991, when the Dow fell over 120 points or nearly 4 percent, *Investor's Business Daily* ran an article about the market entitled "Dow Plunges 120 in a Scary Stock Sell-off: Biotechs, Programs, Expiration and Congress Get the Blame."² In contrast, the London-based *Financial Times* published a front-page article written by a New York writer entitled "Wall Street Drops 120 Points on Concern at Russian Moves." What is interesting is that such news, specifically that the Russian government had suspended oil licenses and taken over the gold supplies, was not mentioned even once in the *Investor's Business Daily* article! That one major newspaper can highlight "reasons" that another does not even report illustrates the difficulty of finding fundamental explanations for the movements of markets.

UNCERTAINTY AND THE MARKET

The stock market hates uncertainty, which is why events that jar investors from their customary framework for analyzing the world can have devastating effects. September 11 serves as the perfect example. Americans were unsure what these terrorist attacks meant for the future. How severe would the drop in air travel—or any travel—be? How big a hit would the approximately \$600 billion tourist industry take? Unanswered questions generate anxiety and declining prices.

Uncertainty about the presidency is another downer. The market almost always declines in reaction to sudden, unexpected changes related to the presidency. As noted previously, President Eisenhower's heart attack on September 26, 1955, caused a 6.54 percent decline in the Dow Industrials, the seventh largest in the postwar period. The drop was a clear sign of Eisenhower's popularity with investors. The assassination of President Kennedy on Friday, November 22, 1963, caused the Dow Industrials to drop 2.9 percent and persuaded the New York Stock Exchange to close two hours early to prevent panic selling. Trading remained suspended the following Monday, November 25, for Kennedy's funeral. Yet, the following Tuesday, by which time Lyndon Johnson had taken over the reins of government, the market soared 4.5 percent, representing one of the best days in the postwar period.

When William McKinley was shot on September 14, 1901, the market dropped by more than 4 percent. But stocks regained all of their losses

² Virginia Munger Kahn, *Investor's Business Daily*, November 16, 1991, p. 1.

on the following trading day. The death of Warren Harding in 1923 caused a milder setback, which was soon erased. Sell-offs such as these provide good opportunities for investors to buy stocks since the market usually reverses itself quickly following the change in leadership.³

DEMOCRATS AND REPUBLICANS

It is well known that the stock market prefers Republicans to Democrats. Most corporate executives and stock traders are Republicans, and many Republican policies are perceived to be favorable to stock prices and capital formation. Democrats are perceived to be less amenable to favorable tax treatment of capital gains and dividends and more in favor of regulation and income redistribution. Yet the stock market has actually done better under Democrats than Republicans.

The performance of the Dow Jones Industrials during every administration since Grover Cleveland was elected in 1888 is shown in Figure 13-2. The greatest bear market in history occurred during Herbert Hoover's Republican administration, while stocks did quite well under Franklin Roosevelt, despite the fact that the Democrat was frequently reviled in boardrooms and brokerage houses around the country. The immediate reaction of the market—the day before the election to the day after—does indeed conform to the fact that investors like Republicans better than Democrats. Since 1888, the market fell an average of 0.5 percent on the day following a Democratic victory, but it rose by 0.7 percent on the day following a Republican victory. But the market's reaction to the Republicans' success in presidential elections has been muted since World War II. There have been occasions, like Clinton's second-term election victory, when the market soared because the Republicans kept control of Congress, not because Clinton was reelected.

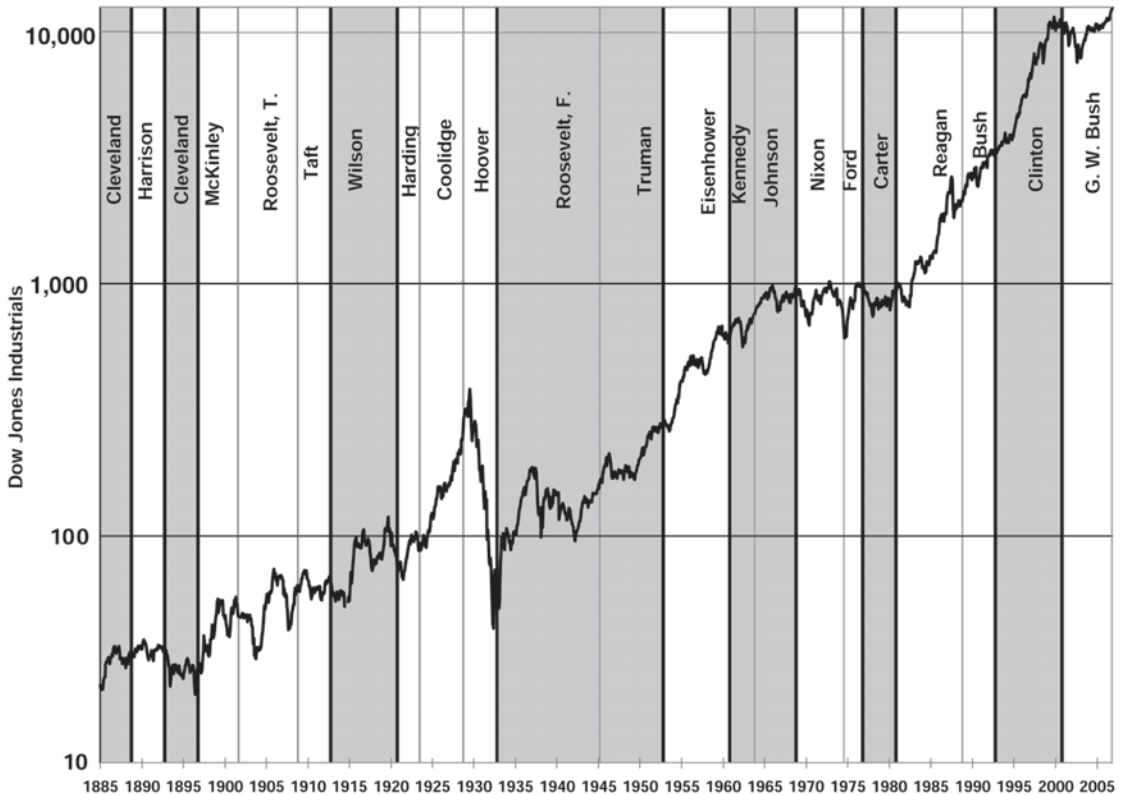
It is also instructive to examine the returns in the first, second, third, and fourth years of a presidential term, which are displayed in Table 13-2. The returns in the third year of a presidential term are clearly the best, especially since 1948. It is striking that this is true since the third year includes the disastrous 43.3 percent drop that occurred in 1931, during the third year of Hoover's ill-fated administration and the worst 1-year performance in more than 120 years.

Why the third year stands out is not clear. One would think that the fourth year of a presidential term, when the administration might in-

³ But there are some whom the market never forgives. Stocks rallied over 4 percent in the week following the news of the death of Franklin Roosevelt, who was never a favorite on Wall Street.

FIGURE 13-2

The Dow Jones Industrial Average and Presidential Terms (Vertical Lines Represent a Change of Administration, Dark Lines Represent a Change of Party, and Shaded Areas Represent a Democratic President in Office)



crease spending or put pressure on the Fed to stimulate the economy for the upcoming election, would be the best year for stocks. But the fourth year, although good, is clearly not the best. Perhaps the market anticipates favorable economic policies in the election year, causing stock prices to rise the year before.

The superior performance under the Democrats in recent years is documented in Table 13-3. This table records the total real and nominal returns in the stock market, as well as the rate of inflation, under Democratic and Republican administrations. Since 1888, the market has fared better in nominal terms under Democrats than under Republicans, but since inflation has been lower when the Republicans have held office, real stock returns have been slightly higher under Republicans than

TABLE 13-2

Stock Returns during Presidential Administrations (Measured in Percent by S&P Total Returns Index; Italics Represent Democratic Administrations)

President's Name	Party	Election Date	From: 1 day before To: 1 day after	First Year of Term	Second Year of Term	Third Year of Term	Fourth Year of Term
Harrison	R	11/6/1888	0.4	6.9	-6.2	18.7	6.2
<i>Cleveland</i>	<i>D</i>	<i>11/8/1892</i>	<i>-0.5</i>	<i>-19.1</i>	<i>3.2</i>	<i>5.0</i>	<i>3.0</i>
McKinley	R	11/3/1896	2.7	20.2	29.1	3.8	21.2
McKinley	R	11/6/1900	3.3	19.7	8.3	-17.4	31.4
Roosevelt, T.	R	11/8/1904	1.3	21.3	0.8	-24.5	38.9
Taft	R	11/3/1908	2.4	16.4	-3.6	3.4	7.3
<i>Wilson</i>	<i>D</i>	<i>11/5/1912</i>	<i>1.8</i>	<i>-5.1</i>	<i>-5.9</i>	<i>31.1</i>	<i>8.7</i>
<i>Wilson</i>	<i>D</i>	<i>11/7/1916</i>	<i>-0.4</i>	<i>-18.5</i>	<i>17.1</i>	<i>19.6</i>	<i>-14.3</i>
Harding	R	11/2/1920	-0.6	9.2	29.6	5.1	26.6
Coolidge	R	11/4/1924	1.2	25.7	11.6	37.5	43.6
Hoover	R	11/6/1928	1.2	-8.4	-24.9	-43.3	-8.2
<i>Roosevelt, F.</i>	<i>D</i>	<i>11/8/1932</i>	<i>-4.5</i>	<i>54.0</i>	<i>-1.4</i>	<i>47.7</i>	<i>33.9</i>
<i>Roosevelt, F.</i>	<i>D</i>	<i>11/3/1936</i>	<i>2.3</i>	<i>-35.0</i>	<i>31.1</i>	<i>-0.4</i>	<i>-9.8</i>
<i>Roosevelt, F.</i>	<i>D</i>	<i>11/5/1940</i>	<i>-2.4</i>	<i>-11.6</i>	<i>20.3</i>	<i>25.9</i>	<i>19.8</i>
<i>Roosevelt, F.</i>	<i>D</i>	<i>11/7/1944</i>	<i>-0.3</i>	<i>36.4</i>	<i>-8.1</i>	<i>5.7</i>	<i>5.5</i>
<i>Truman</i>	<i>D</i>	<i>11/2/1948</i>	<i>-3.8</i>	<i>18.8</i>	<i>31.7</i>	<i>24.0</i>	<i>18.4</i>
Eisenhower	R	11/4/1952	0.4	-1.0	52.6	31.6	6.6
Eisenhower	R	11/6/1956	-0.9	-10.8	43.4	12.0	0.5
<i>Kennedy</i>	<i>D</i>	<i>11/8/1960</i>	<i>0.8</i>	<i>26.9</i>	<i>-8.7</i>	<i>22.8</i>	<i>16.5</i>
<i>Johnson</i>	<i>D</i>	<i>11/3/1964</i>	<i>-0.2</i>	<i>12.5</i>	<i>-10.1</i>	<i>24.0</i>	<i>11.1</i>
Nixon	R	11/5/1968	0.3	-8.5	4.0	14.3	19.0
Nixon	R	11/7/1972	-0.1	-14.7	-26.5	37.2	23.8
<i>Carter</i>	<i>D</i>	<i>11/2/1976</i>	<i>-1.0</i>	<i>-7.2</i>	<i>6.6</i>	<i>18.4</i>	<i>32.4</i>
Reagan	R	11/4/1980	1.7	-4.9	21.4	22.5	6.3
Reagan	R	11/6/1984	-0.9	32.2	18.5	5.2	16.8
Bush, G. H. W.	R	11/8/1988	-0.4	31.5	-3.2	30.5	7.7
<i>Clinton</i>	<i>D</i>	<i>11/3/1992</i>	<i>-0.9</i>	<i>10.0</i>	<i>1.3</i>	<i>37.6</i>	<i>23.0</i>
<i>Clinton</i>	<i>D</i>	<i>11/5/1996</i>	<i>2.6</i>	<i>33.4</i>	<i>28.6</i>	<i>21.0</i>	<i>-9.1</i>
Bush, G. W.	R	11/7/2000*	-1.6	-11.9	-21.9	28.7	12.8
Bush, G. W.	R	11/7/2004	1.1	8.4			

*Outcome of race was officially undetermined until December 13, 2000

Average from 1888 to 2006	Democratic	-0.5	7.3	8.1	21.7	10.7
	Republican	0.7	7.7	9.3	10.3	16.3
	Overall	0.2	7.6	8.5	15.4	13.8
Average from 1948 to 2006	Democratic	-0.4	15.7	8.2	24.6	15.4
	Republican	-0.0	2.3	13.0	22.8	11.7
	Overall	-0.2	7.6	10.2	23.6	13.3

TABLE 13-3

Presidential Administrations and Stock Returns (Stock Returns Taken from Election Date or Date of Taking Office, Whichever Is Earlier; Italics Represent Democratic Administrations)

President's Name	Party	Date	Months in Office	Annualized Nominal Stock Return	Annualized Inflation	Annualized Real Return
Harrison	R	11/88 - 10/92	48	5.74	0.04	5.70
<i>Cleveland</i>	<i>D</i>	<i>11/92 - 10/96</i>	<i>48</i>	<i>-3.31</i>	<i>-1.91</i>	<i>-1.43</i>
McKinley	R	11/96 - 8/01	58	20.66	0.00	20.66
Roosevelt, T.	R	9/01 - 10/08	86	4.81	1.39	3.38
Taft	R	11/08 - 10/12	48	7.54	0.82	6.67
<i>Wilson</i>	<i>D</i>	<i>11/12 - 10/20</i>	<i>96</i>	<i>4.68</i>	<i>9.42</i>	<i>-4.33</i>
Harding	R	11/20 - 7/23	33	5.48	-4.05	9.93
Coolidge	R	8/23 - 10/28	63	28.04	0.12	27.88
Hoover	R	11/28 - 10/32	48	-20.42	-6.29	-15.08
<i>Roosevelt, F.</i>	<i>D</i>	<i>11/32 - 3/45</i>	<i>149</i>	<i>11.52</i>	<i>2.36</i>	<i>8.94</i>
<i>Truman</i>	<i>D</i>	<i>4/45 - 10/52</i>	<i>91</i>	<i>14.66</i>	<i>5.54</i>	<i>8.64</i>
Eisenhower	R	11/52 - 10/60	96	14.96	1.35	13.42
<i>Kennedy</i>	<i>D</i>	<i>11/60 - 10/63</i>	<i>36</i>	<i>15.15</i>	<i>1.11</i>	<i>13.88</i>
<i>Johnson</i>	<i>D</i>	<i>11/63 - 10/68</i>	<i>60</i>	<i>10.39</i>	<i>2.77</i>	<i>7.42</i>
Nixon	R	11/68 - 7/74	69	-1.32	6.03	-6.93
Ford	R	8/74 - 10/76	27	17.21	7.27	9.27
<i>Carter</i>	<i>D</i>	<i>11/76 - 10/80</i>	<i>48</i>	<i>11.04</i>	<i>10.02</i>	<i>0.93</i>
Reagan	R	11/80 - 10/88	96	15.18	4.46	10.26
Bush, G. H. W.	R	11/88 - 10/92	48	14.44	4.22	9.81
<i>Clinton</i>	<i>D</i>	<i>11/92 - 10/00</i>	<i>96</i>	<i>19.01</i>	<i>2.58</i>	<i>16.01</i>
Bush, G.W.	R	11/00 - 12/01	74	1.62	2.51	-0.87
Average from 1888 to October 2006	Democrat	44.0%	10.85	4.12	6.49	
	Republican	56.0%	8.59	1.57	6.91	
	Overall	100%	9.58	2.69	6.71	
Average from 1948 to October 2006	Democrat	42.1%	15.26	3.64	11.27	
	Republican	57.9%	9.71	3.78	5.71	
	Overall	100%	12.01	3.72	7.99	

under Democrats. But this has not been true over the past 60 years, when the market performed far better under the Democrats whether or not inflation is taken into account. Perhaps this is why the market's reaction to a Democratic presidential victory has not been as negative in recent years as it was in the past.

STOCKS AND WAR

Since 1885, the U.S. economy has been at war or on the sidelines of a world war about one-fifth of the time. The stock market does equally well in nominal returns whether there is war or peace. Inflation, however, has averaged nearly 6 percent during wartime and less than 2 percent during peacetime, so the real returns on stocks during peacetime greatly outstrip those during wars.

While returns are better during peacetime, the stock market has actually been more volatile during peacetime than during war, as measured by the monthly standard deviation of the Dow Industrials. The greatest volatility in U.S. markets occurred in the late 1920s and early 1930s, well before the United States was engaged in World War II. Only during World War I and the short Gulf War did stocks have higher volatility than the historical average.

In theory, war should have a profound negative influence on stock prices. Governments commandeer tremendous resources, while high taxes and huge government borrowings compete with investors' demand for stocks. Whole industries are nationalized to further the war effort. Moreover, if losing the war is deemed a possibility, stocks could well decline as the victors impose sanctions on the vanquished. However, the economies of Germany and Japan were quickly restored to health following World War II, and stocks subsequently boomed.

The World Wars

The market was far more volatile during World War I than during World War II. The market rose nearly 100 percent during the early stages of World War I, then fell 40 percent when the United States became involved in the hostilities, and finally rallied when the Great War ended. In contrast, during the six years of World War II, the market never deviated more than 32 percent from its prewar level.

The outbreak of World War I precipitated a panic, as European investors scrambled to get out of stocks and into gold and cash. After Austria-Hungary declared war on Serbia on July 28, 1914, all the major European stock exchanges closed. The European panic spread to New York, and the Dow Jones Industrials closed down nearly 7 percent on Thursday, July 30, the most since the 8.3 percent drop during the Panic of 1907. Minutes before the opening of the New York Stock Exchange on Friday, the exchange voted to close for an indefinite period.

The market did not reopen until December. Never before had the New York Stock Exchange been closed for such an extended period, nor has it since. Emergency trades were permitted, but only by approval of a special committee and only at prices at or above the last trade before the exchange closed. Even then, the trading prohibition was observed in the breach as illegal trades were made outside the exchange (on the curb) at prices that continued to decline through October. Unofficially, by autumn, prices were said to be 15 to 20 percent below the July closing.

It is ironic that the only extended period during which the New York Stock Exchange was closed occurred when the United States was not yet at war or in any degree of financial or economic distress. In fact, when the exchange was closed, traders realized that the United States would be a strong economic beneficiary of the European conflict. Once investors realized that America was going to make the munitions and provide raw materials to the belligerents, public interest in stocks soared.

By the time the exchange reopened on December 12, prices were rising rapidly. The Dow Industrials finished the historic Saturday session about 5 percent higher than the closing prices on the previous July. The rally continued, and 1915 records the best single-year increase in the history of the Dow Industrials, as stocks rose a record 82 percent. Stocks continued to rise in 1916 and hit their peak in November, with prices more than twice the level they were when the war had started more than two years earlier. But then stocks settled back about 10 percent when the United States formally entered the war on April 16, 1917, and fell another 10 percent through November 1918, when the Armistice was signed.

The message of the great boom of 1915 was not lost on traders a generation later. When World War II erupted, investors took their cue from what happened at the beginning of the previous world war. When Great Britain declared war on Germany on September 3, 1939, the rise was so explosive that the Tokyo Stock Exchange was forced to close early. When the market opened in New York, a buying panic erupted. The Dow Industrials gained over 7 percent, and even the European stock exchanges were firm when trading reopened.

The enthusiasm that followed the onset of World War II quickly faded. President Roosevelt was determined not to let corporations earn easy profits as they had in World War I. These profits had been a source of public criticism as Americans felt that the war costs were not being borne equally as its young men died overseas while corporations earned record income. An excess profits tax enacted by Congress during World War II removed the wartime premium that investors had expected from the conflict.

The day before the Japanese attacked Pearl Harbor, the Dow was down 25 percent from its 1939 high and still less than one-third its 1929 peak. Stocks fell 3.5 percent on the day following Pearl Harbor and continued to fall until they hit a low on April 28, 1942, when the United States suffered losses in the early months of the war in the Pacific.

But when the tide turned toward the Allies, the market began to climb. By the time Germany signed its unconditional surrender on May 7, 1945, the Dow Industrials were 20 percent above the prewar level. The detonation of the atomic bomb over Hiroshima, a pivotal event in the history of warfare, caused stocks to surge 1.7 percent as investors recognized the end of the war was near. But World War II did not prove as profitable for investors as World War I, as the Dow was up only 30 percent during the six years from the German invasion of Poland to V-J Day.

Post-1945 Conflicts

The Korean War took investors by surprise. When North Korea invaded its southern neighbor on June 25, 1950, the Dow fell 4.65 percent, greater than the day following Pearl Harbor. But the market reaction to the growing conflict was contained, and stocks never fell more than 12 percent below their prewar level.

The Vietnam War was the longest and one of the least popular of all U.S. wars. The starting point for U.S. involvement in the conflict can be placed at August 2, 1964, when two American destroyers were reportedly attacked in the Gulf of Tonkin.

One and a half years after the Gulf of Tonkin incident, the Dow reached an all-time high of 995, more than 18 percent higher than before the Tonkin attack. But it fell nearly 30 percent in the following months after the Fed tightened credit to curb inflation. By the time American troop strength reached its peak in early 1968, the market had recovered. Two years later, when Nixon sent troops into Cambodia and interest rates were soaring and a recession was looming, the market fell again, down nearly 25 percent from its prewar point.

The Peace Pact between the North Vietnamese and the Americans was signed in Paris on January 27, 1973. But the gains made by investors over the eight years of war were quite small, as the market was held back by rising inflation and interest rates as well as other problems not directly related to the Vietnam War.

If the war in Vietnam was the longest American war, the 1991 Gulf War against Iraq in the Middle East was the shortest. The trigger occurred on August 2, 1990, when Iraq invaded Kuwait, sending oil prices

skyward and sparking a U.S. military buildup in Saudi Arabia. The rise in oil prices combined with an already slowing U.S. economy to drive the United States deeper into a recession. The stock market fell precipitously, and on October 11, the Dow slumped over 18 percent from its prewar levels.

The United States began its offensive action on January 17, 1991. It was the first major war fought in a world where markets for oil, gold, and U.S. government bonds were traded around the clock in Tokyo, Singapore, London, and New York. The markets judged the victors in a matter of hours. Bonds sold off in Tokyo for a few minutes following the news of the U.S. bombing of Baghdad, but the stunning reports of the United States and its allies' successes sent bonds and Japanese stocks straight upward in the next few minutes. Oil prices traded in the Far East collapsed, as Brent crude fell from \$29 a barrel before hostilities to \$20.

On the following day, stock prices soared around the world. The Dow jumped 115 points, or 4.4 percent, and there were large gains throughout Europe and Asia. By the time the United States deployed ground troops to invade Kuwait, the market had known for two months that victory was at hand. The war ended on February 28, and by the first week in March, the Dow was more than 18 percent higher than when the war started.

As noted at the outset of this chapter, the War on Terrorism began with the terrorists' attacks on New York and the Pentagon on September 11, 2001. The Dow Industrials were down 16 percent from their close of 9,606 on September 10 to an intraday low of 8,062 reached on Friday, September 21. But the market rebounded sharply by the next week, and it had recovered to 9,120 by the time the United States began offensive action against the Taliban in Afghanistan on October 7.

Because of aggressive easing policies by the Federal Reserve and the successful execution of the Afghanistan war, the Dow surpassed its September 10 level on November 13 and continued rising to year-end. From its intraday low on September 21 to its intraday high of 10,184 on December 28, the Dow rose an astounding 26.3 percent in three months.

The market continued its rise to 10,673 on March 19, 2002, but the bear market, which had begun two years earlier, was far from over. A sluggish economy, combined with the accounting scandals of Enron, WorldCom, and others, sent stocks into another dive that didn't end until October 10, 2002, when the Dow hit an intraday low of 7,197. From the intraday high of 11,750 reached on January 14, 2000, through the October 10, 2002, low, the Dow Industrials fell nearly 39 percent, a

decline far less than the S&P 500 Index that was bloated by overpriced technology stocks.

The market subsequently rallied to over 9,000, but anxiety about a second U.S. operation in Iraq sent the stock back down to 7,524 five months later on March 11, 2003, just days before the invasion. But as it responded 12 years earlier when the Gulf War started, the market rallied on news of the invasion and continued to rise despite the growing insurgency in Iraq that made the war particularly unpopular.

Notwithstanding the Republican defeat in Congress in November 2006, stocks hit new all-time highs in the summer of 2007, more than recovering all the ground that had been lost during the 2000 to 2002 bear market. From the end of March 2003, the first month of the Iraq invasion, through June 2007, the annual return on the market was an extremely strong 17.5 percent per year.

CONCLUSION

When investigating the causes of major market movements, it is sobering to realize that less than one in four can be linked to a news event of major political or economic import. This confirms the unpredictability of the market and the difficulty in forecasting market moves. Those who sold in panic at the outbreak of World War I missed out on 1915, the best year ever in the stock market. But those who bought at the onset of World War II, believing there would be a replay of the World War I gains, were sorely disappointed because of the government's determination to cap wartime profits. World events may shock the market in the short run, but thankfully they have proven unable to dent the long-term returns that have become characteristic of stocks over the long run.

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CHAPTER

STOCKS, BONDS, AND THE FLOW OF ECONOMIC DATA

The thing that most affects the stock market is everything.

JAMES PALYSTED WOOD, 1966

It's 8:28 a.m. eastern daylight time, Friday, July 5, 1996. Normally a trading day wedged between a major U.S. holiday and a weekend is slow, with little volume or price movement. But not today. Traders around the world are anxiously glued to their terminals, eyes riveted on the scrolling news that displays thousands of headlines every day. It is just two minutes before the most important announcement each month—the U.S. employment statistics.

All week, stock, bond, and currency traders have anticipated this day. The Dow has been trading within a few points of its all-time high, reached at the end of May. But interest rates have been rising, giving traders cause for concern. The seconds tick down. At 8:30 sharp, the words come across the screen:

PAYROLL UP 239,000, UNEMPLOYMENT AT SIX-YEAR LOW OF 5.3 PERCENT, WAGES UP 9 CENTS AN HOUR, BIGGEST INCREASE IN 30 YEARS.

President Clinton hailed the economic news, claiming, “We have the most solid American economy in a generation; wages for American workers are finally on the rise again.”

But the financial markets were stunned. Long-term bond prices immediately collapsed on both domestic and foreign exchanges as traders expected higher interest rates. Interest rates on long- and short-term bonds climbed nearly a quarter point. Although the stock market would not open for an hour, the S&P 500 Index futures, which represent claims on this benchmark index and are described in detail in the next chapter, fell from 676 to 656, about 2 percent. European stock markets, which had been open for hours, sold off immediately. The benchmark DAX index in Germany, CAC in France, and FT-SE in Britain instantly fell almost 2 percent. Within seconds, world equity markets lost \$200 billion, and world bond markets fell at least as much.

This episode demonstrates that what Main Street interprets as good news is often bad news on Wall Street. This is because it is more than mere profits that move stocks; interest rates, inflation, and the future direction of the Federal Reserve’s monetary policy also have a major impact.

ECONOMIC DATA AND THE MARKET

News moves markets. The timing of much news is unpredictable—like war, political developments, and natural disasters. In contrast, news based on data about the economy comes at preannounced times that are set a year or more in advance. In the United States, there are hundreds of scheduled releases of economic data each year—mostly by government agencies, but increasingly by private firms. Virtually all of the announcements deal with the economy, particularly economic growth and inflation, and all have the potential to move the market significantly.

Economic data not only frame the way traders view the economy but also impact traders’ expectations of how the central bank will implement its monetary policy. Stronger economic growth or higher inflation increases the probability that the central bank will either tighten or stop easing monetary policy. All these data influence traders’ expectations about the future course of interest rates, the economy, and ultimately stock prices.

PRINCIPLES OF MARKET REACTION

Markets do not directly respond to what is announced; rather, they respond to the *difference* between what the traders *expect* to happen and

what *actually* happens. Whether the news is “good” or “bad” for the economy is of no importance. If the market expects that 200,000 jobs were lost last month but the report shows that only 100,000 jobs were lost, this will be considered “stronger-than-expected” economic news by the financial markets—having about the same effect on markets as a gain of 200,000 jobs would when the market expected a gain of only 100,000.

The reason why markets react only to the difference between expectations and what actually occurs is that the prices of securities already incorporate all the information that is expected. If a firm is expected to report bad earnings, the market has already priced this gloomy information into the stock price. If the earnings report is not as bad as anticipated, the price will rise on the announcement. The same principle applies to the reaction of bonds, stocks, and foreign exchanges to economic data.

Therefore, to understand why the market moves the way it does, you must identify the *market expectation* for the data released. The market expectation, often referred to as the *consensus estimate*, is gathered by news and research organizations. They poll economists, professional forecasters, traders, and other market participants for their predictions for an upcoming government or private release. The results of their surveys are sent to the financial press and widely reported online and in many other news outlets.¹

INFORMATION CONTENT OF DATA RELEASES

The economic data are analyzed for their implications for future economic growth, inflation, and central bank policy. The following principle summarizes the reaction of the bond markets to the release of data relating to economic growth:

Stronger-than-expected economic growth causes both long- and short-term interest rates to rise. Weaker-than-expected economic growth causes interest rates to fall.

Faster-than-expected economic growth raises interest rates for several reasons. First, stronger economic activity makes consumers feel more confident and more willing to borrow against future income, increasing loan demand. Faster economic growth also motivates firms to

¹ Usually both the median and range of estimates are reported. The consensus estimate does vary a bit from service to service, but the estimates are usually quite close.

expand production. As a result, both firms and consumers will likely increase their demand for credit and push interest rates higher.

A second reason why interest rates rise in tandem with a stronger-than-expected economic report is that such growth might be inflationary, especially if it is near the end of an economic expansion. Economic growth associated with increases in productivity, which often occur in the early and middle stages of a business expansion, is rarely inflationary.

Going back to the example above, inflationary fears were the principal reason why interest rates soared when the Labor Department released its report on July 5, 1996. Traders feared that the large increase in wages caused by the tight labor markets and falling unemployment would cause inflation, a nemesis to both the bond and the stock markets.

Reports on economic growth also have significant implications for the actions of central banks. The threat of inflation from an overly strong economy will make it likely that the central bank will tighten credit. If the aggregate demand is expanding too rapidly relative to the supply of goods and services, the monetary authority can raise interest rates to prevent the economy from overheating.

Of course, in the case of a weaker-than-expected employment report, the bond market will respond favorably as interest rates decline in response to weaker credit demand and lower inflationary pressures. Recall that the price of bonds moves in the opposite direction of interest rates.

An important principle to understand is that the market reacts more strongly after several similar reports move in the same direction. For example, if an inflation report is higher than expected, then the following month the market will react even more strongly to another higher-than-expected reading. The reason for this is that there is a lot of noise in the individual data report and a single month's observation may be reversed in subsequent data. But if the subsequent data confirm the original data, then it is more likely that a new trend has been established and the market will move accordingly.

ECONOMIC GROWTH AND STOCK PRICES

It surprises the general public and even the financial press when a strong economic report sends the stock market lower. But stronger-than-expected economic growth has two important implications for the stock market, and each tugs in the opposite direction. A strong economy increases future corporate earnings, which is bullish for stocks. But it also raises interest rates, which raises the discount rate at which these future profits are discounted. Similarly, a weak economic report may lower ex-

pected earnings; but if interest rates decline, stock prices could possibly move up because of the decline in the rate at which these profits are discounted. It is a struggle, in asset pricing terms, between the numerator, which contains future cash flows, and the denominator, which discounts those cash flows.

Which effect is stronger—the change in the interest rate or the change in corporate profits—depends often on where the economy is in the business cycle. Recent analysis shows that in a recession, a stronger-than-expected economic report increases stock prices since the implications for corporate profits are considered more important than the change in interest rates at this stage in the business cycle.² Inversely, a weaker-than-expected report depresses stock prices. During economic expansions, and particularly toward the end of an expansion, the interest rate effect is usually stronger since inflation is more of a threat.

Many stock traders look at the movements in the bond market to guide their trading. This is particularly true of portfolio managers who actively apportion their portfolio between stocks and bonds on the basis of changes in interest rates and expected stock returns. When interest rates fall after a weak economic report, these investors are immediately ready to increase the proportion of stocks that they hold since the relative returns on stocks or bonds have, at that moment, turned in favor of stocks. On the other hand, investors who recognize that the weak employment report means lower future earnings may sell stocks. The stock market often gyrates throughout the day as investors digest the implications of the data for stock earnings and interest rates.

THE EMPLOYMENT REPORT

The *employment report*, compiled by the Bureau of Labor Statistics (BLS), is the single most important data report released by the government each month. To measure employment, the BLS does two entirely different surveys, one that measures employment and the other that measures unemployment. The *payroll survey* counts the total number of *jobs* that companies have on their payrolls, while the *household survey* counts the number of *people* who are looking for jobs. The payroll survey, sometimes called the *establishment survey*, collects payroll data from nearly 400,000 business establishments, covering nearly 50 million workers,

² See John Boyd, Jian Hu, and Ravi Jagannathan, “The Stock Market’s Reaction to Unemployment News: Why Bad News Is Usually Good for Stocks,” National Bureau of Economic Research (NBER) Working Paper No. W8092, NBER, Cambridge, Mass., January 2001.

about 40 percent of the total workforce. It is this survey that most forecasters use to judge the future course of the economy. Of the greatest importance to traders is the change in the *nonfarm payroll* (the number of farm workers is excluded since it is very volatile and not associated with cyclical economic trends).

The *unemployment rate* is determined from an entirely different survey than the payroll survey. It is the unemployment rate, however, that often gets the top billing in the evening news. The unemployment rate is calculated from a "household survey" in which data from about 60,000 households are accumulated. It asks, among other questions, whether anyone in the household has "actively" sought work over the past four weeks. Those who answer yes are classified as unemployed. The resulting number of unemployed people is divided by the number of people in the total labor force, which yields the unemployment rate. The labor force in the United States, defined as those employed plus those unemployed, comprises about two-thirds of the adult population. This ratio had risen steadily in the 1980s and 1990s as more women have successfully sought work, but it has stabilized recently.

The BLS statistics can be very tricky to interpret. Because the payroll and household data are based on totally different surveys, it is not unusual for payroll employment to go up at the same time that the unemployment rate rises, and vice versa. One reason is because the payroll survey counts jobs, while the household survey counts people. So workers with two jobs are counted only once in the household survey but twice in the payroll survey. Furthermore, self-employed individuals are not counted in the payroll survey but are counted in the household survey. Finally, increases in the number seeking work in the early stage of an economic recovery may increase the unemployment rate due to the influx of job seekers into an improved labor market.

For these reasons, economists and forecasters have downplayed the importance of the unemployment rate in forecasting the business cycle. But this does not diminish the political impact of this number. The unemployment rate is an easily understood figure that represents the fraction of the workforce looking for but not finding work. Much of the public looks more to this statistic than any other to judge the health of the economy. As a result, pressure to shift policy mounts on politicians and policymakers whenever the unemployment rate rises.

Since 2005, the Automatic Data Processing (ADP) corporation has released its own payroll data, called *The ADP National Employment Report*, two days before the BLS labor report. The ADP report is a measure of nonfarm private employment, based on approximately three-fourths

of ADP's 500,000 U.S. business clients and approximately 23 million employees. Because ADP processes the paychecks for 1 out of every 6 private sector employees in the United States every pay period across a broad range of industries, firm sizes, and geographies, ADP's numbers provide a good clue for the upcoming labor data. Early indications are that the ADP number may give a better estimate of payroll changes than the consensus forecast, although more data are needed to confirm this.

THE CYCLE OF ANNOUNCEMENTS

The employment report is just one of several dozen economic announcements that come out every month. The usual release dates for the various data reports that the BLS, the Conference Board, and other entities generate in a typical month is displayed in Table 14-1. The number of asterisks represents the importance of the report to the financial market.

The payroll report is the culmination of important data on economic growth that come out around the turn of the month. On the first business day of each month, a survey by the Institute for Supply Management (ISM, formerly the National Association of Purchasing Managers, the NAPM) called the *purchasing managers index* (PMI) is released.

The institute's report surveys 250 purchasing agents of manufacturing companies and inquires as to whether orders, production,

TABLE 14-1

Monthly Economic Calendar

Monday	Tuesday	Wednesday	Thursday	Friday
1 10:00 Purchasing Mgrs. Index** (PMI)	2 8:30 Leading Economic Indicator* (2 months lag)	3 8:15 ADP Employment Est.** 10:00 Service PMI**	4 8:30 Jobless Claims**	5 8:30 Employment Report****
8	9	10	11 8:30 Jobless Claims**	12 8:30 Retail Sales** 8:30 Producer Prices****
15	16 8:30 Consumer Prices****	17 8:30 Housing Starts*** 9:15 Industrial Production*	18 8:30 Merchandise Trade* 8:30 Jobless Claims**	19 10:00 Cons. Sentiment (Univ. of Mich., Prelim.)** 12:00 Phila. Fed Rep*
22	23 8:30 Durable Goods Orders**	24	25 8:30 Jobless Claims**	26 8:30 Gross Dom. Prod.*** 8:30 PCE Deflator***
29	30 10:00 Cons. Confidence (Conference Board)***	31 10:00 Chicago Purchasing Managers**		

Stars Rank Importance to Market (**** = most important)

employment, or other indicators are rising or falling, and it forms an index from these data. A reading of 50 means that half the managers report rising activity and half report falling activity. A reading of 52 or 53 is the sign of a normally expanding economy. A reading of 60 represents a strong economy in which three-fifths of the managers report growth. A reading below 50 represents a contracting manufacturing sector, and a reading below 40 is almost always a sign of recession. Two days later, on the third business day of the month, the ISM publishes a similar index for the service sector of the economy.

There are other releases of very timely data reports on manufacturing activity. The Chicago Purchasing Managers report comes out on the last business day of the month, the day before the national PMI report. The Chicago area is well diversified in manufacturing, so about two-thirds of the time the Chicago index will move in the same direction as the national index.

And if you want an even earlier reading on the economy, there are the consumer sentiment indicators: one from the University of Michigan and another from the Conference Board, a business trade association. These surveys query consumers about their current financial situation and their expectations of the future. The Conference Board survey, released on the last Tuesday of the month, is considered a good early indicator of consumer spending. For many years, the University of Michigan monthly index was not published until after the Conference Board release, but pressure for early data reports has persuaded the university to release a preliminary report before the Conference Board.

INFLATION REPORTS

Although the employment report forms the capstone of the news about economic growth, the market knows that the Federal Reserve is equally if not more interested in the inflation data. That's because inflation is the primary variable that the central bank can control in the long run. Some of the earliest signals of inflationary pressures arrive with the midmonth inflation statistics.

The first monthly inflation release is the *producer price index* (PPI), which was known before 1978 as the "wholesale price index." The PPI, first published in 1902, is one of the oldest continuous series of statistical data published by the government.

The PPI measures the prices received by producers for goods sold at the wholesale level, the stage before the goods are resold to the public. About one-quarter of the PPI comes from the price of capital goods sold

to manufacturers, and about 15 percent of the PPI is energy related. There are no services in the producer price index. At the same time the PPI is announced, indexes for the prices of intermediate and crude goods are released, both of which track inflation at earlier stages of production.

The second monthly inflation announcement, which follows the PPI by a day or so, is the all-important *consumer price index* (CPI). The CPI does cover the prices of services as well as goods. Services, which include rent, housing, transportation, and medical services, now comprise over half the weight of the CPI.

The consumer price index is considered the benchmark measure of inflation. When price level comparisons are made, both on a historical and an international basis, the consumer price index is almost always the chosen index. The CPI is also the price index to which so many private and public contracts, as well as Social Security and government tax brackets, are linked.

The financial market probably gives a bit more weight to the consumer price index than to the producer price index because of the CPI's widespread use in indexing and political importance. But many economists regard the producer price index as more sensitive to early price trends as inflation often shows up at the wholesale level before it shows up on the retail level.

Core Inflation

Of importance to the market is not only the overall inflation rate but inflation that excludes the volatile food and energy sectors. Since weather has a great influence on food prices, a rise or fall in the price of food over a month does not have much meaning for the overall inflationary trend. Similarly, the fluctuations of oil and natural gas prices are due to weather conditions, temporary supply disruptions, and speculative trading that do not necessarily persist into future months. To obtain an index of inflation that measures the more persistent and long-term trends of inflation, the government also computes the *core* consumer and producer price indexes, which measure inflation excluding food and energy.

The core rate of inflation is more important to the central banks as it identifies underlying inflation better than changes in the overall index that include food and energy. Forecasters are usually able to predict the core rate of inflation better than the overall rate since the latter is influenced by the volatile food and energy sectors. An error of three-tenths of a percentage point in the consensus forecast for the month-to-month rate of inflation might not be that serious, but such an error would be con-

sidered quite large for the core rate of inflation and would significantly affect the financial markets.

Another inflation indicator that both Fed chairmen Alan Greenspan and Ben Bernanke have supported is the *personal consumption expenditure* (PCE) *deflator*, which is the price index calculated for the consumption component of the GDP accounts. The PCE deflator differs from the consumer price index in that the PCE deflator uses a more up to date weighting scheme and includes the cost of the employer-paid as well as the employee-paid medical insurance.

Employment Costs

Other important releases bearing on inflation relate to labor costs. The monthly employment report issued by the BLS contains data on the hourly wage rate. This report sheds light on cost pressures arising in the labor market. Since labor costs average nearly two-thirds of a firm's production costs, increases in the hourly wage not matched by increases in productivity increase labor costs and threaten to cause inflation.

Every calendar quarter, the government also releases the *employment cost index* (ECI). This index includes benefit costs as well as wages, and it is considered the most comprehensive report of labor costs. The Federal Reserve considers this a more important indicator of inflation than the hourly wage, so the financial markets closely scrutinize these data.

IMPACT ON FINANCIAL MARKETS

The following summarizes the impact of inflation on the financial markets:

A lower-than-expected inflation report lowers interest rates and boosts bond and stock prices. Inflation worse than expected raises interest rates and depresses stock and bond prices.

That inflation is bad for bonds should come as no surprise. Bonds are fixed-income investments whose cash flows are not adjusted for inflation. Bondholders demand higher interest rates to protect their purchasing power when inflation increases.

Worse-than-expected inflation is also bad for the stock market. As I noted in Chapter 11, stocks have proven to be poor hedges against inflation in the short run. Stock investors know that worsening inflation increases the effective tax rate on both corporate earnings and capital gains and induces the central bank to tighten credit, raising real interest rates.

CENTRAL BANK POLICY

Central bank policy is of primary importance to financial markets. Martin Zweig, a noted money manager has described the relationship this way:

In the stock market, as with horse racing, money makes the mare go. Monetary conditions exert an enormous influence on stock prices. Indeed, the monetary climate—primarily the trend in interest rates and Federal Reserve policy—is the dominant factor in determining the stock market's major direction.³

Chapter 13 showed that four of the top five largest one-day rallies in Wall Street history were involved with monetary policy. Lowering short-term interest rates and providing more credit to the banking system is almost always extremely welcome by stock investors. When the central bank eases credit, it lowers the rate at which stock future cash flows are discounted and stimulates demand, which increases future earnings.

Chapter 11 showed that over the past half century, tightening by the Fed was associated with poor returns over the next year while easing boosted the market. Although the impact of changes in the fed funds rate on 3- to 12-month returns has not been as reliable in recent years as in the past, surprise intermeeting moves by the central bank are as powerful as ever. The unexpected one-half-point cut in the funds rate from 6.5 to 6 percent that took place on January 3, 2001, sent the S&P 500 Index up 5 percent and the tech-heavy Nasdaq up an all-time record 14.2 percent. A smaller, but still substantial response met the Fed's decision to lower the discount rate on August 17, 2007, during the subprime mortgage crisis.

The only case in which stocks will react poorly is if the central bank eases excessively, so that the market fears an increase in inflation. But if the central bank eases excessively, an investor would prefer to be in stocks than bonds, as fixed-income assets are hurt more than stocks by unexpected inflation.

CONCLUSION

The reactions of financial markets to the release of economic data are not random but instead can be predicted by economic analysis. Strong economic growth invariably raises interest rates, but it has an ambiguous

³ Martin Zweig, *Winning on Wall Street*, New York: Warner Books, 1986, p. 43.

effect on stock prices, as higher interest rates battle against stronger corporate profits. Higher inflation is bad for both the stock and bond markets. Central bank easing is very positive for stocks and has historically sparked some of the strongest stock rallies.

Although the most important monthly report for the markets is usually the employment data, the focus of traders constantly shifts. In the 1970s, inflation announcements took center stage, but after Fed chairman Paul Volcker shifted the focus to monetary aggregates, the Thursday afternoon money supply announcements captured the attention of traders. Later, in the 1980s when the dollar soared, trade statistics were given top billing. Employment and inflation reports are always important to the markets, and the central banks' reaction to these data is probably the most important factor that impacts markets.

In the end it should be noted that this chapter focuses on the short-run reaction of financial markets to economic data. Although it is fascinating to observe and understand the market's reaction, investing on the basis of these releases is a tricky game that is best left to speculators who can stomach the short-term volatility. Most investors will do well to watch from the sidelines and stick to an investment strategy for the long run.

4 PART

STOCK FLUCTUATIONS IN THE SHORT RUN

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15

CHAPTER

THE RISE OF EXCHANGE-TRADED FUNDS, STOCK INDEX FUTURES, AND OPTIONS

When I was a kid—a runner for Merrill Lynch at 25 dollars a week—I'd heard an old timer say, "The greatest thing to trade would be stock futures—but you can't do that, it's gambling."

LEO MELAMED, 1988¹

Warren Buffett thinks that stock futures and options ought to be outlawed, and I agree with him.

PETER LYNCH, 1989²

If someone were to ask what stock traded the largest dollar volume in the United States in 2006, what would you guess? General Electric, Exxon Mobil, Microsoft? The surprising answer is a stock that was not in

¹ Leo Melamed is the founder of the International Money Market, the home of the world's most successful stock index futures market. Quoted in Martin Mayer, *Markets*, New York: Norton, 1988, p. 111.

² Peter Lynch, *One Up on Wall Street*, New York: Penguin, 1989, p. 280.

existence before 1993 and does not even represent a company. The security with the highest dollar volume was *spiders*, the nickname given to the S&P 500 Depository Receipts (SPDRs), an exchange-traded fund that represents the value of the S&P 500 Index. In 2006, over 17.6 billion shares were traded, representing a value of over \$2.3 trillion.

EXCHANGE-TRADED FUNDS

Exchange-traded funds (ETFs) are the most innovative and successful new financial instruments since stock index futures contracts debuted two decades earlier. ETFs are shares issued by an investment company that represent an underlying portfolio. They are traded throughout the day on an exchange where the prices are determined by supply and demand. Most ETFs issued in the 1990s tracked only well-known stock indexes, but more recently they have been tracking new customized indexes and even actively managed portfolios.

The growth of exchange-traded funds has been explosive. At the end of 2006, ETF assets totaled \$422 billion, and although this is only a small fraction of the \$10.4 trillion in standard mutual funds, ETFs have grown more than 300 percent since 2002.

Spiders were the first and most successful ETF, launched in 1993. But spiders were soon joined by others, with nicknames like *cubes*, a corruption of the QQQ ticker symbol given to the Nasdaq-100 Index, and *diamonds*, with the ticker DIA, which represents the Dow Jones Industrial Average.

These ETFs track their respective indexes extremely closely. That's because designated institutions, market makers, and large investors, called *authorized participants*, can buy the underlying shares of the stocks in the index and deliver them to the issuer in exchange for units of ETFs and deliver units of ETFs in exchange for the underlying shares. The minimum size for such an exchange, called a *creation unit*, is usually 50,000 shares. For example, an authorized participant who delivers 50,000 shares of spiders to State Street Bank & Trust will receive a prorated number of shares of each member of the S&P 500 Index. These authorized participants keep the prices of the ETFs extremely close to the value of the index. For the active ETFs, such as spiders and cubes, the bid-ask spread is as low as 1 cent.

There are several advantages of ETFs over mutual funds. ETFs, unlike mutual funds, can be bought or sold at any time during the day. Second, an investor can sell ETFs short, hoping to make a profit by buying

them back at a lower price.³ This proves to be a very convenient way of hedging portfolio gains if an investor fears the market may fall. And finally, ETFs are extremely tax efficient since, unlike mutual funds, they generate almost no capital gains either from the sales of other investors or from portfolio changes to the index. This is because swaps between the ETFs and underlying shares are considered *exchanges in kind* and are not taxable events. Later in this chapter we will list the advantages and disadvantages of ETFs as compared to alternative forms of index investing.

STOCK INDEX FUTURES

ETFs are really the outgrowth of one of the most important trading innovations of the last 50 years—the development of stock index futures in the early 1980s. Despite the enormous popularity of these new exchange-traded funds, the total dollar volume in ETFs is still dwarfed by the dollar volume represented by trading in index futures, most of which began trading in Chicago but are mostly now traded on electronic exchanges. Shifts in overall market sentiment often impact the index futures market first and then are transmitted to stocks traded in New York.

To understand how important index futures were to stock prices in the 1980s and 1990s, one need only look at what happened on April 13, 1992. It began as an ordinary trading day, but at about 11:45 in the morning, the two big Chicago futures exchanges, the Board of Trade and the Mercantile Exchange, were closed when a massive leak from the Chicago River coursed through the tunnels under the financial district and triggered extensive power outages. The intraday movement of the Dow Industrials and the S&P futures is shown in Figure 15-1. As soon as the Chicago futures trading was halted, the volatility of the stock market declined significantly.

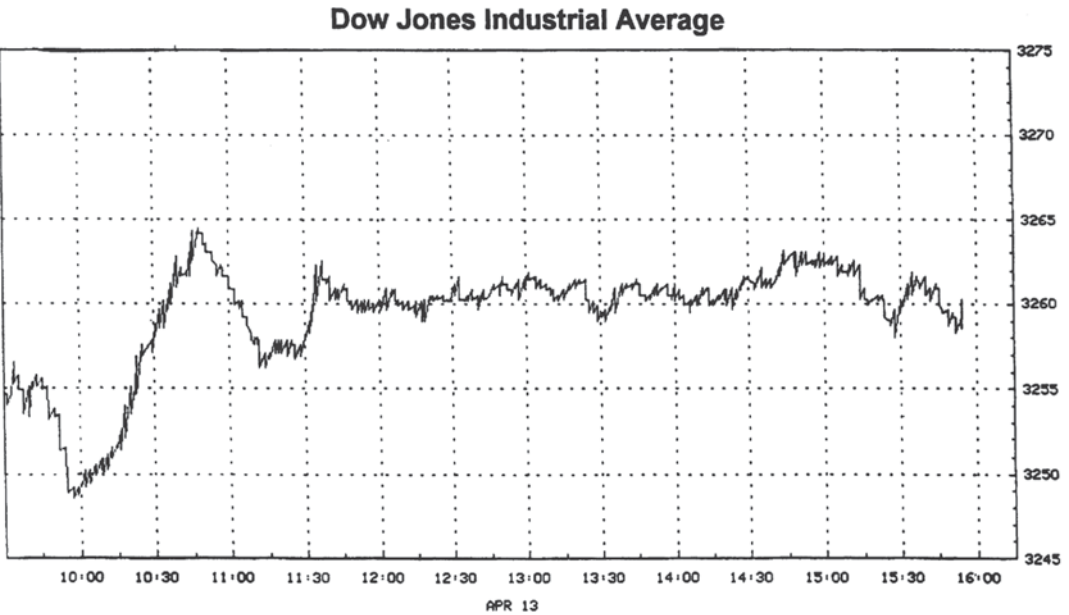
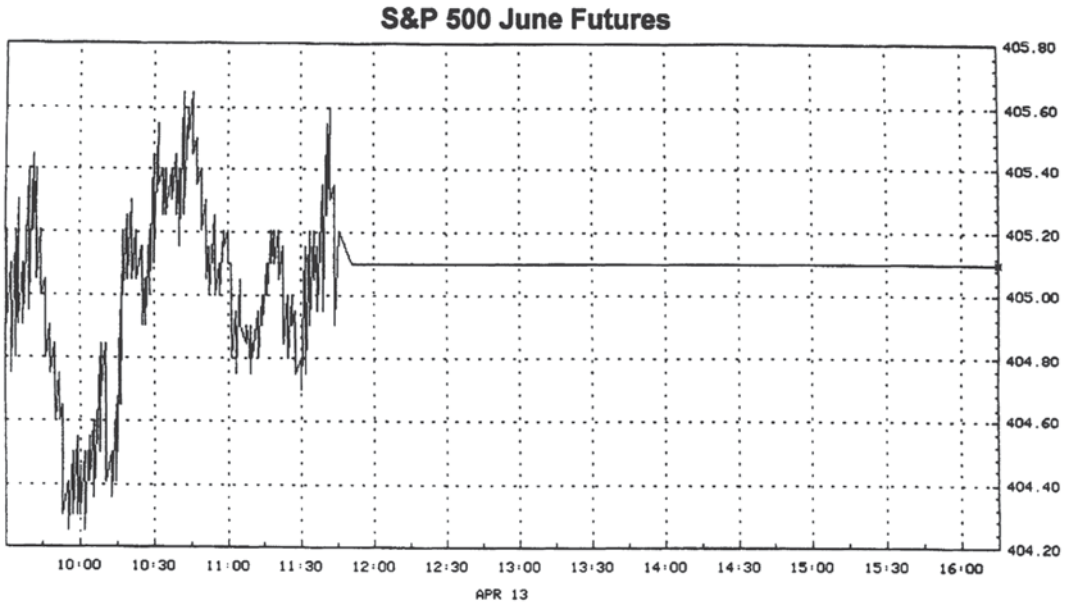
It almost looks as if the New York Stock Exchange went “brain dead” when there was no lead from Chicago. The volume in New York dropped by more than 25 percent on the day the Chicago futures market was closed; and some dealers claimed that if the futures exchange remained inoperative, it would cause liquidity problems and difficulty in executing some trades in New York.⁴ Michael Metz, a market strategist at Oppenheimer & Co., declared: “It’s been absolutely delightful; it

³ ETFs are exempt from the uptick rule that until recently restricted shorting stock when the price is falling.

⁴ Robert Steiner, “Industrials Gain 14.53 in Trading Muted by Futures Halt in Chicago,” *Wall Street Journal*, April 14, 1992, p. C2.

FIGURE 15-1

When Stock Index Futures Closed Down, April 13, 1992



SOURCE: Bloomberg L.P.

seems so sedate. It reminds me of the halcyon days on Wall Street before the program traders took hold.”⁵

Who are these *program traders* that investors hear so much about, and what do they do? The floor of the New York Stock Exchange has always been alive with a constant din of people scurrying about delivering orders and making deals. But in the mid-1980s, just a few years after index futures were introduced, the background noise was punctuated every so often by the rat-tat-tat of dozens of automated machines printing hundreds of buy or sell tickets. These orders were almost always from stock index futures *arbitrageurs*—that is, program traders who rely on differences between the prices of stock index futures traded in Chicago and the prices of the component stocks traded in New York.

The noise signaled that the futures market was moving quickly in Chicago and stock prices would soon change accordingly in New York. It was an eerie warning, something akin to the buzz of locusts in biblical times, portending decimated crops and famine. And famine it might be, for during the 1980s and early 1990s some of the most vicious declines in stock prices have been preceded by computers tapping out orders emanating from the futures markets.

In those days, changes in the overall level of stocks did not originate on Wall Street but on Wacker Drive at the Chicago Mercantile Exchange. *Specialists* on the New York Stock Exchange, those dealers assigned to make and supervise markets in specific stocks, kept their eyes glued on the futures markets to find out where stocks would be heading. These dealers learned from experience not to stand in the way of index futures when they are moving quickly. If they did, they might get caught in an avalanche of trading such as the one that buried several specialists on October 19, 1987, that fateful day when the Dow crashed nearly 23 percent.

BASICS OF THE FUTURES MARKETS

Most investors regard index futures and exchange-traded funds as esoteric securities that have little to do with the market in which stocks are bought and sold. Many investors do very well trading stocks without any knowledge of these new instruments. But no one can comprehend the short-run market movements without an understanding of stock index futures and ETFs.

⁵ “Flood in Chicago Waters Down Trading on Wall Street,” *Wall Street Journal*, April 14, 1992, p. C1. Today the proliferation of electronic trading has made it impossible for an incident such as the one that crippled the Chicago exchange 15 years ago to happen again.

Futures trading goes back hundreds of years. The term *futures* was derived from the promise to buy or deliver a commodity at some future date at some specified price. Futures trading first flourished in agricultural crops, where farmers wanted to have a guaranteed price for the crops they would harvest at a later date. Markets developed where buyers and sellers who wanted to avoid uncertainty could come to an agreement on the price for future delivery. The commitments to honor these agreements, called *futures contracts*, were freely transferable, and markets developed where they were actively traded.

Stock index futures were launched in February 1982 by the Kansas City Board of Trade using the Value Line Index of about 1,700 stocks. But two months later, at the Mercantile Exchange in Chicago, the world's most successful stock index future, based on the S&P 500 Index, was introduced. By 1984, the value of the contracts traded on this index future surpassed the dollar volume on the New York Stock Exchange for all stocks. Today, the value of stocks represented by S&P 500 futures trading exceeds \$100 billion *per day*.

All stock index futures are constructed similarly. In the case of the seller, the S&P Index future is a promise to deliver a fixed multiple of the value of the S&P 500 Index at some date in the future, called a *settlement date*. In the case of the buyer, the S&P Index future is a promise to receive a fixed multiple of the S&P 500 Index's value. The multiple for the S&P Index future is 250, so if the S&P 500 Index is 1,400, the value of one contract is \$350,000. In 1998, a *mini* version of the contract (called an *e-mini*), with a multiple of 50 times the index, was offered, and it trades on the electronic markets. The dollar volume of these minis now far exceeds that of the standard-sized contracts.

There are four evenly spaced settlement dates each year. They fall on the third Friday of March, June, September, and December. Each settlement date corresponds to a contract. If you buy a futures contract, you are entitled to receive (if *positive*) or obligated to pay (if *negative*) 250 times the difference between the value of the S&P 500 Index on the settlement date and the price at which you purchased the contract.

For example, if you buy one September S&P futures contract at 1,400, and on that third Friday of September the S&P 500 Index is at 1,410, you have made 10 points, which translates into \$2,500 profit (\$250 times 10 points). Of course, if the index has fallen to 1,390 on the settlement date, you will lose \$2,500. For every point the S&P 500 Index goes up or down, you make or lose \$250 per contract.

On the other hand, the returns to the seller of an S&P 500 futures contract are the mirror image of the returns to the buyer. The seller

makes money when the index falls. In the previous example, the seller of the S&P 500 futures contract at 1,400 will lose \$2,500 if the index at settlement date rises to 1,410, while he or she would make the same amount if the index fell to 1,390.

One source of the popularity of stock index futures is their unique settlement procedure. With a standard futures contract, if you bought it, you would be obligated at settlement to receive, or if you sold it, you would be obligated to deliver, a specified quantity of the good for which you have contracted. Many apocryphal stories abound about how traders, forgetting to close out their contract, find bushels of wheat, corn, or frozen pork bellies dumped on their lawn on settlement day.

If commodity delivery rules applied to the S&P 500 Index futures contracts, delivery would require a specified number of shares for each of the 500 firms in the index. Surely this would be extraordinarily cumbersome and costly. To avoid this problem, the designers of the stock index futures contract specified that settlement be made in cash, computed simply by taking the difference between the contract price at the time of the trade and the value of the index on the settlement date. No delivery of stock takes place. If a trader does not close a contract before settlement, his or her account would just be debited or credited on settlement date.

The creation of cash-settled futures contracts was no easy matter. In most states, particularly Illinois where the large futures exchanges are located, settling a futures contract in cash was considered a wager—and wagering, except in some special circumstances, was illegal. In 1974, however, the Commodity Futures Trading Commission, a federal agency, was established by Congress to regulate all futures trading. Since futures trading was now governed by this new federal agency and since there was no federal prohibition against wagering, the prohibitory state laws were superseded.

INDEX ARBITRAGE

The prices of commodities (or financial assets) in the futures market do not stand apart from the prices of the underlying commodity. If the value of a futures contract rises sufficiently above the price of the commodity that can be purchased for immediate delivery in the open market, often called the *cash* or *spot market*, traders can buy the commodity, store it, and then deliver it at a profit against the higher-priced futures contract on the settlement date. If the price of a futures contract falls too far below its current spot price, owners of the commodity can sell it

today, buy the futures contract, and take delivery of the commodity later at a lower price—in essence, earning a return on goods that would be in storage anyway.

Such a process of buying and selling commodities against their futures contracts is one type of arbitrage. Arbitrage involves traders who take advantage of temporary discrepancies in the prices of identical or nearly identical goods or assets. Those who reap profits from such trades are called *arbitrageurs*.

Arbitrage is very common in both the stock index futures market and the ETF market. If the price of futures contracts sufficiently exceeds that of the underlying S&P 500 Index, it pays for arbitrageurs to buy the underlying stocks and sell the futures contracts. If the futures price falls sufficiently below that of the index, arbitrageurs will sell the underlying stocks and buy the futures. On the settlement date, the futures price must equal the underlying index by the terms of the contract, so the difference between the futures price and the index—called a *premium* if it is positive and a *discount* if it is negative—is an opportunity for profit.

Arbitrage in the ETF market is similar, except here an arbitrageur must buy or sell all the stocks in the index and simultaneously make an offsetting transaction in the ETF in the open market. An arbitrageur in the ETF makes a profit when the prices of the stocks that she buys to create the ETF are less than the funds that she receives by selling, or *creating*, an ETF. Alternatively if the prices she receives from selling the stocks in the index exceed the cost of buying the ETF, the arbitrageur will buy the ETF, exchange it into its component stocks, and sell them in the open market.

Index arbitrage has become a finely tuned art. The prices of stock index futures and ETFs usually stay within very narrow bands of the index value based on the price of the underlying shares. When the buying or selling of stock index futures or ETFs drives the price outside this band, arbitrageurs step in, and a flood of orders to buy or sell are immediately transmitted to the exchanges that trade the underlying stocks in the index. These simultaneously placed orders are called *programmed trading*, and they consist of either *buy programs* or *sell programs*. When market commentators talk about “sell programs hitting the market,” they mean that index arbitrageurs are selling stock and buying futures or ETFs that have fallen to a discount.

PREDICTING THE NEW YORK OPEN WITH GLOBEX TRADING

Although trading index futures closes at 4:15 p.m. Eastern time, 15 minutes after the close of the New York stock exchanges, trading reopens in

index futures at 4:30 in an electronic market called *Globex*. Globex has no centralized floor, and traders post their bids and offers on computer screens where all interested parties have instant access. Trading in Globex proceeds all night until 9:15 the next morning, 15 minutes before the start of stock trading in New York.⁶

Index futures trading can be active just after the close of regular trading on the NYSE and Nasdaq. This trading is especially popular in the weeks following the end of a quarter when many firms release their earnings reports and give guidance about future earnings and revenues. Unless there is important breaking news, trading is usually slow during the night hours, although activity can pick up if there is dramatic movement on the Tokyo or European stock exchanges. Trading again becomes very active around 8:30 a.m., when many of the government economic data, such as the employment report and the consumer price index, are announced.⁷

Market watchers can use the Globex futures in the S&P, Nasdaq, and the Dow to predict how the market will open in New York. The *fair market value* of these index futures are calculated based on the arbitrage conditions between the future and current prices of stocks.

The fair market value for the futures contract is determined on the basis of the current index value when markets are open and on the previous closing level when markets are closed. Because of the continuous stream of news, the futures price overnight will usually be either above or below the fair market value computed at the close. If, for instance, better-than-expected earnings reports came out after the market closed, then the futures price will trade above fair market value computed on the basis of previous closing prices. The amount by which the futures price trades above or below its fair market value will be the best estimate of where stocks will trade when the exchanges open. Many financial news channels post the overnight trading in the S&P 500, Dow, and Nasdaq futures to inform viewers of the likely opening of the market.

The formula to calculate the fair market value depends on two variables: the dividend yield on stocks and the interest rate. If an investor puts a sum of money today in risk-free bonds, that sum will earn interest at the ongoing interest rate. If instead the investor buys a portfolio of stocks and simultaneously sells a one-year futures contract that guarantees the price of those stocks one year from now, the investor will earn the

⁶ In Chapter 13, we examined the reaction of S&P futures to the terrorist attacks on the morning of September 11, 2001.

⁷ In Chapter 14 we noted the dramatic fall in the S&P futures traded on the Globex that occurred in response to the strong July 5, 1996, employment report.

dividend yield on stocks and be guaranteed a return on his or her stocks that is the difference between the futures price and the current price.

Since both these investments deliver a guaranteed, riskless sum, they must earn the same rate of return. That means that the futures price for stocks must be sufficiently above the current price to compensate the investor for the difference between the yield on stocks and the yield on bonds. In other words, the futures price must be above the current price (in percentage terms) by $i - d$, the interest rate minus the dividend yield.⁸

DOUBLE AND TRIPLE WITCHING

Index futures play some strange games with stock prices on the days when futures contracts expire. Recall that index arbitrage works through the simultaneous buying or selling of stocks against futures contracts. On the day that contracts expire, arbitrageurs unwind their stock positions at precisely the same time that the futures contracts expire.

Index futures contracts expire on the third Friday of the last month of each quarter: in March, June, September, and December. Index options and options on individual stocks, which are described later in the chapter, settle on the third Friday of every month. Hence four times a year, all three types of contracts expire at once. This expiration has in the past produced violent price movements in the market, and it is consequently termed a *triple witching hour*. The third Friday of a month when there are no futures contract settlements is called a *double witching*, and it displays less volatility than triple witching.

There is no mystery why the market is volatile during double or triple witching dates. On these days, the specialists on the New York Stock Exchange and the market makers on the Nasdaq are instructed to buy or sell large blocks of stock on the close, whatever the price, because institutional investors are closing out their arbitrage positions. If there is a huge imbalance of buy orders, prices will soar; if sell orders predominate, prices will plunge. These swings, however, do not matter to arbitrageurs since the profit on the future position will offset losses on the stock position, and vice versa.

In 1988, the New York Stock Exchange urged the Chicago Mercantile Exchange to change its procedures and stop futures trading at the close of Thursday's trading and settle the contracts at Friday opening prices rather than at Friday closing prices. This change gave specialists

⁸ If the dividend yield is more than the interest rate, then the futures price will be below the current price.

more time to seek out balancing bids and offers, and it has greatly moderated the movements in stock prices on triple witching dates.

MARGIN AND LEVERAGE

One of the reasons for the popularity of futures contracts is that the cash needed to enter into the trade is a very small part of the value of the contract. Unlike stocks, there is no money that transfers between the buyer and seller when a futures contract is bought or sold. A small amount of good-faith collateral, or *margin*, is required by the broker from both the buyer and seller to ensure that both parties will honor the contract at settlement. For the S&P 500 Index, the current initial margin is about 5 percent of the value of the contract. This margin can be kept in Treasury bills with interest accruing to the investor, so trading a futures contract involves neither a transfer of cash nor a loss of interest income.

The *leverage*, or the amount of stock that you control relative to the amount of margin you have to put down with a futures contract, is enormous. For every dollar of cash (or Treasury bills) that you put in margin against an S&P futures contract, you command about \$20 of stock. And for *day trading*, when you close your positions by the end of the day, the margin requirements are significantly less. These low margins contrast with the 50 percent margin requirement for the purchase of individual stocks that has prevailed since 1974.

This ability to control \$20 or more of stock with \$1 of cash is reminiscent of the rampant speculation that existed in the 1920s before the establishment of minimum stock margin requirements. In the 1920s, individual stocks were frequently purchased with a 10 percent margin. It was popular to speculate with such borrowed money, for as long as the market was rising, few investors lost money. But if the market dropped precipitously, margin buyers often found that not only did they lose their equity but they were also indebted to the brokerage firm. Buying futures contracts with low margins can result in similar repercussions today. The tendency of low margins to fuel market volatility is discussed in Chapter 16.

USING ETFs OR FUTURES

The use of ETFs or index futures greatly increases an investor's flexibility to manage portfolios. Suppose an investor has built up gains in individual stocks but is now getting nervous about the market. Selling one's individual stocks may trigger a large tax liability.

But by using ETFs (or futures), a good solution is available. The investor sells enough ETFs to cover the value of the portfolio that he seeks to hedge and continues to hold his individual stocks. If the market declines, the investor profits on his ETF position, offsetting the losses of the stock portfolio. If the market instead goes up, contrary to expectation, the loss on ETFs will be offset by the gains on the individual stock holdings. This is called *hedging stock market risk*. Since the investor never sells his individual stocks, he triggers no tax liability from these positions.

Another advantage of ETFs is that they can yield a profit from a decline in the market even if one does not own any stock. Selling ETFs substitutes for *shorting stock*, or selling stock you do not own in anticipation that the price will fall and you can buy it back at a lower price. Using ETFs to bet on a falling market is much more convenient than shorting a portfolio of stocks since regulations prohibit individual stocks from being shorted if their price is declining, but ETFs are exempt from this rule.

WHERE TO PUT YOUR INDEXED INVESTMENTS: ETFs, FUTURES, OR INDEX MUTUAL FUNDS?

With the development of index futures and ETFs, investors have three major choices to match the performance of one of many stock indexes: exchange-traded funds, index futures, and index mutual funds.⁹ The important characteristics of each type of investment are given in Table 15-1.

As far as trading flexibility, ETFs and index futures far outshine mutual funds. ETFs and index futures can be bought or sold any time during the trading day and after hours on the Globex and other exchanges. In contrast, mutual funds can be bought or sold only at the market close, and the investor's order must often be in several hours earlier. ETFs and index futures can also be shorted to hedge one's portfolio or speculate on a market decline, which mutual funds cannot. And ETFs can be margined like any stock (with current Fed regulations at 50 percent), while index futures possess the highest degree of leverage, as investors can control stocks worth 20 or more times the value of cash.

The trading flexibility of ETFs or futures can be either a bane or a boon to investors. It is easy to overreact to the continuous stream of optimistic and pessimistic news, causing an investor to sell near the low or buy near the high. Furthermore, the ability to short stocks (except for hedging) or to leverage might tempt investors to play their short-term hunches on the market. This is a very dangerous game. For most in-

⁹ Index mutual funds are described in detail in Chapter 20.

TABLE 15-1

Comparison of Indexed Investments

	ETFs	Index Futures	Index Mutual Funds
Continuous Trading	Yes	Yes	No
Can Be Sold Short	Yes	Yes	No
Leverage	Can Borrow 50%	Can Borrow over 90%	None
Expense Ratio	Extremely Low	None	Very Low
Trading Costs	Stock Commission	Futures Commission	None
Dividend Reinvestment	Yes*	No†	Yes
Tax Efficiency	Extremely Good	Poor	Very Good

*Depends on policy of brokerage firm

†Dividends built into price

vestors, restricting the frequency of trades and reducing leverage is beneficial to their total returns.

On the cost side, all these vehicles are very efficient. Index mutual funds are available at an annual cost of 20 basis points or less a year, and most ETFs are even cheaper. But both ETFs and futures must be bought through a brokerage account, and this involves paying both a commission and a “bid-ask spread,” although these are quite low for actively traded indexes. On the other hand, most index funds are *no-load funds*, meaning there is no commission when the fund is bought or sold. Furthermore, although index futures involve no annual costs, these contracts must be rolled over into new contracts at least once a year, entailing additional commissions.

It is on the tax side that ETFs really shine. Because of the structure of ETFs, these funds generate very few if any capital gains. Index mutual funds are also very tax efficient, but they do throw off capital gains. This means funds must sell individual shares from their portfolio if investors redeem their shares or if stocks are removed from the index. Although capital gains have been small for most index funds, they are larger than ETFs.¹⁰ Futures are not tax efficient since any gains or losses must be realized at the end of the year whether the contracts are sold or not.

Of course, these tax differences between ETFs and index mutual funds do not matter if an investor holds these funds in a tax-sheltered account, such as an individual retirement account (IRA) or a Keogh plan (futures are not allowed in these accounts). However, if these funds are held in taxable accounts, the after-tax return on ETFs is apt to be higher than it would be for even the most efficient index fund.

¹⁰ From 1997 through 2006, there was no capital gain distribution from spiders (S&P 500 ETFs), while the Vanguard 500 Index Fund has had several (although none since 2000).

The bottom line is that unless you like to speculate and leverage your cash, you will want to avoid index futures. However, if you want to speculate on the direction of the market, I recommend *index options*, which are described below and which limit an investor's loss.

Whether to hold ETFs or low-cost index mutual funds is a very close decision. If you like to move in and out of the market frequently (which I do not recommend), ETFs are for you. If you like to invest in the market on a monthly basis or automatically reinvest your dividends, then no-load index funds may be the better instrument. However, in recent years automatic reinvestment of dividends has become possible for stocks and ETFs if you specify that option to your brokerage firm. This development further tips the scale in favor of ETFs over index mutual funds.

INDEX OPTIONS

Although ETFs and index futures are very important to investment professionals and institutions, the options market has caught the fancy of many investors. And this is not surprising. The beauty of an option is embedded in its very name: you have the option, but not the obligation, to buy or sell stocks or indexes at a given price by a given time. For the option buyer, this option, in contrast to the futures, automatically limits your maximum liability to the amount you invested.

There are two major types of options: puts and calls. *Calls* give you the right to buy a stock (or stocks) at a fixed price within a given period of time. *Puts* give you the right to sell a stock. Puts and calls have existed on individual stocks for decades, but they were not bought and sold through an organized trading system until the establishment of the Chicago Board Options Exchange (CBOE) in 1974.

What attracts investors to puts and calls is that liability is strictly limited. If the market moves against options buyers, they can forfeit the purchase price, forgoing the option to buy or sell. This contrasts sharply with futures contracts with which, if the market goes against buyers, losses can mount quickly. In a volatile market, futures can be extremely risky, and it could be impossible for investors to exit a contract without substantial losses.

In 1978, the CBOE began trading options on the popular stock indexes, such as the S&P 500 Index.¹¹ The CBOE options trade in multiples

¹¹ In fact, the largest 100 stocks of the S&P 500 Index, called the "S&P 100," comprise the most popularly traded index options. Options based on the S&P 500 Index are more widely used by institutional investors.

of \$100 per point of index value—cheaper than the \$250-per-point multiple on the popular S&P 500 Index futures.

An index allows investors to buy the stock index at a set price within a given period of time. Assume that the S&P 500 Index is now selling for 1,400, but you believe that the market is going to rise. Let us assume you can purchase a call option at 1,450 for three months for 30 points, or \$3,000. The purchase price of the option is called the *premium*, and the price at which the option has value when it expires—in this case 1,450—is called the *strike price*. At any time within the next three months you can, if you choose, exercise your option and receive \$100 for every point that the S&P 500 Index is above 1,450.

You need not exercise your option to make a profit. There is an extremely active market for options, and you can always sell them before expiration to other investors. In this example, the S&P 500 Index will have to rise above 1,480 for you to show a profit if you hold until the expiration, since you paid \$3,000 for the option. But the beauty of options is that, if you guessed wrong and the market falls, the most you can lose is the \$3,000 premium you paid.

An index put works exactly the same way as a call, but in this case the buyer makes money if the market goes down. Assume you buy a put on the S&P 500 Index at 1,350, paying a \$3,000 premium. Every point the S&P 500 Index is below 1,350 at expiration will recoup \$100 of your initial premium. If the index falls to 1,320 by expiration, you have broken even. Every point below 1,320 gives you a profit on your option.

The price that you pay for an index option is determined by the market and depends on many factors, including interest rates and dividend yields. But the most important factor is the expected volatility of the market itself. Clearly, the more volatile the market, the more expensive it is to buy either puts or calls. In a dull market, it is unlikely that the market will move sufficiently high (in the case of a call) or low (in the case of a put) to give options buyers a profit. If this low volatility is expected to continue, the prices of options are low. In contrast, in volatile markets, the premiums on puts and calls are bid up as traders consider it more likely that the options will have value by the time of their expiration.¹²

The price of options depends on the judgments of traders as to the likelihood that the market will move sufficiently to make the rights to buy or sell stock at a fixed price valuable. But the theory of options pricing was given a big boost in the 1970s when two academic economists, Fischer Black and Myron Scholes, developed the first mathematical for-

¹² Chapter 16 will discuss a valuable index of option volatility called *VIX*.

mula to price options. The *Black-Scholes formula* was an instant success. It gave traders a benchmark for valuation where previously they used only their intuition. The formula was programmed on traders' handheld calculators and PCs around the world. Although there are conditions when the formula must be modified, empirical research has shown that the Black-Scholes formula closely approximates the price of traded options. Myron Scholes won the Nobel Prize in Economics in 1997 for his discovery.¹³

Buying Index Options

Options are actually more basic instruments than futures or ETFs. You can replicate any future or ETF with options, but the reverse is not true. Options offer the investor far more strategies than futures. Such strategies can range from the very speculative to the extremely conservative.

Suppose you want to be protected against a decline in the market. You can buy an index put, which increases in value as the market declines. Of course, you have to pay a premium for this option, very much like an insurance premium. If the market does not decline, you have forfeited your premium. But if it does decline, the increase in the value of your put has cushioned, if not completely offset, the decline in your stock portfolio.

Another advantage of puts is that you can buy just the amount of protection that you like. If you want to protect yourself against only a total collapse in the market, you can buy a put that is way *out-of-the-money*, in other words, a put whose strike price is far below that of the current level of the index. This option pays off only if the market declines precipitously. In addition, you can also buy puts with a strike price above the current market, so the option retains some value even if the market does not decline. Of course, these *in-the-money* puts are far more expensive.

There are many recorded examples of fantastic gains in puts and calls. But for every option that gains so spectacularly in value, there are thousands of options that expire worthless. Some market professionals estimate that 85 percent of individual investors who play the options market lose money. Not only do options buyers have to be right about

¹³ The original article was published in 1973: Fischer Black and Myron Scholes, "The Pricing of Options and Corporate Liabilities," *Journal of Political Economy*, vol. 81, no. 3, pp. 637–654. Fischer Black was deceased when the Nobel Prize was awarded in 1997. Myron Scholes shared the Nobel Prize with William Sharpe and Bob Merton, the latter contributing to the discovery of the formula.

the direction of the market but also their timing must be nearly perfect, and their selection of the strike price must be appropriate.

Selling Index Options

Of course, for anyone who buys an option, someone must sell—or write—an options contract. The sellers, or writers, of call options believe that the market will not rise sufficiently to make a profit for options buyers. Sellers of call options usually make money when they sell options since the vast majority of options expire worthless. But should the market move sharply against the options sellers, their losses could be enormous.

For that reason, most sellers of call options are investors who already own stock. This strategy, called *buy and write*, is popular with many investors since it is seen as a win-win proposition. If stocks go down, they collect a premium from buyers of the call, and so they are better off than if they had not written the option. If stocks do nothing, they also collect the premium on the call, and they are still better off. If stocks go up, call writers still gain more on the stocks they own than they lose on the call they wrote, so they are still ahead. Of course, if stocks go up strongly, they miss some of the rally since they have promised to deliver stock at a fixed price. In that case, call writers certainly would have been better off if they had not sold the call. But they still make more money than if they had not owned the stocks at all.

The buyers of put options are insuring their stock against price declines. But who are the sellers of these options? They are primarily those who are willing to buy the stock, but only if the price declines. A seller of a put collects a premium, but he or she receives the stock only if it falls sufficiently to go below the strike price. Since put sellers are not as common as call sellers, premiums on puts that are out-of-the-money are frequently quite high.

THE IMPORTANCE OF INDEXED PRODUCTS

The development of stock index futures and options in the 1980s was a major development for investors and money managers. Heavily capitalized firms, such as those represented in the Dow Jones Industrial Average, have always attracted money because of their outstanding liquidity. But with stock index futures, investors were able to buy the whole market, such as represented by the popular indexes.

Ten years later, exchange-traded funds gave investors still another way to diversify across all markets at low cost. These ETFs had the fa-

miliarity of stocks but, like index futures, much higher liquidity and superior tax efficiency. Today when investors want to take a position in the market, it is most easily done with stock index futures or exchange-traded funds. Index options give investors the ability to insure the value of their portfolio at the lowest possible price and save on transaction costs and taxes.

Despite the opposition of such notable investors as Warren Buffett and Peter Lynch, there is no hard evidence that these index products have increased volatility or harmed investors. In fact, it is my belief that these index products have increased the liquidity of the world's stock markets, enabled better diversification, and led to higher stock prices than would be available without them.

16

CHAPTER

MARKET VOLATILITY

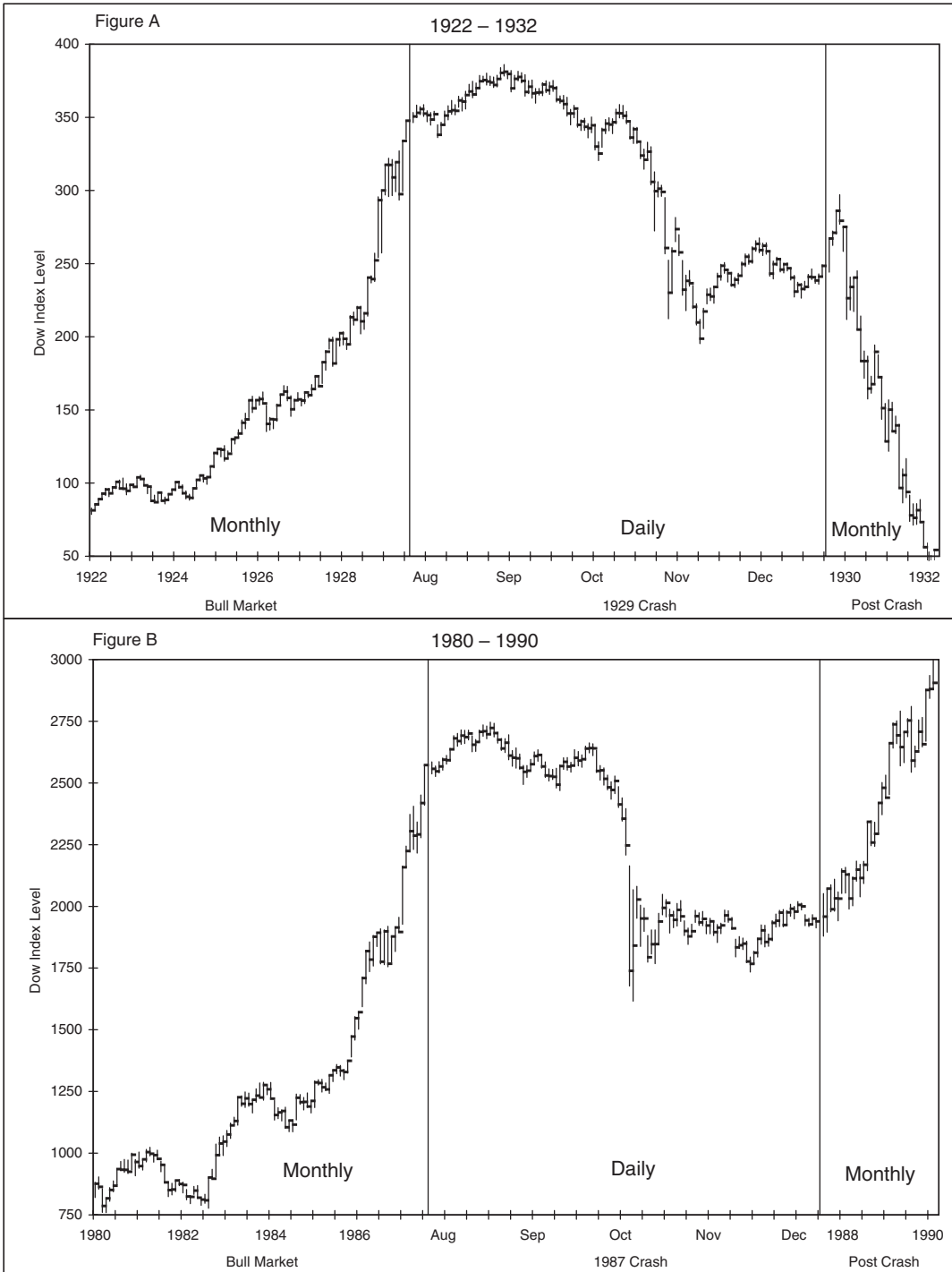
The word crisis in Chinese is composed of two characters: the first, the symbol of danger, . . . the second, of opportunity.

A comparison of the Dow Jones Industrial Average from 1922 through 1932 and 1980 through 1990 is shown in Figure 16-1. There is an uncanny similarity between these two bull markets. In October 1987, the editors of the *Wall Street Journal*, looking at the then-incomplete version of the chart shown in Figure 16-1b, felt the similarity was so portentous that they printed a similar comparison in the paper that hit the streets on Monday morning, October 19, 1987. Little did they know that that day would witness the greatest one-day drop in stock market history, exceeding the great crash of October 29, 1929. Ominously, the market continued to trade very much like 1929 for the remainder of the year. Many forecasters, citing the similarities between the two periods, were certain that disaster loomed and advised their clients to sell everything.

But the similarity between the 1929 and the 1987 episodes stopped at year's end. The stock market recovered from its October 1987 crash, and by August 1989, it hit new high ground. In contrast, two years after the October 1929 crash, the Dow, in the throes of the greatest bear market in U.S. history, had lost more than two-thirds of its value and was about to lose two-thirds more.

FIGURE 16-1

1929 and 1987 Stock Crashes



What was different? Why did the eerie similarities between these two events eventually diverge so dramatically? The simple answer is that in 1987 the central bank had the power to control the ultimate source of liquidity in the economy—the supply of money. And, in contrast to 1929, it did not hesitate to use it. Heeding the painful lessons of its mistakes in the early 1930s, the Fed temporarily flooded the economy with money and pledged to stand by all bank deposits to ensure that all aspects of the financial system would function properly.

The public was assured. There were no runs on banks, no contraction of the money supply, and no deflation in commodity and asset values. Indeed, the economy itself expanded despite the market collapse. The October 1987 stock market crash taught investors an important lesson—the world was indeed different from 1929 and a sharp sell-off can be an opportunity for profit, not a time to panic.

THE STOCK MARKET CRASH OF OCTOBER 1987

The stock crash of Monday, October 19, 1987, was one of the most dramatic financial events of the postwar era. The 508-point, or 22.6 percent, decline in the Dow Jones Industrials from 2,247 to 1,739 was by far the largest point drop up to that time and the largest one-day percentage drop in all history. Volume on the New York Stock Exchange soared to an all-time record, exceeding 600 million shares on both Monday and Tuesday, and for that fateful week the number of shares traded exceeded the volume for all of 1966.

The crash on Wall Street reverberated around the world. Tokyo, which two years later was going to enter its own massive bear market, fell the least, but it still experienced a record one-day drop of 15.6 percent. Stocks in New Zealand fell nearly 40 percent, and the Hong Kong market closed because collapsing prices brought massive defaults in their stock index futures market. In the United States alone, stock values on that infamous day dropped about \$500 billion, and the total worldwide decline in stock values exceeded \$1 trillion. A similar percentage decline in today's market would wipe out more than \$7 trillion worldwide, a sum greater than the gross national product of every country but the United States.¹

The stock market decline began in earnest the week prior to “Black Monday,” as October 19 came to be called. At 8:30 a.m. on the preceding

¹ This is based on a \$31.6 trillion worldwide total stock value in 2007, float adjusted. The sum would be much larger if we included the value of government-held shares in emerging markets.

Wednesday, the Department of Commerce reported that the United States suffered a \$15.7 billion merchandise trade deficit, which at that time was one of the largest in U.S. history and far in excess of market expectations. The reaction in the financial markets was immediate. Yields on long government bonds rose to over 10 percent for the first time since November 1985, and the dollar declined sharply. The Dow Industrials fell 95 points on Wednesday, a record point drop at that time.

The situation continued to worsen on Thursday and Friday as the Dow fell 166 more points, to 2,246. Late Friday afternoon, about 15 minutes prior to close, heavy selling hit the stock index futures markets in Chicago. The indexes had fallen below crucial support levels, which led to the barrage of selling in Chicago by those wanting to get out of stocks at almost any price.

The December S&P 500 futures contract fell to an unprecedented 6 points (or almost 3 percent) below the spot index. The development of such a wide discount meant that money managers were willing to sell large orders at a significant concession in order to sell fast, rather than risk that their sell orders for individual stocks might sit in New York, unexecuted. At the close of trading on Friday, the stock market had experienced its worst week in nearly five decades.

Before New York opened the following Monday, there were ominous portents from the world markets. Overnight in Tokyo, the Nikkei average fell 2½ percent, and there were sharp declines in Sydney and Hong Kong. In London, prices had fallen by 10 percent as many money managers were trying to sell U.S. stocks trading there before the anticipated decline hit New York.

Trading on the New York Stock Exchange on Black Monday was chaotic. No Dow Jones Industrial stock traded near the 9:30 opening bell, and only 7 Dow stocks traded before 9:45. By 10:30, 11 Dow stocks still had not opened. "Portfolio insurers," described later in this chapter, heavily sold stock index futures, trying to insulate their clients' exposure to the plunging market. By late afternoon, the S&P 500 Index futures were selling at a 25-point, or 12 percent, discount to the spot market, a spread that was previously considered inconceivable. By the late afternoon, huge sell orders transmitted by program sellers cascaded onto the New York Exchange through the computerized system. The Dow Industrials collapsed almost 300 points in the final hour of trading, bringing the toll for the day to a record 508 points, or 22.6 percent.

Although October 19 is remembered in history as the day of the great stock crash, it was actually the next day—"Terrible Tuesday," as

it has become known—that the market almost failed. After opening up over 10 percent from Monday’s low, the market began to plunge by midmorning, and shortly after noon it fell below its Monday close. The S&P 500 Index futures market collapsed to 181—an incredible 40 points, or 22 percent, under the reported index value. If index arbitrage had been possible, the futures prices would have dictated a Dow at 1,450. Stock prices in the world’s largest market, on this calculation, were off nearly 50 percent from their high of 2,722 set just seven weeks earlier.

It was at this time that near meltdown hit the market. The NYSE did not close, but trading was halted in almost 200 stocks. For the first time, trading was also halted in the S&P 500 Index futures in Chicago.

The only futures market of any size that remained open was the Major Market Index that traded on the Chicago Board of Trade and represented blue-chip stocks similar to the Dow Industrials. These blue chips were selling at such deep discounts to the prices in New York that values proved irresistible to some speculators. And since it was the only market that remained open, buyers stepped in and futures shot up an equivalent of 120 Dow points, or almost 10 percent, in a matter of minutes. When traders and the exchange specialists saw the buying come back into the blue chips, prices rallied in New York and the worst of the market panic passed. A subsequent investigative report by the *Wall Street Journal* indicated that this futures market was a key to reversing the catastrophic market collapse.²

THE CAUSES OF THE OCTOBER 1987 CRASH

There was no single precipitating event—such as a declaration of war, a terrorist act, an assassination, or a bankruptcy—that caused Black Monday. However, worrying trends had threatened the rising stock market for some time: sharply higher long-term rates caused by a falling dollar and the rapid development of a new strategy, called *portfolio insurance*, that was designed to insulate portfolios from a decline in the overall market. The latter was born from the explosive growth of stock index futures markets detailed in the previous chapter, markets that did not even exist six years earlier.

² James Stewart and Daniel Hertzberg, “How the Stock Market Almost Disintegrated a Day after the Crash,” *Wall Street Journal*, November 20, 1987, p. 1.

Exchange-Rate Policies

The roots of the surge in interest rates that preceded the October 1987 stock market crash are found in the futile attempts by the United States and other G7 countries (Japan, the United Kingdom, Germany, France, Italy, and Canada) to prevent the dollar from falling in the international exchange markets.

The dollar had bounded to unprecedented levels in the middle of the 1980s on the heels of huge Japanese and European purchases of dollar securities and a strong U.S. economy. Foreign investors were attracted to high dollar interest rates, in part driven by record U.S. budget deficits but also by a strengthening of the U.S. economy and the capital-friendly presidency of Ronald Reagan. By February 1985, the dollar became massively overvalued and U.S. exports became very uncompetitive, severely worsening the U.S. trade deficit. The dollar then reversed course and began a steep decline.

Central bankers initially cheered the fall of the overpriced dollar, but they grew concerned when the dollar continued to decline and the U.S. trade deficit, instead of improving, worsened. Finance ministers met in February 1987 in Paris with the goal of supporting the dollar. They worried that if the dollar became too cheap, their own exports to the United States, which had grown substantially when the dollar was high, would suffer.

The Federal Reserve reluctantly participated in the dollar stabilization program, whose success depended on either an improvement in the U.S. trade position or, absent that, a commitment by the Federal Reserve to raise interest rates to support the dollar.

But the trade deficit did not improve; in fact, it worsened after the initiation of the exchange stabilization policies. Traders, nervous about the deteriorating U.S. trade balance, demanded ever higher interest rates to hold U.S. assets. Leo Melamed, chairman of the Chicago Mercantile Exchange, was blunt when asked about the origins of Black Monday: "What caused the crash was all that f— around with the currencies of the world."³

The stock market initially ignored rising interest rates. The U.S. market, like most equity markets around the world, was booming. The Dow Jones Industrials, which started 1987 at 1,933, reached an all-time high of 2,725 on August 22—250 percent above the August 1982 low reached five years earlier. All world markets participated. Over the same

³ Martin Mayer, *Markets*, New York: Norton, 1988, p. 62.

five-year period, the British stock market was up 164 percent; the Swiss, 209 percent; German, 217 percent; Japanese, 288 percent; and Italian, 421 percent.

But rising bond rates, coupled with higher stock prices, spelled trouble for the equity markets. The long-term government bond rate, which began the year at 7 percent, topped 9 percent in September and continued to rise. As stocks rose, the dividend and earnings yield fell, and the gap between the real yield on bonds and the earnings and dividend yields on stocks reached a postwar high. By the morning of October 19, the long-term bond yield had reached 10.47 percent despite the fact that inflation was well under control. The record gap between yields on stocks and the real yields on bonds set the stage for the stock market crash.

The Futures Market

The S&P 500 futures market also clearly contributed to the market crash. Since the introduction of the stock index futures market, a new trading technique, called *portfolio insurance*, had been introduced into portfolio management.

Portfolio insurance was, in concept, not much different than an oft-used technique called a *stop-loss order*. If an investor buys a stock and wants to protect herself from a loss (or if it has gone up, protect her profit), it is possible to place a sell order below the current price that will be triggered when and if the price falls to or below this specified level.

But stop-loss orders are not guarantees that you can get out of the market. If the stock falls below your specified price, your stop-loss order becomes a *market order* to be executed at the *next best* price. If the stock *gaps*, or declines dramatically, your order could be executed far below your hoped-for price. This means a panic might develop if many investors place stop-loss orders around the same price. A price decline could trigger a flood of sell orders, overwhelming the market.

Portfolio insurers, who sold the stock index futures against large portfolios to protect them against market decline, felt they were immune to such problems. It seemed extremely unlikely that the S&P 500 Index futures would ever decline dramatically in price and that the whole U.S. capital market, the world's largest, could fail to find buyers. This is one reason why the stock market continued to rise in the face of sharply higher long-term rates.

But the entire market did gap on October 19, 1987. During the week of October 12, the market declined by 10 percent and a large number of sell orders flooded the markets. So many traders and money managers

using portfolio insurance strategies tried to sell index futures to protect their clients' profits that the futures market collapsed. There were absolutely no buyers, and liquidity vanished.

What the overwhelming majority of stock traders once believed was inconceivable became a reality. Since the prices of index futures were so far below the prices of the stocks selling in New York, investors halted their buying of shares in New York altogether. The world's largest corporations failed to attract any buyers.

Portfolio insurance withered rapidly after the crash. It was dramatically demonstrated that it was not an insurance scheme at all because the continuity and liquidity of the market could not be assured. There was, however, an alternative form of portfolio protection: index options. With the introduction of these options markets in the 1980s, investors could explicitly purchase insurance against market declines by buying puts on a market index. Options buyers never needed to worry about price gaps or being able to get out of their position since the price of the insurance was specified at the time of purchase.

Certainly there were factors other than portfolio insurance contributing to Black Monday. But portfolio insurance and its ancestor, the stop-loss order, abetted the fall. All of these schemes are rooted in the basic trading philosophy of letting profits ride and cutting losses short. Whether implemented with stop-loss orders, index futures, or just a mental note to get out of a stock once it declines by a certain amount, this philosophy can set the stage for dramatic market moves.

CIRCUIT BREAKERS

As a result of the crash, the Chicago Mercantile Exchange, where the S&P 500 Index futures traded, and the New York Stock Exchange implemented rules that restricted or halted trading when certain price limits were triggered. To prevent destabilizing speculation when the Dow Jones Industrial Average changes by at least 2 percent, the New York Stock Exchange's Rule 80a placed "trading curbs" on index arbitrage between the futures market and the New York Stock Exchange.⁴

But of greater importance are measures that sharply restrict or stop trading on both the futures market and on the New York Stock Exchange when market moves are very large. When the S&P 500 Index futures fall by 5 percent, trading in futures is halted for 10 minutes. If the Dow In-

⁴ The New York Stock Exchange Index replaced the Dow Jones Industrials to compute the 2 percent collar in 2005.

dustrials decline by 10 percent before 2 p.m., the New York Stock Exchange will declare a one-hour trading halt.⁵ If the decline is 20 percent, a two-hour halt will be declared, and if the Dow declines by 30 percent, the NYSE will close for the day.⁶ Futures trading will halt when the New York Stock Exchange is closed.⁷

The rationale behind these measures is that halting trading gives investors time to reassess the situation and formulate their strategy based on rapidly changing prices. This time-out could bring buyers into the market and help market makers maintain a liquid market.

The argument against halts is that they increase volatility by discouraging short-term traders from buying when prices fall sharply since they might be prevented from unwinding their position if trading is subsequently halted. This sometimes leads to an acceleration of price declines toward the price limits, thereby increasing short-term volatility, as occurred when prices fell to the limits on October 27, 1997.⁸

THE NATURE OF MARKET VOLATILITY

Although most investors express a strong distaste for market fluctuations, volatility must be accepted to reap the superior returns offered by stocks. For risk is the essence of above-average returns: investors cannot make any more than the risk-free rate of return unless there is some possibility that they can make less.

While the volatility of the stock market deters many investors, it fascinates others. The ability to monitor a position on a minute-by-minute basis fulfills the need of many to quickly validate their judgment. For many the stock market is truly the world's largest casino.

Yet this ability to know exactly how much one is worth at any given moment can also provoke anxiety. Many investors do not like the instantaneous verdict of the financial market. Some retreat into investments

⁵ If the decline occurs between 2:00 and 2:30 p.m., the halt is one-half hour. After 2:30 p.m., there is no trading halt.

⁶ These percentage changes are converted into points in the Dow Industrials and adjusted once each quarter. See www.nyse.com/press/circuit_breakers.html.

⁷ These limits were established in 1998. Previously the New York Stock Exchange suspended trading for one-half hour when the Dow fell by 350 points and closed the exchange when the Dow fell by 550 points. Both of these halts were triggered on October 27, 1997, when the Dow Industrials fell by 554 points. Because of intense criticism of these closings, the NYSE sharply widened the limits to keep trading open. The new trading limits for closing the exchange have never yet been breached.

⁸ When the markets reopened after the 350-point limit was reached, traders were so anxious to exit that the 550-point limit was reached in a matter of minutes.

such as real estate, for which daily quotations are not available. Others believe that not knowing the current price somehow makes an investment less risky. As Keynes stated nearly 60 years ago about the investing attitudes of the endowment committee at Cambridge University:

Some Bursars will buy without a tremor unquoted and unmarketable investments in real estate which, if they had a selling quotation for immediate cash available at each audit, would turn their hair grey. The fact that you do not know how much its ready money quotation fluctuates does not, as is commonly supposed, make an investment a safe one.⁹

HISTORICAL TRENDS OF STOCK VOLATILITY

The annual variability, measured by the standard deviation of the monthly returns, from 1834 to 2006 is plotted in Figure 16-2. It is striking that there is so little overall trend of any sort in the volatility of the market. The period of greatest volatility was during the Great Depression, and the year of highest volatility was 1932. The annualized volatility of 1932 was over 65 percent, 17 times higher than 1964, which is the least volatile year on record. The volatility of 1987 was the highest since the Great Depression, but the volatility in the mid-1990s and 2006 fell to near record lows. Excluding the 1929 to 1939 period, when the volatility was 34 percent, the volatility of the market has remained remarkably stable at about 13 to 14 percent over the past 170 years.

These trends are confirmed by examining Figure 16-3a, which displays the average daily percentage change on the Dow Jones Industrial Average during each year since 1896. The downward trend in the Dow volatility in the early twentieth century is partially due to the increase in the number of stocks in the Dow Industrials from 12 to 20, and then to 30 in 1928. The average daily change in the Dow Industrials over the past 100 years is 0.73 percent, slightly less than three-quarters of 1 percent. Since the 1930s, there have been only three years—1974, 1987, and 2000—when the average daily change has exceeded 1 percent.¹⁰

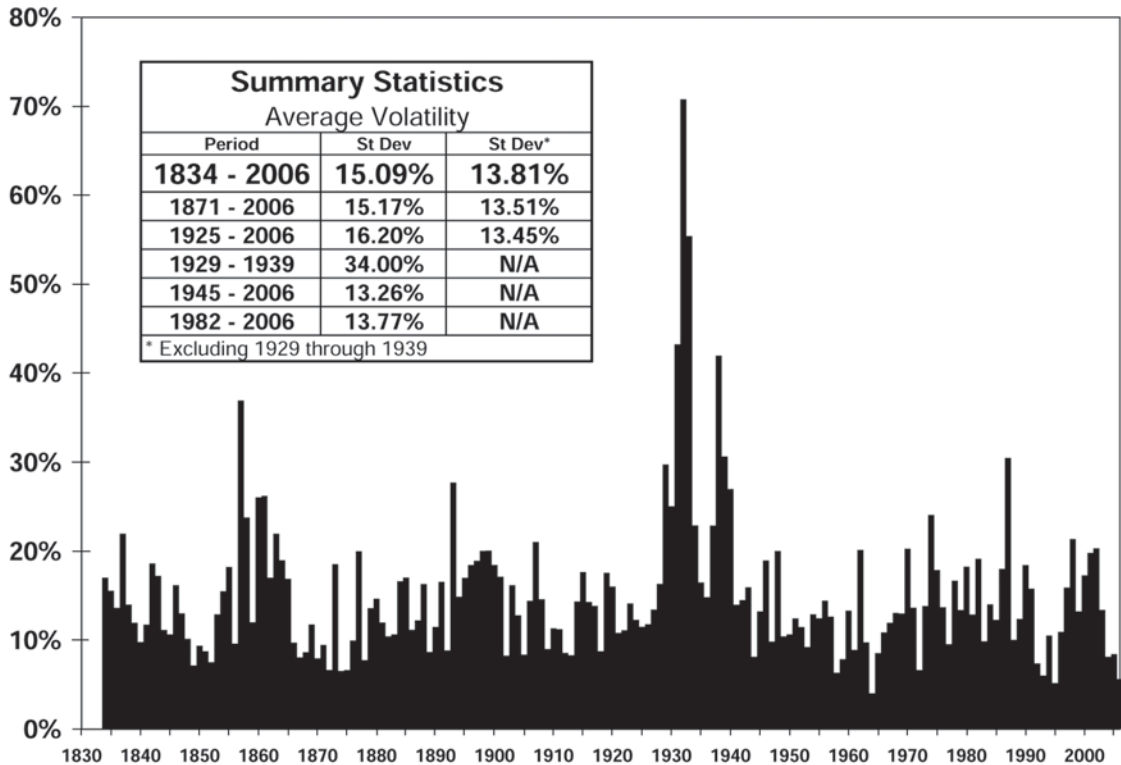
The percentage of trading days when the Dow Industrials changed by more than 1 percent is shown in Figure 16-3b. It has averaged 23 percent over the period, or about once per week. But it has ranged from as low as 1.2 percent in 1964 to a high of 67.6 percent in 1932, when

⁹ Charles D. Ellis, ed., "Memo for the Estates Committee, King's College, Cambridge, May 8, 1938," *Classics*, Homewood, Ill.: Dow Jones-Irwin, 1989, p. 79.

¹⁰ The average percentage change in the Dow Industrials in 2001 was 0.9934 percent.

FIGURE 16-2

Annual Volatility of Stock Returns (Annualized Standard Deviation of Monthly Returns), 1834 through December 2006



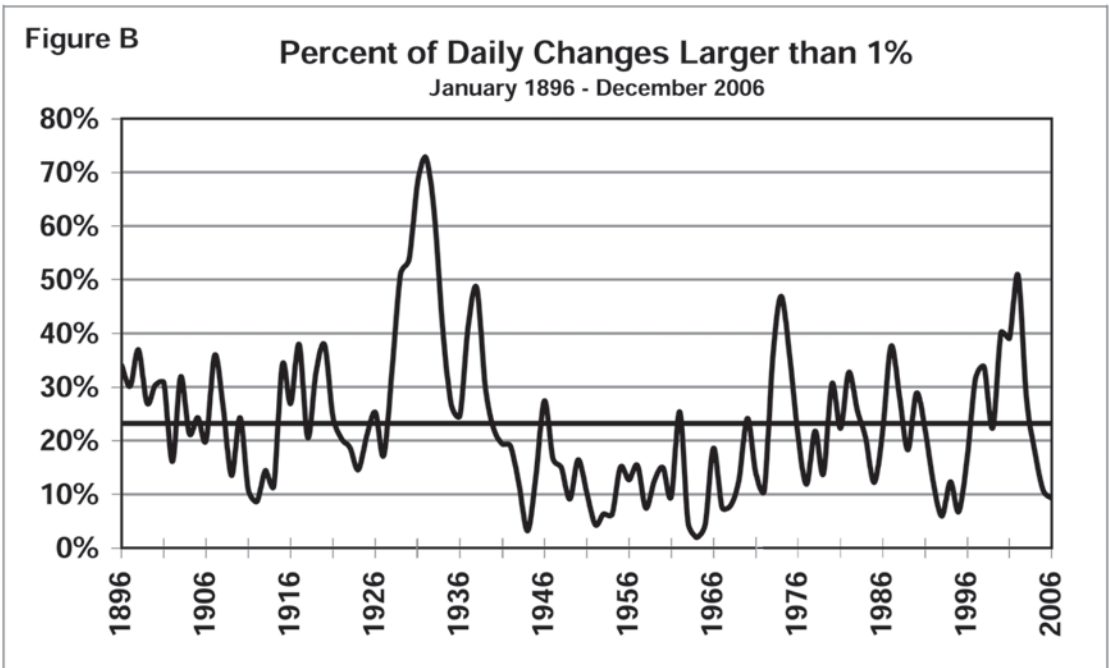
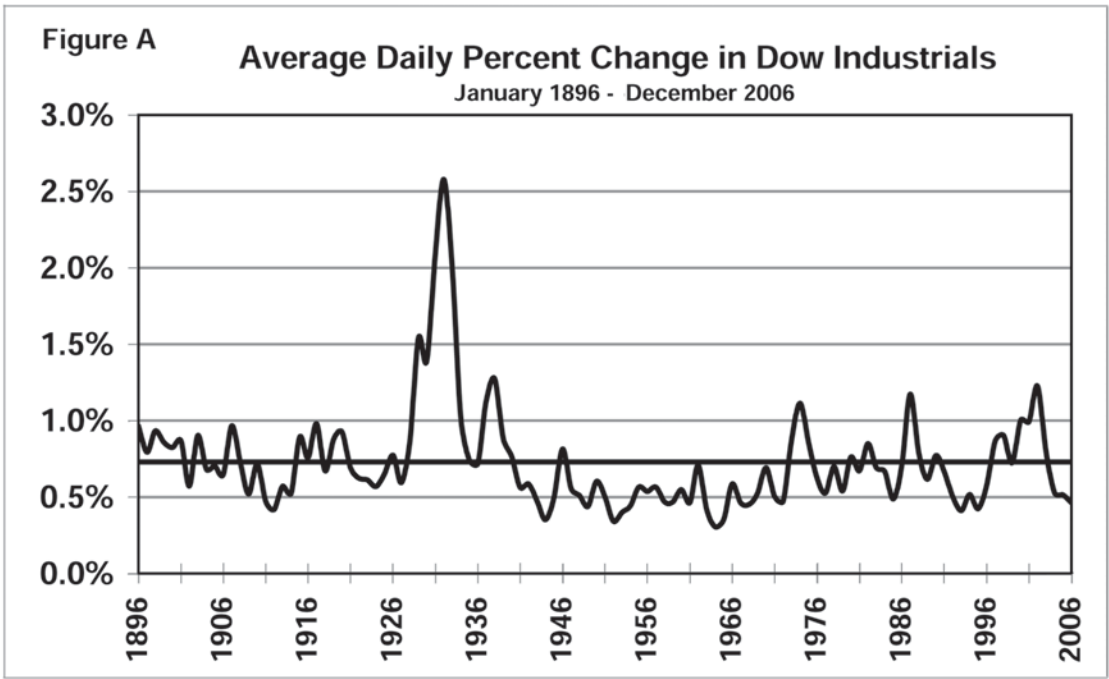
the Dow changed by more than 1 percent in two out of every three trading days.

Most of the periods of high volatility occur when the market has declined. The standard deviation of daily returns is about 25 percent higher in recessions than in expansions. There are two reasons why volatility increases in a recession. First, recessions are more unusual and entail greater economic uncertainty than expansions. The second is that, if earnings fall sharply, then the burden of fixed costs becomes higher and the volatility of profits greater. This leads to increased volatility in the equity value of firms.

If earnings turn into losses, then the equity value of the firms acts like an out-of-the-money option that pays off only if the firm eventually does well to cover its costs. Otherwise, it is worthless. It is not a puzzle why stock volatility was the greatest during the Great Depression when,

FIGURE 16-3

Daily Risk on the Dow Jones Industrial Average



with aggregate profits negative, the equity market as a whole was trading like an out-of-money option.

THE VOLATILITY INDEX (VIX)

Measuring *historical* volatility is a simple matter, but it is far more important to measure the volatility that investors *expect* in the market. This is because expected volatility is a signal of the level of anxiety in the market, and periods of high anxiety have often marked turning points for stocks.

By examining the prices of put and call options on the major stock market indexes, one can determine the volatility that is built into the market, which is called the *implied volatility*.¹¹ In 1993, the Chicago Board Options Exchange (CBOE) introduced the *CBOE Volatility Index*, also called the *VIX Index* or the *VIX*, based on actual index options prices on the S&P 500 Index, and it calculated this index back to the mid-1980s.¹² A weekly plot of the VIX Index from 1986 appears in Figure 16-4.

In the short run, there is a strong negative correlation between the VIX and the *level* of the market. When the market is falling, investors are willing to pay more for downside protection and they purchase puts, causing the VIX to rise. When the market is rising, the VIX typically goes down as investors gain confidence and are less anxious to insure their portfolio against a loss.

This correlation may seem puzzling since one might expect investors to seek more protection when the market is high rather than low. One explanation of the behavior of the VIX Index is that historical volatility is higher in bear markets than bull markets, so falling markets should cause the VIX to rise. But a more persuasive argument is that changes in investor confidence change investors' willingness to hedge by buying puts. As put prices are driven up, arbitrageurs who sell puts sell stocks to hedge their position, thus sending stock prices down. The reverse occurs when investors feel more confident of stock returns.

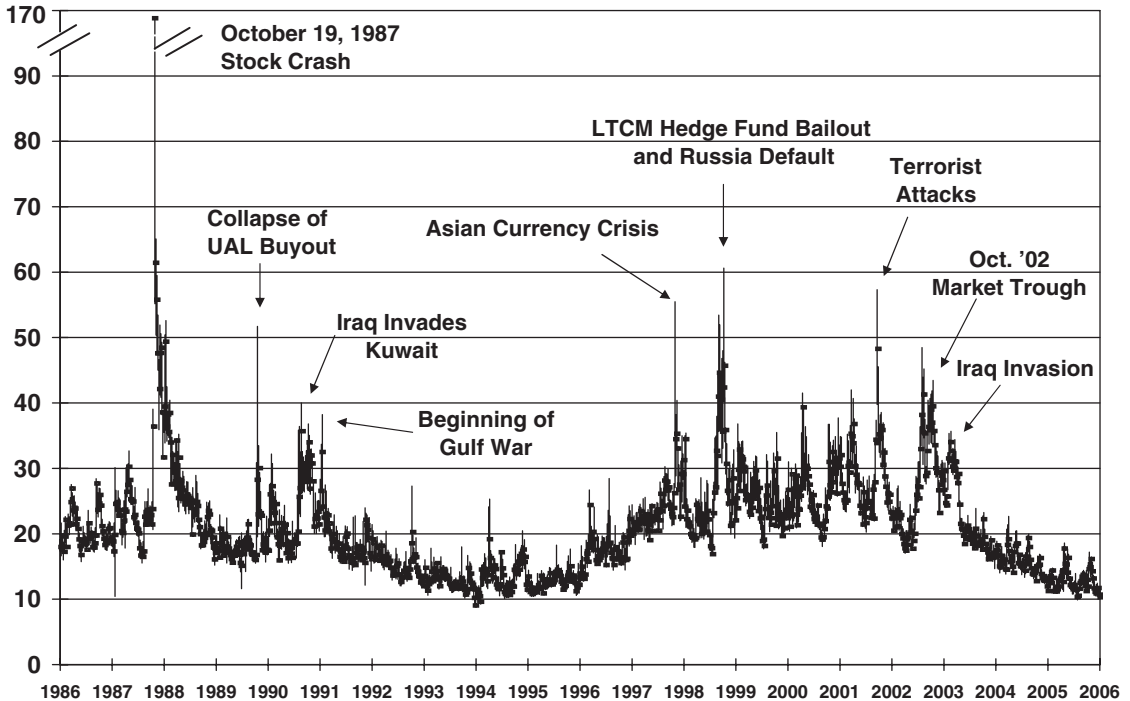
It is easy to see in Figure 16-4 that the peaks in the VIX corresponded to periods of extreme uncertainty and sharply lower stock prices. The Volatility Index peaked at 172 on the Tuesday following the October 19, 1987, stock market crash, far eclipsing any other high.

¹¹ This is done by solving for the volatility using the Black-Scholes options pricing formula. See Chapter 15.

¹² Until 2003, the VIX Index was based on the S&P 100 (the largest 100 stocks in the S&P 500 Index). See the CBOE Web site (www.cboe.com) for more details on its calculation.

FIGURE 16-4

The CBOE Volatility Index (VIX), 1986 to 2006



In the early and mid-1990s, the Volatility Index sank to between 10 and 20. But with the onset of the Asian crises in 1997, the VIX moved up to a 20 to 30 range. Spikes between 50 and 60 in the VIX occurred on three occasions: when the Dow fell 550 points during the attack on the Hong Kong dollar in October 1987; in August 1998 when Long-Term Capital Management (LTCM) was liquidated; and in the week following the terrorist attacks of September 11, 2001.

In recent years, buying when the VIX is high and selling when it is low has proved to be a profitable strategy for the short term. But so has buying during market spills and selling during market peaks. The real question is how high is high and how low is low. For instance, an investor might have been tempted to buy into the market on Friday, October 16, 1987, when the VIX reached 40. Yet such a purchase would have proved disastrous given the record one-day collapse that followed on Monday.

RECENT LOW VOLATILITY

As can be seen from Figures 16-3 and 16-4, volatility in 2005 and 2006 was among the lowest in history. There are good reasons for this: (1) lower economic volatility as the business cycle is muted, (2) the globalization of financial markets that allows investors to diversify risks, and (3) the increased liquidity of markets that allows capital to be instantly allocated to take advantage of profitable opportunities.

But too much stability invites firms and investors to take increasing risk and leverage their positions with lower-cost debt. This means that investors should not become sanguine about recent low volatility. The interconnectedness of markets, for all its benefits, invites global volatility because bullish and bearish sentiment cannot be contained to one market.

THE DISTRIBUTION OF LARGE DAILY CHANGES

Chapter 13 noted that there were 126 days from 1885 through 2006 when the Dow Jones Industrials changed by 5 percent or more: 59 up and 67 down. Seventy-nine of these days, or nearly two-thirds of the total, occurred from 1929 through 1933. The most volatile year by far in terms of daily changes was 1932, which contained 35 days when the Dow moved by at least 5 percent. The longest period of time between two successive changes of at least 5 percent was the 17-year period that preceded the October 19, 1987, stock crash.

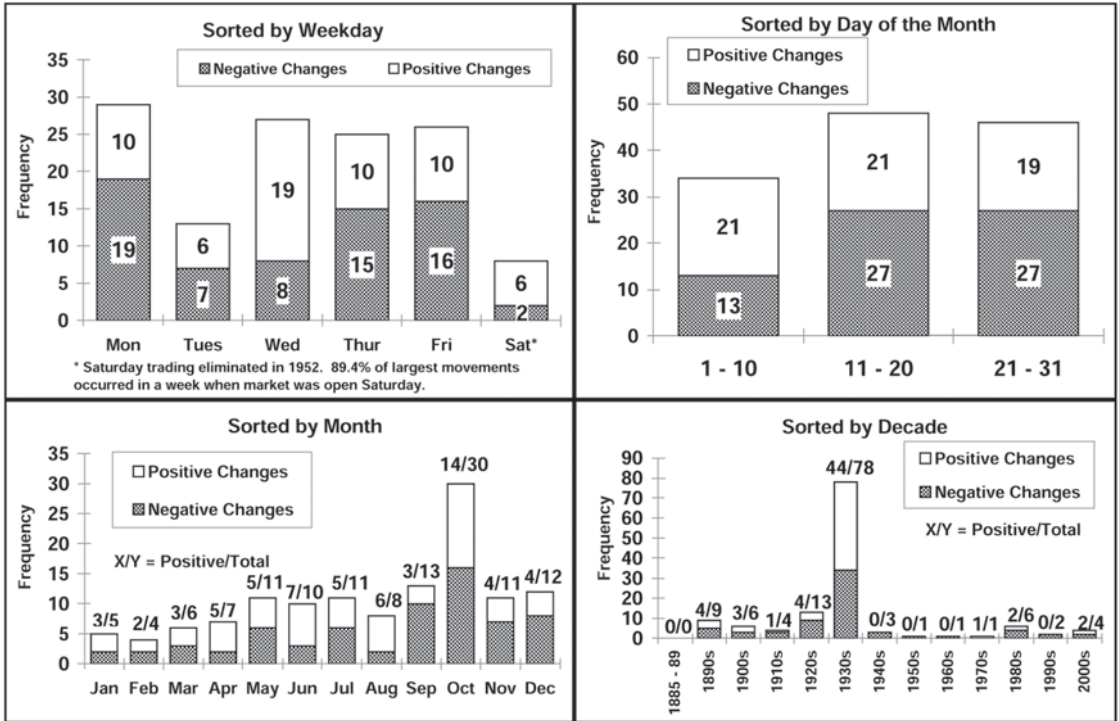
Some of the properties of large daily changes are displayed in Figure 16-5. Monday has seen only slightly more large changes than the rest of the week, and Tuesday has seen significantly fewer. Monday has the largest number of down days, but Wednesday has by far the highest number of up days.

Thirty of the large changes occurred in October, which has witnessed more than twice the large moves as any other month. October's reputation as a volatile month is fully justified. Not only has October witnessed nearly one-quarter of all big moves but it has also seen the two greatest stock crashes in history, in October 1929 and October 1987. It is interesting to note that nearly two-thirds of the large declines have occurred in the last four months of the year. Chapter 18 presents the seasonal aspects of stock price changes.

One of the most surprising bits of information about large market moves relates to the period of the greatest stock market collapse. From September 3, 1929, through July 8, 1932, the Dow Jones Industrials

FIGURE 16-5

Distribution of Dow Jones Industrial Average Changes over 5 Percent, 1885 through December 2006



collapsed nearly 89 percent. During that period, there were 37 episodes when the Dow changed by 5 percent or more. Surprisingly, 21 of those episodes were increases! Many of these sharp rallies were the result of short-covering, which occurred as speculators who thought the market was on a one-way street rushed to sell stock they did not own and were then forced to buy it back, or cover their positions, once the market rallied.

It is not uncommon for markets that appear to be trending in one direction to experience occasional sharp moves in the other direction. In a bull market, the expression “up the staircase, down the elevator” is an apt description of market behavior. Ordinary investors must beware: it is not as easy to make money in trending markets as it looks, and investors who try to play these markets must be ready to bail out quickly when they see the market change direction.

THE ECONOMICS OF MARKET VOLATILITY

Many of the complaints about market volatility are grounded in the belief that the market reacts excessively to changes in news. But how news should impact the market is so difficult to determine that few can quantify the proper impact of an event on the price of a stock. As a result, traders often “follow the crowd” and try to predict how other traders will react when news happens.

Over half a century ago, Keynes illustrated the problem of investors who try to value stock by economic fundamentals as opposed to following the crowd:

Investment based on genuine long-term expectation is so difficult today as to be scarcely practicable. He who attempts it must surely lead much more laborious days and run greater risk than he who tries to guess better than the crowd how the crowd will behave; and, given equal intelligence, he may make more disastrous mistakes.¹³

In 1981, Robert Shiller of Yale University devised a method of determining whether stock investors tended to overreact to changes in dividends and interest rates, the fundamental building blocks of stock values.¹⁴ From the examination of historical data, he calculated what the value of the S&P 500 Index should have been given the subsequent realization of dividends and interest rates. We know what this value is because, as shown in Chapter 7, stock prices are the present discounted value of future cash flows.

What he found was that stock prices were far too variable to be explained merely by the subsequent behavior of dividends and interest rates. Stock prices appeared to overreact to changes in dividends, failing to take into account that most of the changes in dividend payouts were only temporary. For example, investors priced stocks in a recession as if they expected dividends to go much lower, completely contrary to historical experience.

The word *cycle* in *business cycle* implies that ups in economic activity will be followed by downs, and vice versa. Since earnings and profits tend to follow the business cycle, they too should behave in a cyclical manner, returning to some average value over time. Under these cir-

¹³ John Maynard Keynes, *The General Theory of Employment, Interest, and Money*, New York: Harcourt, Brace & World, 1965, First Harbinger Edition, p. 157. (This book was originally published in 1936 by Macmillan & Co.)

¹⁴ Robert Shiller, *Market Volatility*, Cambridge, Mass.: MIT Press, 1989. The seminal article that spawned the excess volatility literature was “Do Stock Prices Move Too Much to Be Justified by Subsequent Changes in Dividends?” *American Economic Review*, vol. 71 (1981), pp. 421–435.

cumstances, a temporary drop in dividends (or earnings) during a recession should have a very minor effect on the price of a stock, which discounts dividends into the infinite future.

When stocks are collapsing, worst-case scenarios loom large in investors' minds. On May 6, 1932, after stocks had plummeted 85 percent from their 1929 high, Dean Witter issued the following memo to its clients:

There are only two premises which are tenable as to the future. Either we are going to have chaos or else recovery. The former theory is foolish. If chaos ensues nothing will maintain value; neither bonds nor stocks nor bank deposits nor gold will remain valuable. Real estate will be a worthless asset because titles will be insecure. No policy can be based upon this impossible contingency. Policy must therefore be predicated upon the theory of recovery. The present is not the first depression; it may be the worst, but just as surely as conditions have righted themselves in the past and have gradually readjusted to normal, so this will again occur. The only uncertainty is when it will occur. . . . I wish to say emphatically that in a few years present prices will appear as ridiculously low as 1929 values appear fantastically high.¹⁵

Two months later the stock market hit its all-time low and rallied strongly. In retrospect, these words reflected great wisdom and sound judgment about the temporary dislocations of stock prices. Yet at the time they were uttered, investors were so disenchanted with stocks and so filled with doom and gloom that the message fell on deaf ears. Chapter 19 discusses why investors often overreact to short-term events and fail to take the long view of the market.

THE SIGNIFICANCE OF MARKET VOLATILITY

Despite the drama of the October 1987 market collapse, there was amazingly little lasting effect on the world economy or even the financial markets. Because the 1987 episode did not augur either a further collapse in stock prices or a decline in economic activity, it will never attain the notoriety of the crash of 1929. Yet its lesson is perhaps more important. Economic safeguards, such as prompt Federal Reserve action to provide liquidity to the economy and assure the proper functioning of the financial markets, can prevent an economic debacle of the kind that beset our economy during the Great Depression.

¹⁵ Memorandum from Dean Witter, May 6, 1932.

This does not mean that the markets are exempt from violent fluctuations. Since the future will always be uncertain, psychology and sentiment often dominate economic fundamentals. As Keynes perceptively stated more than 70 years ago in *The General Theory*, “The outstanding fact is the extreme precariousness of the basis of knowledge on which our estimates of prospective yield have to be made.”¹⁶ Precarious estimates are subject to sudden change, so prices in free markets will be volatile. But history has shown that investors who are willing to step into the market when others are running to the exits reap the benefits of market volatility.

¹⁶ Keynes, *The General Theory*, p. 149.

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CHAPTER

TECHNICAL ANALYSIS AND INVESTING WITH THE TREND

Many skeptics, it is true, are inclined to dismiss the whole procedure [chart reading] as akin to astrology or necromancy; but the sheer weight of its importance in Wall Street requires that its pretensions be examined with some degree of care.

BENJAMIN GRAHAM AND DAVID DODD, 1934¹

THE NATURE OF TECHNICAL ANALYSIS

Flags, pennants, saucers, and head-and-shoulders formations. Stochastics, moving-average convergence-divergence indicators, and candlesticks. Such is the arcane language of the technical analyst, an investor who forecasts future returns by the use of past price trends. Few areas of investment analysis have attracted more critics, yet no other area has a core of such dedicated, ardent supporters. Technical analysis, often dismissed by academic economists as being as useful as astrology, is being given a new look, and some of the recent evidence is surprisingly positive.

¹ Benjamin Graham and David Dodd, *Security Analysis*, 1st ed., New York: McGraw-Hill, 1934, p. 618.

Technical analysts, or *chartists* as they are sometimes called, stand in sharp contrast to *fundamental analysts* who use such variables as dividends, earnings, and book values to forecast stock returns. Chartists ignore these fundamental variables, maintaining that useful information may be gleaned by analyzing past price patterns. These patterns tend to repeat themselves and are the result of market psychology or unusual price movements caused by informed traders. If these patterns are read properly, chartists maintain, investors can use them to outperform the market or share in the gains of those who are more knowledgeable about a stock's prospects.

CHARLES DOW, TECHNICAL ANALYST

The first well-publicized technical analyst was Charles Dow, the creator of the Dow Jones Industrial Average. But Charles Dow did not analyze only charts. In conjunction with his interest in market movements, Dow founded the *Wall Street Journal* and published his strategy in editorials in the early part of this century. Dow's successor, William Hamilton, extended Dow's technical approach and published the *Stock Market Barometer* in 1922. Ten years later, Charles Rhea formalized Dow's concepts in a book entitled *Dow Theory*.

Charles Dow likened the ebb and flow of stock prices to waves in an ocean. He claimed that there was a *primary wave*, which, like the tide, determined the overall trend. Upon this trend were superimposed secondary waves and minor ripples. He also claimed you could identify which trend the market was in by analyzing a chart of the Dow Jones Industrial Average, the volume in the market, and the Dow Jones Rail (now called the Transportation) Average.

Those that follow the Dow theory acknowledged that the strategy would have gotten an investor out of the stock market before the October 1929 stock crash. Martin J. Pring, a noted technical analyst, argues that, starting in 1897, investors who purchased stock in the Dow Jones Industrial Average and followed each Dow theory buy-and-sell signal would have seen an original investment of \$100 reach \$116,508 by January 1990, as opposed to \$5,682 with a buy-and hold strategy (these calculations exclude reinvested dividends).² But confirming profits that come from trading based on the Dow theory is difficult because the buy-

² Martin Pring, *Technical Analysis Explained*, 3rd ed., New York: McGraw-Hill, 1991, p. 31. Also see David Glickstein and Rolf Wubbels, "Dow Theory Is Alive and Well!" *Journal of Portfolio Management*, April 1983, pp. 28–32.

and-sell signals are purely subjective and cannot be determined by precise numerical rules.

THE RANDOMNESS OF STOCK PRICES

Although the Dow theory might not be as popular as it once was, technical analysis is still alive and well. The idea that you can identify the major trends in the market, riding bull markets while avoiding bear markets, is still a fundamental pursuit of technical analysts.

Yet most economists still attack the fundamental tenet of the chartists—that stock prices follow predictable patterns. To these academic researchers, the movements of prices in the market more closely conform to a pattern called a *random walk* than to trends that forecast future returns.

The first to make this connection was Frederick MacCauley, an economist in the early part of this century. His comments at a 1925 dinner meeting of the American Statistical Association on the topic of “forecasting security prices” were reported in the association’s official journal:

MacCauley observed that there was a striking similarity between the fluctuations of the stock market and those of a chance curve which may be obtained by throwing dice. Everyone will admit that the course of such a purely chance curve cannot be predicted. If the stock market can be forecast from a graph of its movements, it must be because of its difference from the chance curve.³

More than 30 years later, Harry Roberts, a professor at the University of Chicago, simulated movements in the market by plotting price changes that resulted from completely random events, such as flips of a coin. These simulations looked like the charts of actual stock prices, forming shapes and following trends that are considered by chartists to be significant predictors of future returns. But since the next period’s price change was, by construction, a completely random event, such patterns could not logically have any predictive content. This early research supported the belief that the apparent patterns in past stock prices were the result of completely random movements.

But does the randomness of stock prices make economic sense? Factors influencing supply and demand do not occur randomly and are

³ *Journal of the American Statistical Association*, vol. 20 (June 1925), p. 248. Comments made at the Aldine Club in New York on April 17, 1925.

often quite predictable from one period to the next. Shouldn't these predictable factors make stock prices move in nonrandom patterns?

In 1965, Professor Paul Samuelson of MIT showed that the randomness in security prices did not contradict the laws of supply and demand.⁴ In fact, such randomness was a result of a free and efficient market in which investors had already incorporated all the known factors influencing the price of the stock. This is the crux of the *efficient market hypothesis*.

If the market is efficient, prices will change only when new, unanticipated information is released to the market. Since unanticipated information is as likely to be good as it is to be bad, the resulting movement in stock prices is random. Price charts will look like a random walk since the probability that stocks go up or down is completely random and cannot be predicted.⁵

SIMULATIONS OF RANDOM STOCK PRICES

If stock prices are indeed random, their movements should not be distinguishable from counterfeits generated randomly by a computer. Figure 17-1 extends the experiment conceived by Professor Roberts 50 years ago. Instead of generating only closing prices, I programmed the computer to generate intraday prices, creating the popular high-low-close bar graphs that are found in most newspapers and chart publications.

There are eight charts in Figure 17-1. A computer, using a random-number generator, has simulated four of these charts. In these charts, there is absolutely no way to predict the future from the past because future movements are designed to be totally independent from the past. The other four charts were chosen from actual data of the Dow Jones Industrial Average over recent years. Before reading further, try to determine which are real historical prices and which are computer created.

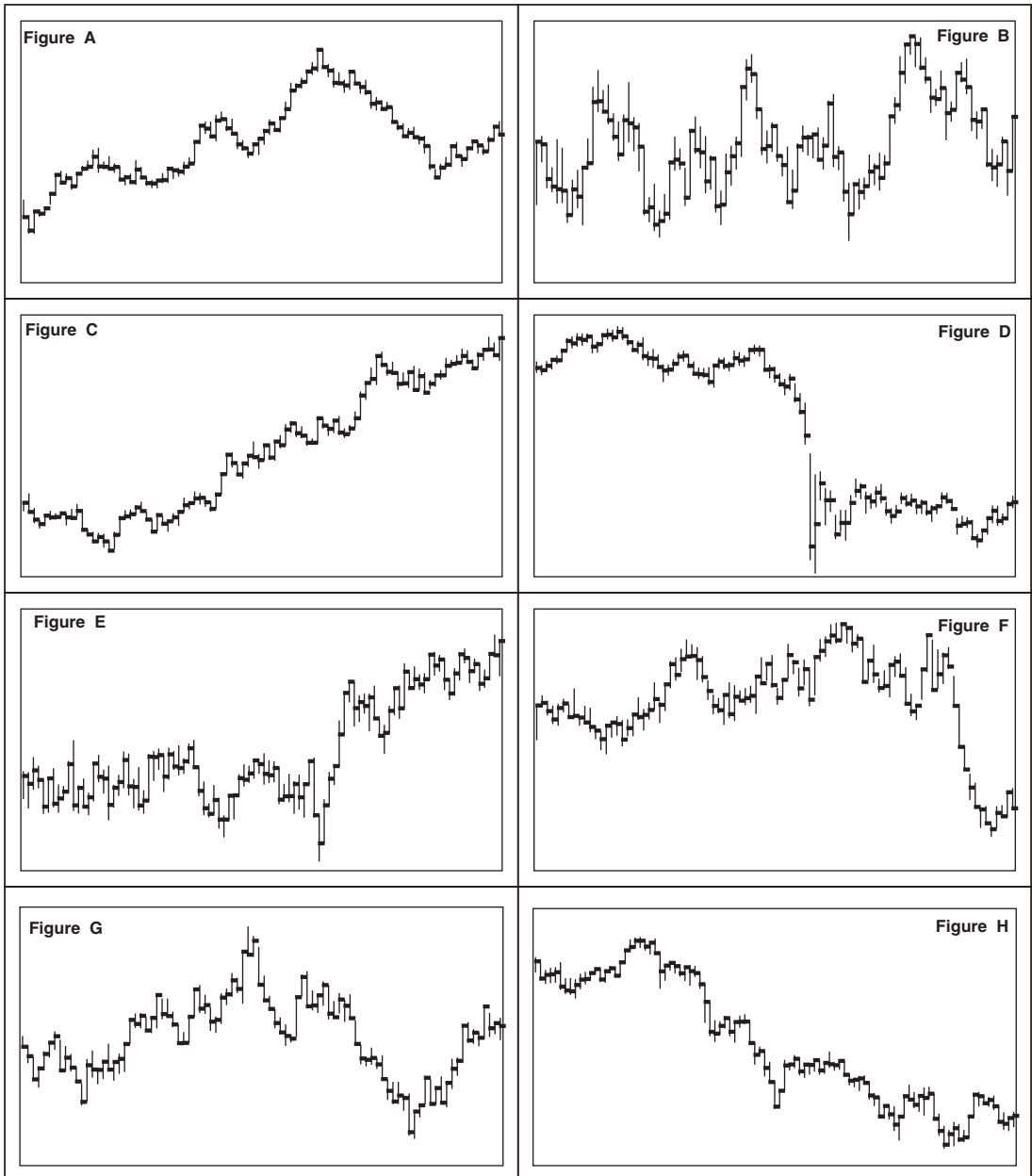
Such a task is quite difficult. In fact, most of the top brokers at a leading Wall Street firm found it impossible to tell the difference between real and counterfeit data. Only two-thirds of brokers correctly identified Figure 17-1d, which depicts the period around the October 19, 1987, stock crash. With the remaining seven charts, the brokers showed

⁴ Paul Samuelson, "Proof That Properly Anticipated Prices Fluctuate Randomly," *Industrial Management Review*, vol. 6 (1965), p. 49.

⁵ More generally, the sum of the product of each possible price change times the probability of its occurrence is zero. This is called a *martingale*, of which a random walk (50 percent probability up, 50 percent probability down) is a special case.

FIGURE 17-1

Real and Simulated Stock Indexes



no ability to distinguish actual from counterfeit data. The true historical prices are represented by charts *b*, *d*, *e*, and *h*, while the computer-generated data are charts *a*, *c*, *f*, and *g*.⁶

TRENDING MARKETS AND PRICE REVERSALS

Despite the fact that many “trends” are in fact the result of the totally random movement of stock prices, many traders will not invest against a trend that they believe they have identified. Two of the most well-known sayings of market timers are “Make the trend your friend” and “Trust the thrust.”

Martin Zweig, a well-known market timer who uses fundamental and technical variables to forecast market trends, has forcefully stated: “I can’t overemphasize the importance of staying with the trend of the market, being in gear with the tape, and not fighting the major movements. Fighting the tape is an open invitation to disaster.”⁷

When a trend appears established, technical analysts draw *channels* that enclose the path of stock prices. A channel encloses the upper and lower bounds within which the market has traded. The lower bound of a channel is frequently called a *support level*, and the upper bound a *resistance level*. When the market breaks the bounds of the channel, a large market move often follows.

The very fact that many traders believe in the importance of trends can induce behavior that makes trend following so popular. While the trend is intact, traders sell when prices reach the upper end of the channel and buy when they reach the lower end, attempting to take advantage of the apparent back-and-forth motion of stock prices. If the trend line is broken, many of these traders will reverse their positions: buying if the market penetrates the top of the trend line or selling if it falls through the bottom. This behavior often accelerates the movement of stock prices and reinforces the importance of the trend.

Options trading by trend followers reinforces the behavior of market timers. When the market is trading within a channel, traders will sell put and call options at strike prices that represent the lower and upper bounds of the channel. As long as the market remains within the channel, these speculators collect premiums as the options expire worthless.

⁶ Figure 17-1b covers February 15 to July 1, 1991; Figure 17-1e covers January 15 to June 1, 1992; and Figure 17-1h from June 15 to November 1, 1990.

⁷ Martin Zweig, *Winning on Wall Street*, New York: Warner Books, 1990, p. 121.

If the market penetrates the trading range, options sellers are exposed to great risks. Recall that sellers of options (as long as they do not own the underlying stock) face a huge potential liability, a liability that can be many times the premium that they collected upon sale of the option. When such unlimited losses loom, these option writers “run for cover,” or buy back their options, accelerating the movement of prices.

MOVING AVERAGES

Successful technical trading requires not only identifying the trend but, more importantly, identifying when the trend is about to reverse. A popular tool for determining when the trend might change examines the relationship between the current price and a moving average of past price movements, a technique that goes back to at least the 1930s.⁸

A *moving average* is simply the arithmetic average of a given number of past closing prices of a stock or index. For example, a 200-day moving average is the average of the past 200 days’ closing prices. For each new trading day, the oldest price is dropped and the most recent price is added to compute the average.

Moving averages fluctuate far less than daily prices. When prices are rising, the moving average trails the market and, technical analysts claim, forms a support level for stock prices. When prices are falling, the moving average is above current prices and forms a resistance level. Analysts claim that a moving average allows investors to identify the basic market trend without being distracted by the day-to-day volatility of the market. When prices penetrate the moving average, this indicates that powerful underlying forces are signaling a reversal of the basic trend.

The most popular moving average uses prices for the past 200 trading days, and it is therefore called the *200-day moving average*. It is frequently plotted in newspapers and investment letters as a key determinant of investment trends. One of the early supporters of this strategy was William Gordon, who indicated that, over the period from 1897 to 1967, buying stocks when the Dow broke above the moving average produced nearly seven times the return as buying when the Dow broke below the average.⁹ Colby and Meyers claim that for the United

⁸ See William Brock, Josef Lakonishok, and Blake LeBaron, “Simple Technical Trading Rules and the Stochastic Properties of Stock Returns,” *Journal of Finance*, vol. 47, no. 5 (December 1992), pp. 1731–1764. The first definitive analysis of moving averages comes from a book by H. M. Gartley, *Profits in the Stock Market*, New York: H. M. Gartley, 1930.

⁹ William Gordon, *The Stock Market Indicators*, Palisades, N.J.: Investors Press, 1968.

States the best time period for a moving average of weekly data is 45 weeks, just slightly longer than the 200-day moving average.¹⁰

Testing the Dow Jones Moving-Average Strategy

In order to test the 200-day moving-average strategy, I examined the daily record of the Dow Jones Industrial Average from 1885 to the present. In contrast to the previous studies on moving-average strategies, the holding-period returns include the reinvestment of dividends when the strategy suggests investing in the market and interest-bearing securities when one is not invested in the stock market. Annualized returns are examined over the entire period as well as the subperiods.

I adopted the following criteria to determine the buy-sell strategy: Whenever the Dow Jones Industrial Average closed by *at least* 1 percent above its 200-day moving average, stocks were purchased at these closing prices. Whenever the Dow Industrials closed by *at least* 1 percent below its 200-day moving average, stocks were sold. When sold, the portfolio was invested in Treasury bills and earned interest income.

There are two noteworthy aspects of this strategy. The 1 percent band around the 200-day moving average is used in order to reduce the number of times an investor would have to move in and out of the market. Without this band, investors using the 200-day moving-average strategy are often “whipsawed,” a term used to describe the alternate buying and then selling of stocks in an attempt to beat the market. Such trades dramatically lower investor returns because of the large transactions costs incurred.

The second aspect of this strategy assumes that an investor buys or sells stocks at the closing price rather than at any time reached during the day. Only in recent years has the exact intraday level of the averages been computed. Using historical data, it is impossible to determine times when the market average penetrated the 200-day moving average during the day but closed at levels that did not trigger a signal. By specifying that the average must close above or below the signal, I present a theory that could have been implemented in practice.¹¹

¹⁰ Robert W. Colby and Thomas A. Meyers, *The Encyclopedia of Technical Market Indicators*, Homewood, Ill.: Dow Jones-Irwin, 1988.

¹¹ Historically, the daily high and low levels of stock averages were calculated on the basis of the highest or lowest price of each stock reached at any time during the day. This is called the *theoretical high or low*. The *actual high* is the highest level reached at any given time by the stocks in the average.

Back-Testing the 200-Day Moving Average

In Figure 17-2 are the daily and 200-day moving averages of the Dow Jones Industrial Average during two select periods: from 1924 to 1936 and 1999 to 2006. The time periods when investors are out of the stock market are shaded; otherwise, investors are fully invested in stocks.

Over the entire 120-year history of the Dow Jones average, the 200-day moving-average strategy had its greatest triumph during the boom and crash of the 1920s and early 1930s. Using the criteria outlined above, investors would have bought stocks on June 27, 1924, when the Dow was 95.33 and, with only two minor interruptions, ridden the bull market to the top at 381.17 on September 3, 1929. Investors would have exited the market on October 19, 1929, at 323.87, 10 days before the Great Crash. Except for a brief period in 1930, the strategy would have kept investors out of stocks through the worst bear market in history. They would have finally reentered the market on August 6, 1932, when the Dow was 66.56, just 25 points higher than its low.

Investors following the 200-day moving-average strategy would also have avoided the October 19, 1987, crash, selling out on the previous Friday, October 16. However, in contrast to the 1929 crash, stocks did not continue downward. Although the market fell 23 percent on October 19, investors would not have reentered the market until the following June when the Dow was only about 5 percent below the exit level of October 16. Nonetheless, following the 200-day moving-average strategy would have avoided October 19 and 20, traumatic days for many investors who held stocks.

The returns from the 200-day moving-average strategy and a buy-and-hold strategy of not timing the market are summarized in Table 17-1. From January 1886 through December 2006, the 10.21 percent annual return from the timing strategy beat the annual return on the holding strategy of 9.68 percent. As noted earlier, however, the timing strategy had its biggest success avoiding the 1929 to 1932 crash. If that period is excluded, the returns of the timing strategy are 43 basis points per year behind the holding strategy, although the timing strategy has lower risk.

Moreover, if the transactions costs of implementing the timing strategy are included in the calculations, the excess returns over the whole period, including the 1929 to 1932 Great Crash, more than vanish. Transactions costs include brokerage costs and bid-ask spreads, as well as the capital gains tax incurred when stocks are sold and are assumed to be on average half a percent when buying or selling the market. This number probably underestimates such costs, especially in the earlier

FIGURE 17-2

Dow Jones Industrials and the 200-Day Moving-Average Strategy (Shaded Areas Are Out of the Market)

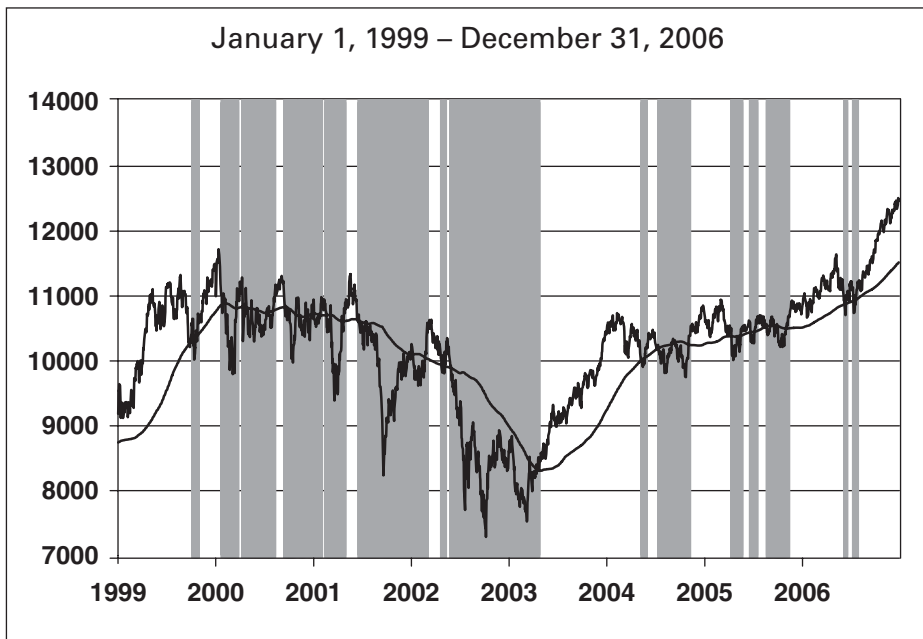
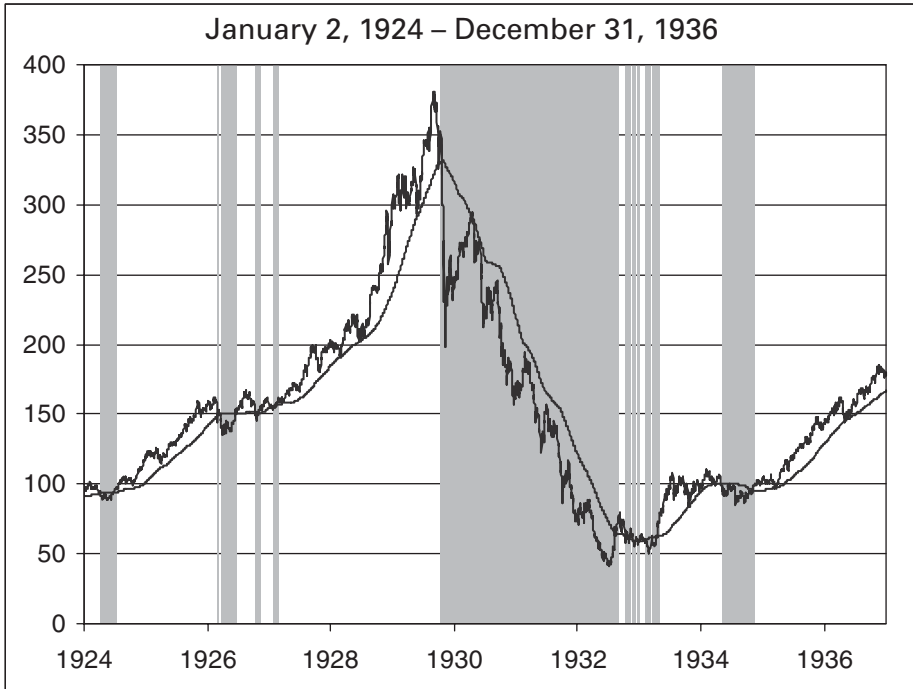


TABLE 17-1

Annualized Returns of Timing and Holding Strategies, January 1886 through December 2006

Period	Holding Strategy		Timing Strategy					
	Return	Risk	No. Trans. Cost		Net Trans. Costs		% in Market	No. of Switches
			Return	Risk	Return	Risk		
1886 - 2006	9.68%	21.5%	10.21%	16.7%	8.63%	17.3%	62.9%	350
Subperiods								
1886 - 1925	9.08%	23.7%	9.77%	17.7%	8.11%	18.0%	57.1%	122
1926 - 1945	6.25%	31.0%	11.10%	21.8%	9.44%	22.7%	62.7%	60
1946 - 2006	11.23%	16.0%	10.21%	14.2%	8.70%	15.1%	67.4%	168
1990 - 2006	11.76%	14.7%	6.60%	16.9%	4.30%	18.3%	73.7%	74
Excl. 1929 - 1932 Crash								
1886 - 2006	11.30%	20.5%	10.80%	16.5%	9.23%	17.2%	64.2%	334
1926 - 1945	17.72%	25.9%	15.75%	21.3%	14.24%	22.1%	71.2%	44

years. In later years if this strategy is pursued with index futures or ETFs, the transactions costs would be lower. Each 0.1 percentage point increase of transactions costs lowers the compound annual returns by 29 basis points.

Although the excess returns from the timing strategy disappear when transactions costs are considered, the major gain from the timing strategy is a reduction in risk. Since the market timer is in the market less than two-thirds of the time, the standard deviation of returns is reduced by about one-quarter. This means that on a risk-adjusted basis, the return on the 200-day moving-average strategy is quite impressive, even when transactions costs are included.

Unfortunately, the timing strategy has broken down in the last 17 years. The year 2000 was particularly disastrous for the timing strategy. With the Dow Industrials meandering most of the year above and below the 200-day moving average, the investor pursuing the timing strategy was whipsawed in and out of the market, executing a record 16 switches in and out of stocks.

Each switch incurs transactions costs and must overcome the 1 percent pricing band. As a result, even ignoring transactions costs, the timing strategist lost over 28 percent in 2000 while the buy-and-hold strategist lost less than 5 percent. Since 1990, the buy-and-hold strategy

has returned 11.76 percent annually whereas the timing strategy has returned only 6.60 percent, even before transactions costs.¹²

The timing strategy did avoid some nasty bear markets over the past decade. A timing strategist would have exited the market on June 25, 2001, and avoided the entire drop associated with the terrorist attacks. But what looked like a big gain for the market timer was mostly eliminated by the sharp stock rally to close the year. The timing strategist would have reentered the market on January 3, 2002, at a price only 2.3 percent below the exit price six months earlier. But timing investors did miss the second leg of the bear market, exiting stocks on June 4, 2002, at 9,889 and not reentering until nearly a year later, on April 22, 2003, when the Dow was at 8,325, nearly 16 percent lower.

The Nasdaq Moving-Average Strategy

It is remarkable that during the 1990 to 2006 period when the moving-average strategy on the Dow Industrials failed to generate good returns, the exact same strategy proved very successful on the Nasdaq. In Table 17-2 it can be seen that the timing strategy outperformed the holding strategy by nearly 5 percent per year since 1972 and by nearly 4 percent per year since 1990. Again, the market timer achieved these superior returns with much lower risk.

What is most important about the moving-average strategy is that it keeps investors in major bull markets and out of major bear markets. The strategy worked beautifully during the technology bubble of 1999 to 2001. Using the timing strategy, an investor would have entered the Nas-

¹² Note that during the 1990 to 2006 period, the risk, measured in *annual* returns, is surprisingly higher for the timing strategy than for the holding strategy. This unusual reversal of risks is due to the extremely poor returns for the timing strategy in 2000. If *monthly* returns are considered, the timing strategy had lower risk than the holding strategy over the same period.

TABLE 17-2

Annualized Returns of Nasdaq Timing and Holding Strategies, January 1972 through December 2006

Period	Holding Strategy		Timing Strategy					
	Return	Risk	No Trans. Costs		Net Trans. Costs		% in Market	Number of Switches
			Return	Risk	Return	Risk		
1972 - 2006	10.88%	27.09%	15.56%	19.81%	14.47%	20.21%	67.38%	93
1990 - 2006	11.04%	33.05%	14.99%	26.35%	13.27%	26.99%	69.18%	50

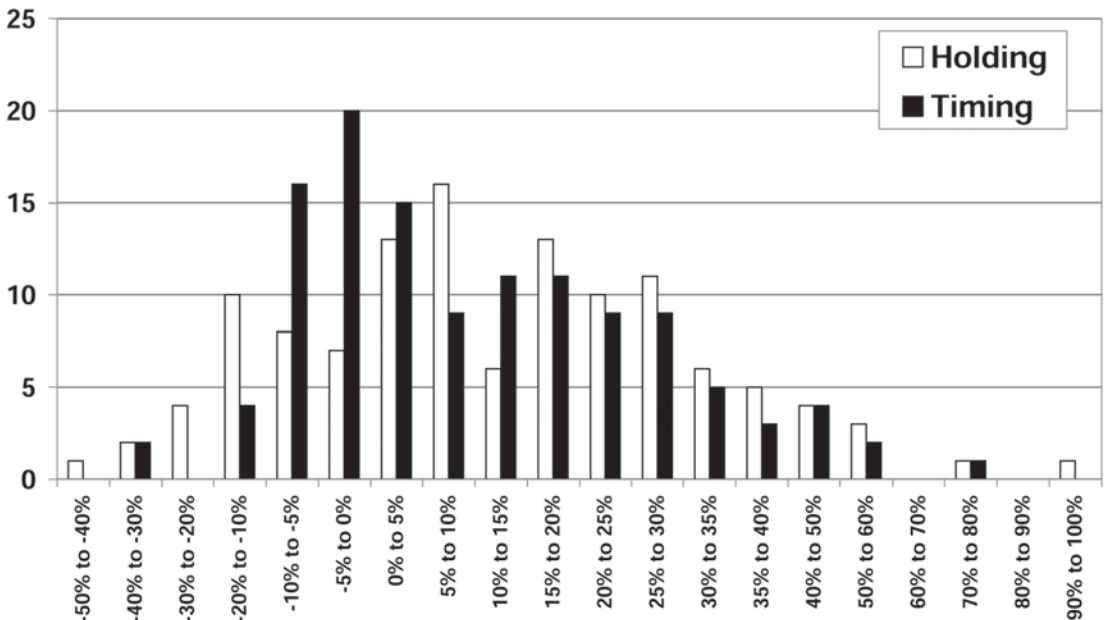
daq market at 1,801 on November 2, 1998, and rode the market to the peak of 5,049 on March 10, 2000. After moving in and out of the market several times, the market timer would have exited the Nasdaq market at 3,896 on September 11, 2000, and stayed out until December 5, 2001, when the Nasdaq was at 2,046, almost 50 percent lower. For those 15 months the timing strategist in Nasdaq would have avoided the most crushing bear market since the 1929 to 1932 stock market crash.

Distribution of Gains and Losses

There is no question that the 200-day moving-average strategy, even with transactions costs, avoids large losses, but it suffers many small defeats. In Figure 17-3 is shown the distribution of yearly gains and losses in the timing strategy after transactions costs and the holding strategy for the Dow Industrials from 1886 to 2006. As noted above, the timing strategist participates in most of the winning markets and avoids most of the losing markets but suffers many small losses. These losses occur when the market does not follow a definite trend. Despite the use of the 1 percent band to reduce whipsawing, investors in a trendless market

FIGURE 17-3

Distribution of Yearly Gains and Losses: Dow Jones Industrials Timing Strategy versus Holding Strategy



often find themselves moving in and out of the market frequently, sometimes incurring heavy transactions costs and trading losses as occurred in 2000.

The distribution in Figure 17-3 is quite similar to that of a buy-and-hold investor's purchasing index puts on the market. As noted in Chapter 15, purchasing index puts are equivalent to buying an insurance policy on the market, but the buyer must continually pay the premium. Similarly, the timing strategy involves a large number of small losses that come from moving in and out of the market, while avoiding most severe declines.

MOMENTUM INVESTING

Technical analysis can also be used to buy individual stocks. Academic economists call this *momentum investing*, and it has received increasing attention. Momentum strategies, unlike fundamental strategies, rely purely on past returns, regardless of earnings, dividends, or other valuation criteria. Momentum investors buy stocks that have recently risen in price and sell stocks that have recently fallen, expecting that the stock price will, for a time, continue to move in the same direction.

While this may seem at odds with the old maxim of "buy low, sell high," there is substantial research to support this "buy-high, sell-higher" strategy. In 1993, Narasimhan Jegadeesh and Sheridan Titman found that stocks with the highest 10 percent returns over the past six months outperformed stocks with the lowest 10 percent returns by about 1 percent per month over the next six months.^{13,14} Other technical strategies, such as buying stocks priced near their 52-week high, have also been shown to be successful.¹⁵

It should be emphasized that these momentum strategies work only in the short term and should not be part of a long-term strategy. In the Jegadeesh and Titman study, over half of the excess returns generated in the first 12 months were lost over the following two years. Over the longer periods, the advantage of buying "winning" stocks is com-

¹³ Narasimhan Jegadeesh and Sheridan Titman, "Returns to Buying Winners and Selling Losers: Implications for Stock Market Efficiency," *Journal of Finance*, vol. 48, no. 1 (March 1993), pp. 65–91.

¹⁴ Moskowitz and Grinblatt have found that much of the success of these strategies is due to the price momentum in industries rather than of individual stocks. See Tobias Moskowitz and Mark Grinblatt, "Do Industries Explain Momentum?" *Journal of Finance*, vol. 54, no. 4 (August 1999), pp. 1249–1290.

¹⁵ Thomas J. George and Chuan-Yang Hwang, "The 52-Week High and Momentum Investing," *Journal of Finance*, vol. 59, no. 5 (October 2004), pp. 2145–2176.

pletely eliminated. In fact, an earlier study by Werner De Bondt and Richard Thaler found that stocks that performed poorly over the previous three- to five-year period significantly *outperformed*, over the next three to five years, those stocks that had done well, implying a mean reversion of longer-run stock returns.¹⁶

The success of momentum investing cannot be explained within an efficient-market framework. It appears that investors underreact to short-term information, which causes the stock to continue to move in the same direction over time rather than adjusting instantaneously. Unfortunately momentum investing does not guarantee success: recent evidence suggests that while professional investors achieve excess returns with a momentum strategy, individual investors tend to underperform the market. This may be because individual investors often focus on the very best performing stocks, which tend to become overpriced quickly and suffer poor returns, while those well-performing stocks that do not make it to the very top of the list and are bought by professionals tend to have the best momentum returns.¹⁷

CONCLUSION

Proponents of technical analysis claim it helps investors identify the major trends of the market and when those trends might reverse. Yet there is considerable debate about whether such trends exist, or whether they are just runs of good and bad returns that are the result of random price movements.

Burton Malkiel has been quite clear in his denunciation of technical analysis. In his bestselling work *A Random Walk Down Wall Street*, he proclaims:

Technical rules have been tested exhaustively by using stock price data on both major exchanges, going back as far as the beginning of the 20th century. The results reveal conclusively that past movements in stock prices cannot be used to foretell future movements. The stock market has no memory. The central proposition of charting is absolutely false, and investors who follow its precepts will accomplish nothing but increasing substantially the brokerage charges they pay.¹⁸

¹⁶ Werner F. M. De Bondt and Richard Thaler, "Does the Stock Market Overreact?" *Journal of Finance*, vol. 40, no. 3 (July 1985), pp. 793–805.

¹⁷ Glenn N. Pettengill, Susan M. Edwards, and Dennis E. Schmitt, "Is Momentum Investing a Viable Strategy for Individual Investors?" *Financial Services Review*, vol. 15, no. 3 (2006), pp. 181–197.

¹⁸ Burton Malkiel, *A Random Walk Down Wall Street*, New York: Norton, 1990, p. 133.

Yet this contention, once supported nearly unanimously by academic economists, is cracking. Recent econometric research has shown that such simple trading rules as 200-day moving averages or short-term price momentum can be used to improve returns.¹⁹

Despite the ongoing academic debate, technical analysis and trend following draw huge numbers of adherents on Wall Street and among many savvy investors. The analysis in this chapter gives a cautious nod to these strategies, as long as transactions costs are not high. But trading on the basis of charts requires full-time attention. In October 1987, the Dow fell below its 200-day moving average on the Friday before the crash and gave a sell signal. But if you failed to sell your stocks that Friday afternoon, you would have been swept downward by the 22 percent nightmare decline of Black Monday.

Furthermore, as I have repeatedly noted throughout this book, actions by investors to take advantage of the past will change returns in the future. As Benjamin Graham stated so well nearly 70 years ago:

A moment's thought will show that there can be no such thing as a scientific prediction of economic events under human control. The very "dependability" of such a prediction will cause human actions which will invalidate it. Hence thoughtful chartists admit that continued success is dependent upon keeping the successful method known to only a few people.²⁰

¹⁹ See William Brock, Josef Lakonishok, and Blake LeBaron, "Simple Technical Trading Rules and the Stochastic Properties of Stock Returns," *Journal of Finance*, vol. 47, no. 5 (December 1992), pp. 1731–1764, and Andrew Lo, Harry Mamaysky, and Jiang Wang, "Foundations of Technical Analysis: Computational Algorithms, Statistical Inference, and Empirical Implementation," *Journal of Finance*, vol. 55 (2000), pp 1705–1765.

²⁰ Benjamin Graham and David Dodd, *Security Analysis*, 2d ed., New York: McGraw-Hill, 1940, pp. 715–716.

18

CHAPTER

CALENDAR ANOMALIES

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

MARK TWAIN

The dictionary defines *anomaly* as something inconsistent with what is naturally expected. And what is more unnatural than to expect to beat the market by predicting stock prices based solely on the day or week or month of the year? Yet it appears that you can. Research has revealed that there are predictable times during which stocks as a whole, and certain stocks in particular, outperform the market.

The analysis in the first edition of *Stocks for the Long Run*, published in 1994, was based on long data series analyzed through the early 1990s. The calendar anomalies reported in that edition invited investors to try to outperform the market by adopting their strategies to these unusual calendar events. However, as more investors know of these anomalies, the prices of stocks may adjust so that much, if not all, of the anomaly is eliminated. That certainly would be the prediction of the efficient market hypothesis.

In this edition of *Stocks for the Long Run*, I shall look at the evidence over the past 14 years to determine whether the anomaly survived or

not. The results are surprising. Some anomalies have weakened and even reversed, while others remain as strong as they have always been. Here is a rundown.

SEASONAL ANOMALIES

The most important historical calendar anomaly is that small-capitalization stocks have far outperformed larger stocks in January. This effect is so strong that without January's return, small stocks would have a *lower* return than large stocks over the past 80 years!¹

This outperformance of small stocks in January has been dubbed the *January Effect*. It was discovered in the early 1980s by Donald Keim,² based on research he did as a graduate student at the University of Chicago. It was the first significant finding that flew in the face of the efficient market hypothesis that claimed there was no predictable pattern to stock prices.

The January Effect might be the granddaddy of all calendar anomalies, but it is not the only one. For inexplicable reasons, stocks generally do much better in the first half of the month than the second half, do well before holidays, and plunge in the month of September. Furthermore, they do exceptionally well between Christmas and New Year's Day, and until very recently, they have soared on the last trading day of December, which is actually the day that has launched the January Effect.

Why these anomalies occur is not well understood, and whether they will continue to be significant in the future is an open question. But their discovery has put economists on the spot. No longer can researchers be so certain that the stock market is thoroughly unpredictable and impossible to beat.

THE JANUARY EFFECT

Of all of the calendar-related anomalies, the January Effect has been the most publicized. From 1925 through 2006, the average arithmetic return on the S&P 500 Index in the month of January was 1.57 percent, while the average returns on the small stocks came to 6.07 percent. The 4.5 percentage point excess return of small stocks in January exceeds the entire

¹ This includes the dramatic 1975 to 1983 period during which small stocks returned over 30 percent per year.

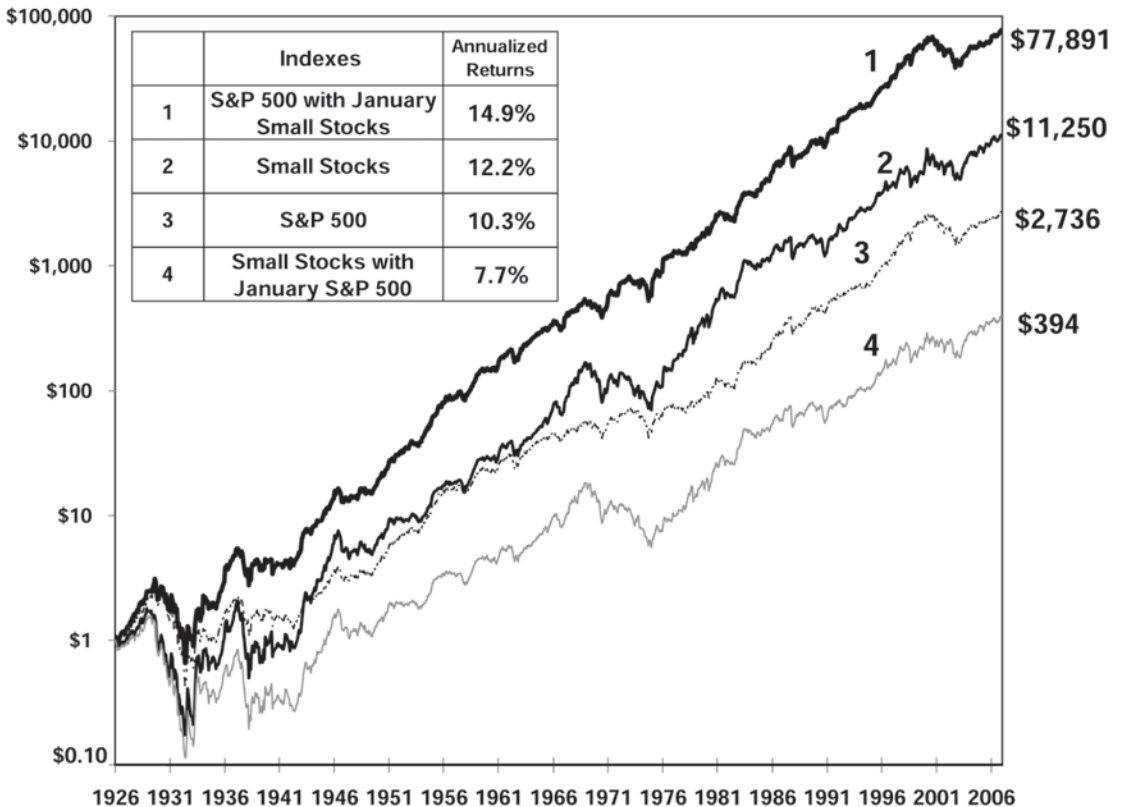
² Donald Keim, "Size-Related Anomalies and Stock Return Seasonality: Further Empirical Evidence," *Journal of Financial Economics*, vol. 12 (1983), pp. 13–32.

1.9 percentage point difference in annual compound returns between large and small stocks. In other words, from February through December, the returns on small stocks are lower than the returns on large stocks. On the basis of history, the only advantageous time to hold small stocks is the month of January!

To see how important the January Effect is, look at Figure 18-1. It shows the total returns index on large and small stocks and on small stocks if the January return on small stocks is replaced with that of the S&P 500 Index in January. As shown in Chapter 9, a single dollar invested in small stocks in 1926 would grow to \$11,250 by the end of 2006, while the same dollar would grow to only \$2,736 in large stocks. Yet if the small stocks' return in January is eliminated, the total return to small stocks accumulates to only \$394, merely 14 percent of the return on large stocks!

FIGURE 18-1

Small and Large Stocks, with and without the January Effect, 1926 through December 2006



Also shown in Figure 18-1 is that if the large January small stock returns persist in the future, it could lead to some astounding investment results. By buying small stocks at the end of December and transferring them back to the S&P 500 Index at the end of January, a \$1 investment in this strategy would have grown to \$77,891 by the end of 2006 if begun in December 1925, or a 14.9 percent annual rate of return.

There have been only 16 years since 1925 when large stocks have outperformed small stocks in January. Furthermore, when small stocks underperform large stocks, it is usually not by much: the worst underperformance was 5.1 percent in January 1929. In contrast, since 1925, small-stock returns have exceeded large-stock returns in January by at least 5 percent for 28 years, by at least 10 percent for 13 years, and by over 20 percent for 2 years.

The January Effect also prevailed during the most powerful bear market in our history. From August 1929 through the summer of 1932, when small stocks lost over 90 percent of their value, small stocks posted consecutive January monthly returns of plus 13 percent, 21 percent, and 10 percent in 1930, 1931, and 1932. It is testimony to the power of the January Effect that investors could have increased their wealth by 50 percent during the greatest stock crash in history by buying small stocks at the end of December in those three years and selling them at the end of the following month, putting their money in cash for the rest of the year!

A fascinating feature of the January Effect is that you do not have to wait the entire month to see the big returns from small stocks roll in. Most of the buying in small stocks begins on the last trading day of December (often in the late afternoon), as some investors pick up the bargain stocks that are dumped by others on New Year's Eve. Strong gains in small stocks continue on the first trading day of January and with declining force through the first week of trading. On the basis of research published in 1989, on the first trading day of January alone, small stocks earn nearly 4 percentage points more than large stocks.³ By the middle of the month, the January Effect is largely exhausted.

When any anomaly such as the January Effect is found, it is important to examine its international reach. When researchers turned to foreign markets, they found that the January Effect was not just a U.S. phenomenon. In Japan, the world's second-largest capital market, the excess returns on small stocks in January come to 7.2 percent per year,

³ Robert Haugen and Josef Lakonishok, *The Incredible January Effect*, Homewood, Ill.: Dow Jones-Irwin, 1989, p. 47.

more than in the United States.⁴ As you shall see later in the chapter, January is the best month for both large and small stocks in many other countries of the world.⁵

How could such a phenomenon go unnoticed for so long by investors, portfolio managers, and financial economists? Because in the United States, the returns in January are nothing special for large stocks that form the bulk of those indexes that are analyzed. That's not to say that January is not a good month for large stocks, as large stocks do quite well in January, particularly in foreign markets. But in the United States, January is by no means the best month for stocks of large firms.

Causes of the January Effect

Why do investors favor small stocks in January? No one knows for sure, but there are several hypotheses. In contrast to institutions, individual investors hold a disproportionate amount of small stocks, and they are more sensitive to the tax consequences of their trading. Small stocks, especially those that have declined in the preceding 11 months, are subject to tax-motivated selling in December. This selling depresses the price of individual issues. In January after the selling ends, these stocks bounce back in price.

There is some evidence to support this explanation. Stocks that have fallen throughout the year fall even more in December and then often rise dramatically in January. Furthermore, there is some evidence that before the introduction of the U.S. income tax in 1913, there was no January Effect. And in Australia, where the tax year runs from July 1 through June 30, there are abnormally large returns to small stocks in July.

If taxes are a factor, however, they cannot be the only one, for the January Effect holds in countries that do not have a capital gains tax. Japan did not tax capital gains for individual investors until 1989, but the January Effect existed before then. Furthermore, capital gains were not taxed in Canada before 1972, and yet there was a January Effect in that country as well. Finally, stocks that have risen throughout the pre-

⁴ See Gabriel Hawawini and Donald Keim, "On the Predictability of Common Stock Returns: World-Wide Evidence," in Robert A. Yarrow, Vojislav Maccsimovic, and William T. Ziemba, eds., *Handbooks in Operations Research and Management Science*, vol. 9, North Holland, 1995, Chap. 17, pp. 497–544.

⁵ For an excellent summary of all this evidence, see Gabriel Hawawini and Donald Keim, "The Cross Section of Common Stock Returns: A Review of the Evidence and Some New Findings," in *Security Market Imperfections in Worldwide Equity Markets*, Donald B. Keim and William T. Ziemba, eds., Cambridge, England: Cambridge University Press, 2000.

vious year and should not be subject to tax-loss selling still rise in January, although not by as much as stocks that have fallen the previous year.

There are other potential explanations for the January Effect. Workers often receive extra income, such as from bonuses and other forms of compensation, at year-end. These individuals often invest their cash in stocks in the first week of January. Data show that there is a sharp increase in the ratio of public buy orders to public sell orders around the turn of the year. Since the public holds a large fraction of small stocks, this could be an important clue to understanding the January Effect.⁶

Although all these explanations appear quite reasonable, none jibes with what is called an “efficient capital market.” If money managers know that small stocks will surge in January, these stocks should be bought well before New Year’s Day to capture these spectacular returns. That would cause the price of small stocks to rise in December, which would prompt other managers to buy them in November, and so on. In the process of acting on the January Effect, the price of stocks would be smoothed out over the year and the phenomenon would disappear.

Of course, to eliminate the January Effect, money managers and investors with significant capital must know of the effect and feel comfortable about acting on it. Those in a fiduciary position might feel uneasy justifying what appears to be a very unusual investment strategy to their clients, especially if it does not work out. Others might be reluctant to take advantage of a phenomenon that seems to have no clear economic rationale.

The January Effect Weakened in Recent Years

Perhaps all the publicity about the January Effect has motivated traders to take advantage of this calendar anomaly since the effect has been far weaker since 1990 than before. From 1990 through January 2007, the average January return on the Russell 2000 Index has been 1.36 percent, only slightly more than the 0.70 percent return on the S&P 500 Index. Furthermore, the return on the Russell 2000 on the last trading day of December and the first trading day of January, which had previously been so high, has been no higher than the S&P 500 Index, and both have been approximately zero. Finally, the excess return on small stocks during the first seven trading days in January, which had been so large before 1990, has also vanished.

⁶ Jay Ritter, “The Buying and Selling Behavior of Individual Investors at the End of the Year,” *Journal of Finance*, vol. 43 (1988), pp. 701–717.

There has, however, been a bit of revival of the January Effect in recent years. Since 2000 the return on small stocks has risen to 1.68 versus 0.21 percent for large stocks. This is not as big as the historical advantage, but it is far larger than that in the 1990s. Perhaps the poor performance of the January Effect during that decade caused traders to ignore the phenomenon, and the anomaly has resurfaced. We all await further data.

LARGE MONTHLY RETURNS

There are other seasonal patterns to stock returns besides the January Effect. The monthly returns on the Dow Industrials and S&P 500 Index are displayed in Figure 18-2. December has been the best month since World War II for both indexes, but only the fifth-best month since 1885. In striking contrast, August, which was the best month for the past 116 years, is actually the second-to-worst month since World War II for the Dow and third-worst month for the S&P 500 Index. Since the end of World War II there has been really no evidence of the “summer rally” that used to be much trumpeted by brokers and investment advisors.

These monthly patterns of returns have a worldwide reach. Although January is a good month in the United States, it is an excellent month in most foreign countries. The January returns for the 20 countries covered by the Morgan Stanley Capital Market Index are shown in Figure 18-3. In every country, January returns are greater than average and constitute nearly one-quarter of the annual stock returns abroad. Investor enthusiasm in January also seems to infect the neighboring months of December and February. Well over one-half of all returns outside the United States occur in the three months of December through February.⁷

THE SEPTEMBER EFFECT

Summer months have good returns, but after the summer holidays, watch out! September is by far the worst month of the year, and in the United States, it is the only month to have a negative return including reinvested dividends. September is followed closely by October, which, as Chapter 16 indicated already, has a disproportionate percentage of crashes.

⁷ The data presented in Figure 18-3 are from a value-weighted stock index calculated on large stocks. As noted previously, there is evidence that smaller stocks experience even higher January returns, so the January returns shown in Figure 18-3 are probably much lower than those that can be gained in the average stock.

FIGURE 18-2

Monthly Returns on the Dow Jones Industrials and the S&P 500

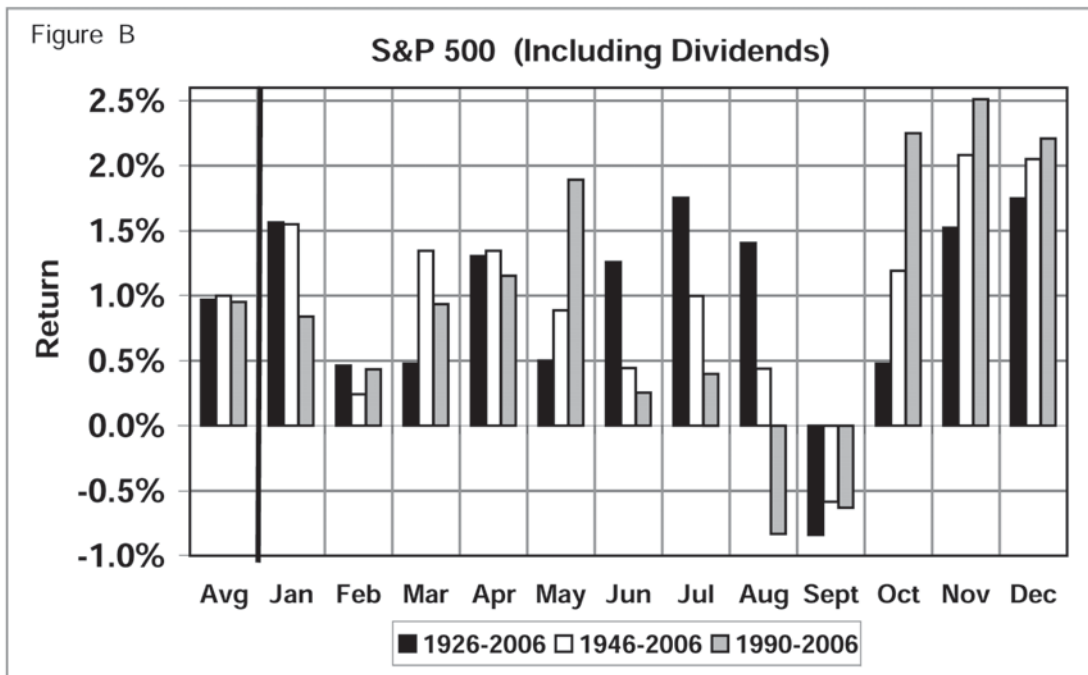
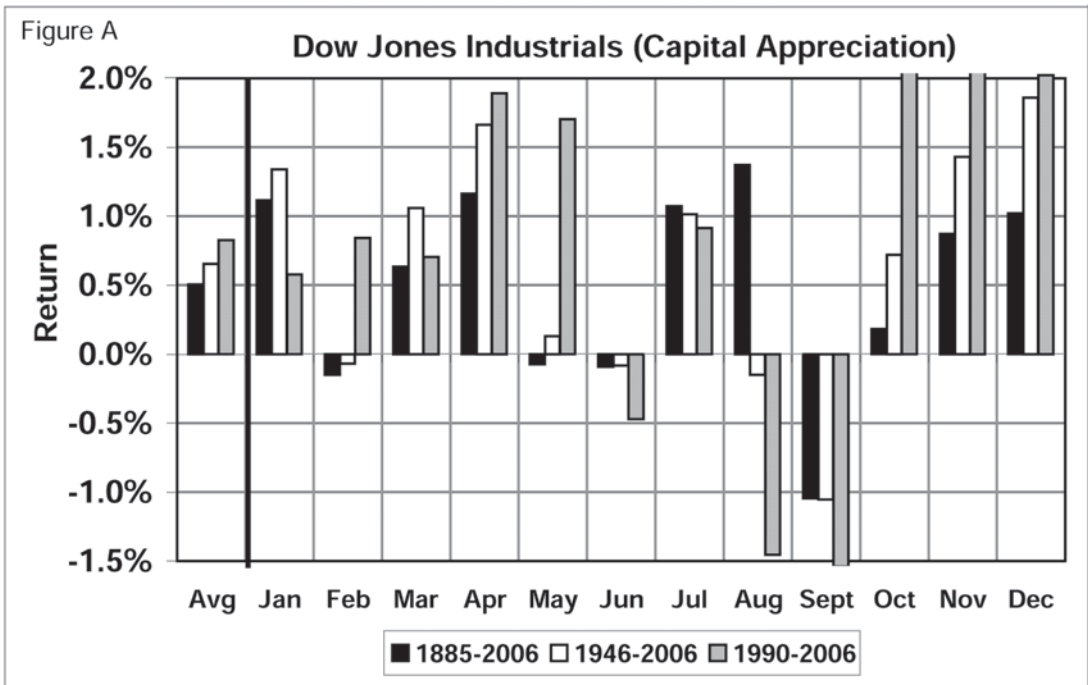
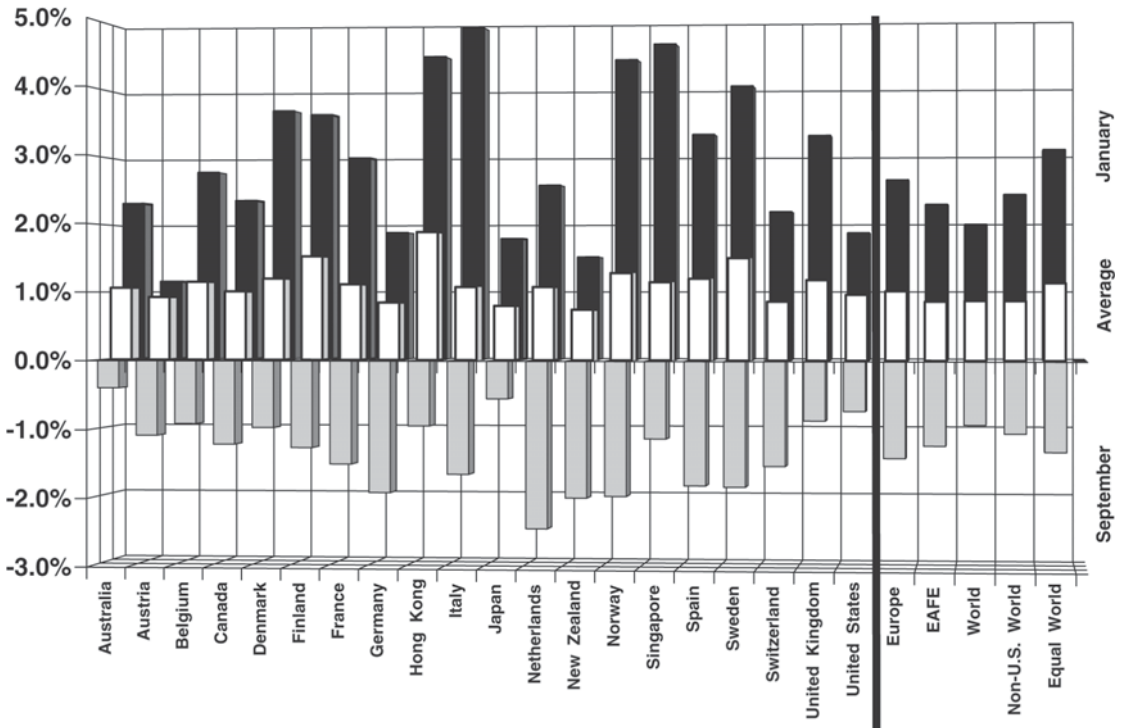


FIGURE 18-3

International January and September Effects, 1970 through December 2006

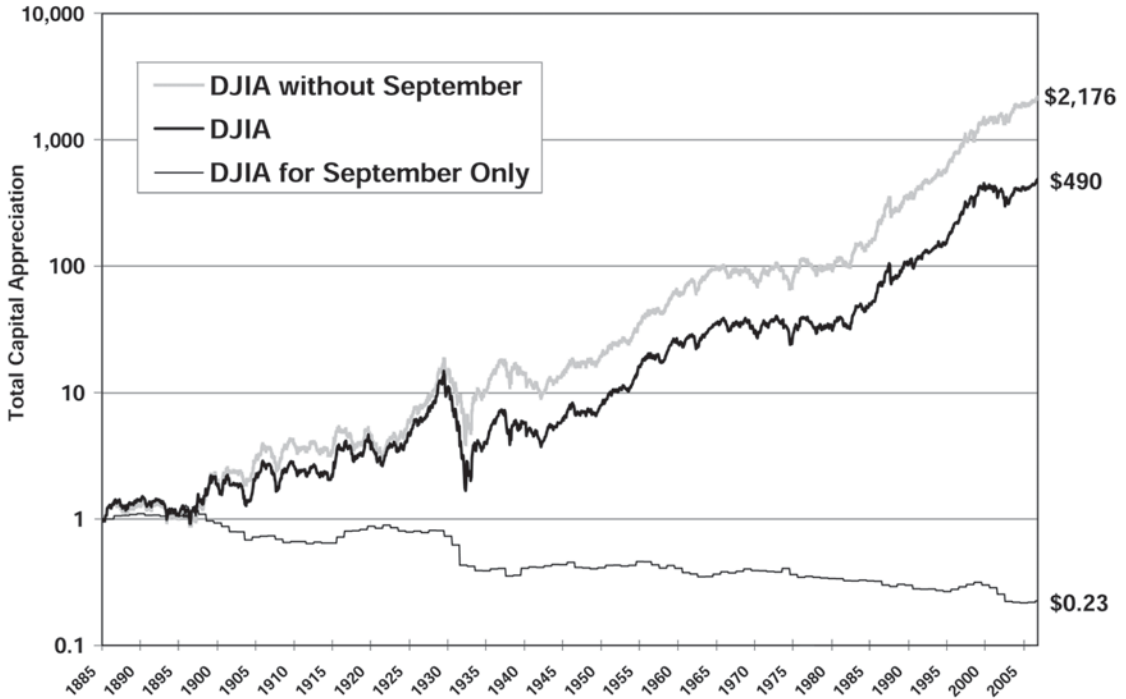


Shown in Figure 18-4 are the Dow Jones Industrial Averages from 1885 through 2006, both including and excluding the month of September. An investment of \$1 in the Dow Jones Average in 1885 would be worth \$490 by the end of 2006 (dividends excluded). In contrast, \$1 invested in the Dow only in the month of September would be worth only 23 cents! On the other hand, if you put your money in the stock market every month except September, your dollar would have been worth \$2,176 at the end of 2006.

The poor returns in September also prevail in the rest of the world. It is amazing that September is the only month of the year that has negative returns in a value-weighted index. September has been the worst month in 17 of the 20 countries analyzed and all the major world indexes, including the EAFE Index and the Morgan Stanley all-world index. In September investors would do better holding zero-interest currency than

FIGURE 18-4

The September Effect: Dow Jones Industrial Average, 1885 through December 2006



putting their assets in the stock market. Furthermore, in contrast to the January Effect, the September Effect has not only prevailed since 1990 but it has actually been stronger over the past 16 years. It is curious that the January Effect has received all the publicity while the September Effect remains strong with very little research to date.

We can only speculate on why returns are so poor in September. Maybe the poor returns have nothing directly to do with economics but are related to the approach of winter and the depressing effect of rapidly shortening daylight. Psychologists stress that sunlight is an essential ingredient to well-being: recent research has confirmed that the New York Stock Exchange does significantly worse on cloudy days than it does on sunny days.⁸ But this explanation falters “down under” as September is

⁸ Edward M. Saunders, Jr., “Stock Prices and Wall Street Weather,” *American Economic Review*, vol. 83 (December 1993), pp. 1337–1345.

also a poor month in Australia and New Zealand, where the month marks the beginning of spring and longer days.⁹

Perhaps the poor returns in September are the result of investors' liquidating stocks (or holding off buying new stocks) to pay for their summer vacations. As discussed below, until recently Monday was by far the worst-performing day of the week. For many, September is the monthly version of Monday: the time you face work after a period of leisure.

OTHER SEASONAL RETURNS

Although psychologists say that many silently suffer depression around Christmas and New Year's, stock investors believe 'tis the season to be jolly. Over the past 120 years, daily price returns between Christmas and New Year's, as Table 18-1 indicates, have averaged 10 times the average.

⁹ Of course, many investors in the Australian and New Zealand market live north of the Equator.

TABLE 18-1

Dow Jones Industrial Average Daily Price Returns, February 1885 through December 2006

	1885 - 2006	1885 - 1926	1926 - 1945	1946 - 1990	1990 - 2006
Overall Averages					
Whole Month	0.0238%	0.0192%	0.0147%	0.0273%	0.0400%
First Half of Month	0.0428%	0.0203%	0.0621%	0.0500%	0.0606%
Second Half of Month	0.0048%	0.0182%	-0.0316%	0.0040%	0.0199%
Last Day of Month	0.0998%	0.0875%	0.1633%	0.1460%	-0.0831%
Days of the Week					
Monday	-0.0946%	-0.0874%	-0.2106%	-0.1313%	0.1240%
Tuesday	0.0386%	0.0375%	0.0473%	0.0307%	0.0512%
Wednesday	0.0613%	0.0280%	0.0814%	0.0909%	0.0409%
Thursday	0.0246%	0.0012%	0.0627%	0.0398%	-0.0038%
Friday	0.0672%	0.0994%	0.0064%	0.0942%	-0.0077%
With Sat	0.0701%	0.0994%	0.0064%	0.0826%	0.0961%
Without Sat	0.0637%			0.0961%	-0.0077%
Saturday	0.0578%	0.0348%	0.0964%	0.0962%	
Holiday Returns					
Day before Holiday					
July 4th	0.3154%	0.2118%	0.8168%	0.2746%	0.0809%
Christmas	0.3510%	0.4523%	0.3634%	0.3110%	0.1959%
New Year's	0.3099%	0.5964%	0.3931%	0.2446%	-0.3101%
Holiday Avg	0.3254%	0.4201%	0.5244%	0.2767%	-0.0111%
Christmas Week	0.2412%	0.3242%	0.2875%	0.1828%	0.0746%

Even more striking is the difference between stock returns in the first and second half of the month.¹⁰ Over the entire 122-year period studied, the percentage change in the Dow Jones Industrial Average during the first half of the month—which includes the last trading day of the previous month up to and including the fourteenth day of the current month—is almost nine times the gain that occurs during the second half.¹¹

The average percentage changes in the Dow Jones Industrial Average over every calendar day of the month are shown in Figure 18-5. It is striking that the average percentage gain on the last trading day of the month (and the thirtieth calendar day, when that is not the last trading day) and the first six calendar days is more than equal to the entire return for the month. The net change in the Dow Industrials is negative for all the other days.

The strong gains at the turn of the month are probably related to the inflow of funds into the equity market from monthly pay cycles. Although this phenomenon has attenuated in recent years, the return in the first half of the month is still more than three times the return in the second half of the month since 1990.

DAY-OF-THE-WEEK EFFECTS

Many people hate Mondays. After two days of relaxing and doing pretty much what you like, having to face work on Monday is a drag. And stock investors apparently feel the same way. Monday has been by far the worst day of the week for the market. Over the past 121 years, the returns on Monday have been decisively negative—so negative that if Monday returns were instead like Tuesday through Friday, the Dow Industrial Average would have reached 68 million today!

Although investors hate Mondays, they have relished Fridays. Friday has been the best day of the week, yielding price returns about three times the daily average. Even when markets were open on Saturday (every month before 1946 and nonsummer months before 1953), Friday price returns were the best.

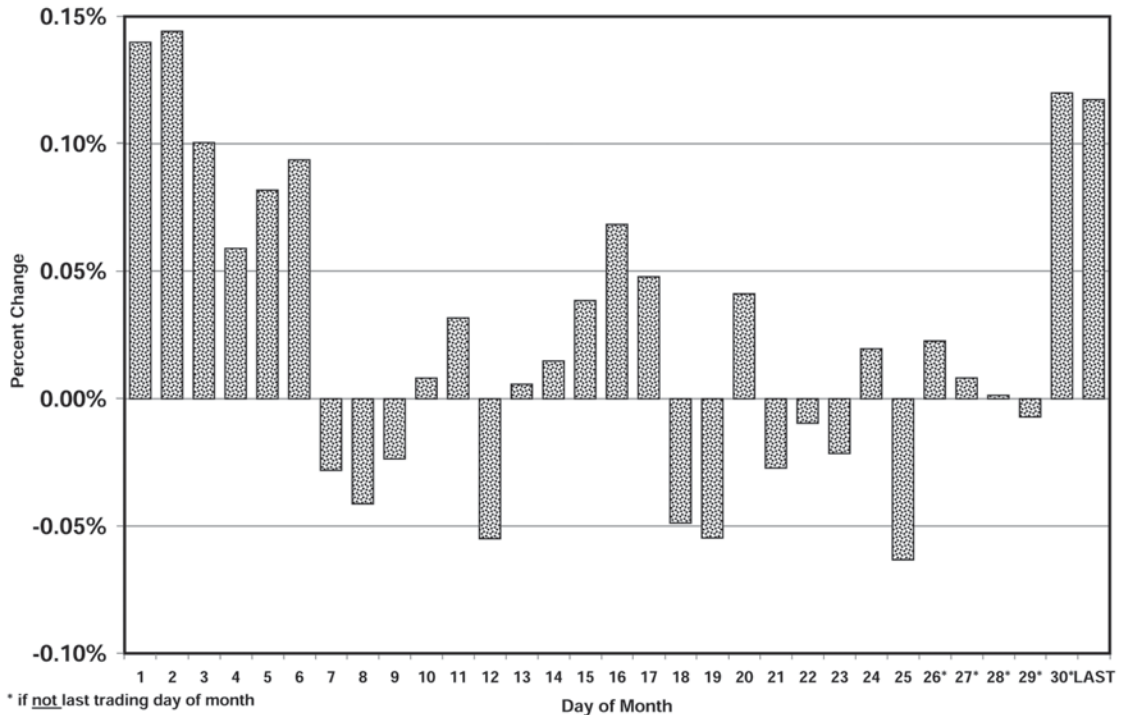
The Monday and Friday effects are not confined to U.S. equity markets. Studies by Keim and Hawawini have shown that throughout most

¹⁰ R. A. Ariel, "A Monthly Effect in Stock Returns," *Journal of Financial Economics*, vol. 18 (1987), pp. 161–174.

¹¹ The difference in the returns to the Dow stocks between the first and second halves of the month is accentuated by the inclusion of dividends. Currently, about two-thirds of the Dow Industrial stocks pay dividends in the first half of the month, which means that the difference between the first and second half returns are accentuated even more.

FIGURE 18-5

Daily Price Returns on the Dow Jones Industrial Average, 1885 through December 2006



of the world, Monday is a poor day, garnering negative returns not only in the United States but also in Canada, the United Kingdom, Germany, France, Japan, Korea, and Singapore. On the other hand, none of the major countries have negative returns on Wednesday, Thursday, or Friday. Tuesday is also a poor day for the market, especially in Asia and Australia.¹² This might be due to the poor Monday just experienced in Western countries, since daily returns in the United States have been found to influence Asian markets the next day.

But the daily pattern of stock prices has changed dramatically. Since 1990 Monday has gone from the worst to the best and Friday from the best to the worst. This pattern might be an overreaction by traders to the widespread publication of the daily data during the 1990s. Knowing

¹² These results are taken from Hawawini and Keim, "On the Predictability of Common Stock Returns," pp. 497–544.

Monday is usually a bad day, traders sell the Friday before and buy back stock on Monday. Whatever the reason, it shows that, like the January Effect, well-publicized anomalies are often arbitrated out of the market.

Another calendar anomaly is that stocks do very well before major holidays, as shown in Table 18-1. Price returns before the Fourth of July, Christmas, and New Year's are, on average, almost 14 times the average daily price return. But this anomaly, like the day-of-the-week effect, has changed dramatically in recent years. Although stock returns on the day before July Fourth and Christmas have remained strong, returns on the last day of the trading year have switched from a strongly positive 0.31 percent to a decisively negative 0.31 percent since 1990. The negative returns on the last trading day in recent years are probably caused by a large number of "sell-on-close" orders that are automatically executed to offset a position in stock index futures. The downward movement of stock prices generally occurs in the last 30 minutes of trading. Of course, it is likely that once this pattern becomes widely known, it too will disappear.

Finally, there appears to be a diurnal pattern of stock returns. Evidence has shown that there is usually a sinking spell in the morning, especially on Monday. During lunch the market firms, then pauses or declines in the midafternoon before rising strongly in the last half hour of trading. This often leads the market to close at the highest levels of the day.

WHAT'S AN INVESTOR TO DO?

These anomalies are an extremely tempting guide to formulating an investing strategy. But these calendar-related returns do not always occur, and, as investors become more aware of them, some have moderated while others have disappeared altogether. Still others have completely switched, such as the behavior of stocks on the last trading day of the year.

Furthermore, investing in these anomalies requires the buying and selling of stock, which incurs transactions costs, and unless you are trading with tax-sheltered funds, you may realize gains that could be taxed. Nevertheless, investors who have already decided to buy or sell but have some latitude in choosing the timing of such a transaction, might wish to take these calendar anomalies into account before making their trades.

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CHAPTER

BEHAVIORAL FINANCE AND THE PSYCHOLOGY OF INVESTING

The rational man—like the Loch Ness monster—is sighted often, but photographed rarely.

DAVID DREMAN, 1998¹

The market is most dangerous when it looks best; it is most inviting when it looks worst.

FRANK J. WILLIAMS, 1930²

This book is filled with data, figures, and charts that support an internationally diversified, long-term strategy for stock investors. Yet advice is much easier to take in theory than to put in practice. The finance profession is increasingly aware that psychological factors can thwart rational analysis and prevent investors from achieving the best results for their portfolio. The study of these psychological factors has burgeoned into the field of *behavioral finance*.

¹ David Dreman, *Contrarian Investment Strategies: The Next Generation*, New York: Simon & Schuster, 1998.

² Frank J. Williams, *If You Must Speculate, Learn the Rules*, Burlington, Vt.: Freiser Press, 1930.

This chapter is written as a narrative to make it easier to understand the basic research and issues of behavioral finance. Dave is an investor who falls into psychological traps that prevent him from being effective. You may notice similarities between his behavior and your own. If so, the advice given in this chapter should help the reader become a more successful investor. Dave first talks to his wife Jennifer and then to an Investment Counselor who understands behavioral finance. The narrative begins in the fall of 1999, several months prior to the peak in the technology and Internet bubble that dominated markets at the turn of the century.

THE TECHNOLOGY BUBBLE, 1999 TO 2001

TIME: OCTOBER 1999

Dave: Jen, I've made some important investment decisions. Our portfolio contains nothing but these "old foggy" stocks like Philip Morris, Procter & Gamble, and Exxon. These stocks just aren't doing anything right now. My friends Bob and Paul at work have been making a fortune in Internet stocks. I talked with my broker, Allan, about the prospects of these stocks. He said the experts think the Internet is the wave of the future. I'm selling some of our stocks that just aren't moving and getting into the Internet stocks like Amazon, Yahoo!, and Inktomi.

Jennifer: I've heard that those stocks are very speculative. Are you sure you know what you're doing?

Dave: Allan says that we are entering a "New Economy," spurred by a communications revolution that is going to completely change the way we do business. Those stocks that we owned are Old Economy stocks. They had their time, but we should be investing for the future. I know these Internet stocks are volatile, and I'll watch them very carefully so we won't lose money. Trust me. I think we're finally on the right track.

TIME: MARCH 2000

Dave: Jen, have you seen our latest financial statements? We're up 60 percent since October. The Nasdaq crossed 5,000, and no one I've heard believes it will stop there. The excitement about the market is spreading, and it has become *the* topic of conversation around the office.

Jen: You seem to be trading in and out of stocks a lot more than you did before. I can't follow what we own!

Dave: Information is hitting the market faster and faster. I have to continuously adjust my portfolio. Commissions are so cheap now that it

pays to trade on any news affecting stocks. Trust me, look how well we're doing.

TIME: JULY 2000

Jen: Dave, I've looked at our broker's statement. We don't hold those Internet stocks anymore. Now we own (*she reads from the statement*) Cisco, EMC, Oracle, Sun Microsystems, Nortel Networks, JDS Uniphase. I don't know what any of these companies do. Do you?

Dave: When the Internet stocks crashed in April, I sold out right before we lost all our gains. Unfortunately, we didn't make much on those stocks, but we didn't lose either.

I think we're on the right track now. Those Internet companies weren't making any money. All the new firms we now own form the backbone of the Internet and all are profitable. Allan told me an important principle: Do you know who made the most money in the California Gold Rush of the 1850s? Not the gold miners. Oh, some of the early diggers found gold, but most found nothing. The real winners from the Gold Rush were those that sold supplies to the miners—pick axes, boots, pans, and hiking gear. The lesson is very clear, most of the Internet companies are going to fail, but those supplying the backbone of the Internet—the routers, software, and fiber optic cables—will be the big winners.

Jen: But I think I heard some economist say those companies are way overpriced now; they're selling for hundreds of times earnings.

Dave: Yes, but look at their growth over the last five years—no one has ever seen this before. The economy is changing, and many of the traditional yardsticks of valuation don't apply. Trust me; I'll monitor these stocks. I got us out of those Internet stocks in time, didn't I?

TIME: NOVEMBER 2000

Dave (to himself): What should I do? The last few months have been dreadful. I'm down about 20 percent. Just over two months ago, Nortel was over 80. Now it is around 40. Sun Microsystems was 65, and now it is around 40. These prices are so cheap. I think I'll use some of my remaining cash to buy more shares at these lower prices. Then, my stocks don't have to go up as much for me to get even.

TIME: AUGUST 2001

Jen: Dave. I've just looked at our brokerage statement. We've been devastated! Almost three-quarters of our retirement money is gone. I

thought you were going to monitor our investments closely. Our portfolio shows nothing but huge losses.

Dave: I know; I feel terrible. All the experts said these stocks would rebound, but they kept going down.

Jen: This has happened before. I don't understand why you do so badly. For years you watch the market closely, study all these financial reports, and seem to be very well informed, yet you seem to always make the wrong decisions. You buy near the highs and sell near the lows. You hold on to losers while selling your winners. You . . .

Dave: I know, I know. My stock investments always go wrong. I think I'm giving up on stocks and sticking with bonds.

Jen: Listen, Dave. I have talked to a few other people about your investing troubles, and I want you to go see an investment counselor. They use behavioral psychology to help investors understand why they do poorly. The investment counselor will help you correct this behavior. Dave, I made you an appointment already. Please go see him.

BEHAVIORAL FINANCE

TIME: NEXT WEEK

Dave was skeptical. He thought that understanding stocks required knowledge of economics, accounting, and mathematics. Dave never heard the word *psychology* used in any of those subjects. Yet he knew he needed help, and it couldn't hurt to check it out.

Investment Counselor (IC): I have read your profile and talked to your wife extensively. You are very typical of the investor that we counsel here. I adhere to a new branch of economics called *behavioral finance*. Many of the ideas my profession explores are based on psychological concepts that have rarely before been applied to the stock market and portfolio management.

Let me give you some background. Until recently, finance was dominated by theories that assumed investors maximized their expected *utility*, or well-being, and always acted rationally. This was an extension of the *rational theory of consumer choice* under certainty applied to uncertain outcomes.

In the 1970s two psychologists, Amos Tversky and Daniel Kahneman, noted that many individuals did not behave as this theory predicted. They developed a new model—called *prospect theory*—of how individuals actually behave and make decisions when faced with uncertainty.³ Their

model established them as the pioneers of behavioral finance, and their research has been making much headway in the finance profession.

Fads, Social Dynamics, and Stock Bubbles

IC: Let us first discuss your decision to get into the Internet stocks. Think back to October 1999. Do you remember why you decided to buy those stocks?

Dave: Yes. My stocks were simply not going anywhere. My friends at work were investing in the Internet and making a lot of money. There was so much excitement about these stocks; everyone claimed that the Internet was a communications revolution that would change business forever.

IC: When everyone is excited about the market, you should be extremely cautious. Stock prices are not based just on economic values but on psychological factors that influence the market. Yale economist Robert Shiller, one of the leaders of the behavioral finance movement, has emphasized that fads and social dynamics play a large role in the determination of asset prices.⁴ Shiller showed that stock prices have been far too volatile to be explained by fluctuations in economic factors, such as dividends or earnings.⁵ He has hypothesized that much of the extra volatility can be explained by fads and fashions that have a large impact on investor decisions.

Dave: I did have my doubts about these Internet stocks, but everyone else seemed so sure they were winners.

IC: Note how others influenced your decision against your better judgment. Psychologists have long known how hard it is to remain separate from a crowd. This was confirmed by a social psychologist named Solomon Asch. He conducted a famous experiment where subjects were presented with four lines and asked to pick the two that were the same length. The right answer was obvious, but when confederates of Dr. Asch presented conflicting views, the subjects often gave the incorrect answer.⁶

³ Daniel Kahneman and Amos Tversky, "Prospect Theory: An Analysis of Decision under Risk," *Econometrica*, vol. 47, no. 2 (March 1979).

⁴ Robert Shiller, "Stock Prices and Social Dynamics," *Brookings Papers on Economic Activity*, Washington, D.C.: Brookings Institution, 1984.

⁵ Robert Shiller, "Do Stock Prices Move Too Much to Be Justified by Subsequent Movements in Dividends?" *American Economic Review*, vol. 71, no. 3 (1981), pp. 421–436. See Chapter 16 for further discussion.

⁶ Solomon Asch, *Social Psychology*, Englewood Cliffs, N.J.: Prentice Hall, 1952.

Follow-up experiments confirmed that it was not social pressure that led the subjects to act against their own best judgment but their disbelief that a large group of people could be wrong.⁷

Dave: Exactly, so many were hyping these stocks that I felt there had to be something there. If I didn't buy the Internet stocks, I thought that I was missing out.

IC: I know. The Internet and technology bubble is a perfect example of social pressures influencing stock prices. The conversations around the office, the newspaper headlines, and the analysts' predictions—they all fed the craze to invest in these stocks. Psychologists call this penchant to follow the crowd the *herding instinct*—the tendency of individuals to adapt their thinking to the prevailing opinion.

The Internet bubble has many precedents. In 1852, Charles Mackay wrote the classic *Extraordinary Delusions and the Madness of Crowds*, which chronicled a number of financial bubbles during which speculators were driven into a frenzy by the upward movement of prices: the South Sea bubble in England and the Mississippi bubble in France around 1720 and the tulip mania in Holland a century earlier.⁸

Let me read you my favorite passage from the book. See if you can relate with this:

We find that whole communities suddenly fix their minds upon one subject, and go mad in its pursuit; that millions of people become simultaneously impressed with one delusion and run after it. . . . Sober nations have all at once become desperate gamblers, and risked most of their existence upon the turn of a piece of paper. . . . Men, it has been well said, think in herds. . . . They go mad in herds, while they only recover their senses slowly and one by one.

Dave (shaking his head): This happens again and again through history. Even though others were pointing to those very same excesses last year, I was convinced that “this time is different.”

IC: As were many others. The propensity of investors to follow the crowd is a permanent fixture of financial history. There are many times when the “crowd” is right,⁹ but often following the crowd can lead you astray.

⁷ Morton Deutsch and Harold B. Gerard, “A Study of Normative and Informational Social Influences upon Individual Judgment,” *Journal of Abnormal and Social Psychology*, vol. 51 (1955), pp. 629–636.

⁸ Charles Mackay, *Memoirs of Extraordinary Popular Delusions and the Madness of Crowds*, London: Bentley, 1841.

⁹ See James Surowiecki, *The Wisdom of Crowds*, New York: Anchor Books, 2005.

Dave, have you ever been in a new town and found yourself choosing between two restaurants? One perfectly rational way of deciding, if they are close in distance, is to see which restaurant is busier since there's a good chance that at least some of those patrons have tried both restaurants and have chosen to eat at the better one. But when you eat at the busier restaurant, you are increasing the chance that the next diner, using the same reasoning, will also eat there, and so on. Eventually, everybody will be eating at that one restaurant even though the other one could be much better.

Economists call this decision-making process an *information cascade*, and they believe that it happens often in financial markets.¹⁰ For example, when one company bids for another, often other suitors will join in. When an IPO gets a strong following, other investors join in. Individuals have a feeling that “someone knows something” and that they shouldn't miss out. Sometimes that's right, but very often that is wrong.

Excessive Trading, Overconfidence, and the Representative Bias

IC: Dave, let me shift the subject. From examining your trading records, I see that you were an extremely active trader.

Dave: I had to be. Information was constantly bombarding the market; I felt I had to reposition my portfolio constantly to reflect the new information.

IC: Let me tell you something. Trading does nothing but cause extra anxiety and lower returns. A couple of economists published an article in 2000 called “Trading Is Hazardous to Your Wealth.” (And, I may add, to your health also.) Examining the records of tens of thousands of traders, they showed that the returns of the heaviest traders were 7.1 percent below those who traded infrequently.¹¹

Dave: You're right. I think trading has hurt my returns. I thought that I was one step ahead of the other guy, but I guess I wasn't.

IC: It is extraordinarily difficult to be a successful trader. Even bright people who devote their entire energies to trading stocks rarely make superior returns.

¹⁰ Robert Shiller, “Conversation, Information, and Herd Behavior,” *American Economic Review*, vol. 85, no. 2 (1995), pp. 181–185; S. D. Bikhchandani, David Hirshleifer, and Ivo Welch, “A Theory of Fashion, Social Custom and Cultural Change,” *Journal of Political Economy*, vol. 81 (1992), pp. 637–654; and Abhijit V. Banerjee, “A Simple Model of Herd Behavior,” *Quarterly Journal of Economics*, vol. 107, no. 3 (1992), pp. 797–817.

¹¹ Brad Barber and Terrance Odean, “Trading Is Hazardous to Your Wealth: The Common Stock Investment Performance of Individual Investors,” *Journal of Finance*, vol. 55 (2000), pp. 773–806.

The problem is that most people are simply *overconfident* in their own abilities. To put it another way, the average individual—whether a student, a trader, a driver, or anything else—believes he or she is better than average, which of course is statistically impossible.¹²

Dave: What causes this overconfidence?

IC: Overconfidence comes from several sources. First, there is what we call a *self-attribution bias* that causes one to take credit for a favorable turn of events when credit is not due.¹³ Remember in March 2000 bragging to your wife about how smart you were to have bought those Internet stocks?

Dave: Yes. And was I wrong!

IC: Your early success fed your overconfidence.¹⁴ You and your friends attributed your stock gains to skillful investing, even though those outcomes were frequently the result of chance.

Another source of overconfidence comes from the tendency to see too many parallels between events that seem the same.¹⁵ This is called the *representative bias*. This bias actually arises because of the human learning process. When we see something that looks familiar, we form a representative heuristic to help us learn. But the parallels we see are often not valid, and our conclusions are misguided.

Dave: The investment newsletters I get say that every time such-and-such event has occurred in the past, the market has moved in a certain direction, implying that it is bound to do so again. But when I try to use that advice, it never works.

IC: Conventional finance economists have been warning for years about finding patterns in the data when in fact there are none. Searching past data for patterns is called *data mining*, and it is easier than ever to do

¹² B. Fischhoff, P. Slovic, and S. Lichtenstein, "Knowing with Uncertainty: The Appropriateness of Extreme Confidence," *Journal of Experimental Psychology: Human Perception and Performance*, vol. 3 (1977), pp. 552–564.

¹³ A. H. Hastorf, D. J. Schneider, and J. Polefka, *Person Perception*, Reading, Mass.: Addison-Wesley, 1970.

¹⁴ For reference to a model that incorporates success as a source of overconfidence, see Simon Gervais and Terrance Odean, "Learning to Be Overconfident," *Review of Financial Studies*, vol. 14, no. 1 (2001), pp. 1–27.

¹⁵ For references to models that incorporate the representative heuristic as a source of overconfidence, see either N. Barberis, A. Shleifer, and R. Vishny, "A Model of Investor Sentiment," National Bureau of Economic Research (NBER) Working Paper No. 5926, NBER, Cambridge, Mass., 1997, or Kent Daniel, David Hirshleifer, and Avandihar Subrahmanyam, "Investor Psychology and Security Market Under- and Overreactions," *Journal of Finance*, vol. 53 no. 6 (1998), pp. 1839–1886.

with computing power becoming so cheap.¹⁶ Throw in a load of variables to explain stock price movements and you are sure to find some spectacular fits—like over the past 100 years stocks have risen on every third Thursday of the month when the moon is full!

The representative bias has been responsible for some spectacularly wrong moves in the stock market, even when the situations seem remarkably similar. When World War I broke out in July 1914, officials at the New York Stock Exchange thought it was such a calamity that the exchange closed down for five months. Wrong! The United States became the arms merchant for Europe; business boomed, and 1915 was one of the single best years in stock market history.

When Germany invaded Poland in September 1939, investors looked at the behavior of the market during World War I. Noting the fantastic returns, they bought stocks like mad and sent the market up by more than 7 percent on the next day's trading! But this was wrong again. FDR was determined not to let the corporations prosper from World War II as they had from World War I. After a few more up days, the stock market headed into a severe bear market, and it wasn't until nearly six years later that the market returned to its September 1939 level. Clearly, the representative bias was the culprit for this error, and the two events weren't as similar as people thought.

Psychologically, human beings are not designed to accept all the randomness that is out there. It is very discomfoting for many to learn that most movements in the market are random and do not have any identifiable cause or reason. Individuals possess this deep psychological need to know why something happens. That is where the reporters and "experts" come in. They are more than happy to fill the holes in our knowledge with explanations that are wrong more often than not.

Dave: I can relate personally to this representative bias. I remember that before I bought the technology stocks in July 2000, my broker compared these companies to the suppliers providing the gear for the gold rushers of the 1850s. It seemed like an insightful comparison at the time, but in fact the situations were very different. It is interesting that my broker, who is supposed to be the expert, is subject to the same overconfidence that I am.

IC: There is actually evidence that experts are even more subject to overconfidence than the nonexperts. The so-called experts have been trained

¹⁶ For a reference to data mining, see Andrew Lo and Craig MacKinlay, "Data-Snooping Biases in Tests of Financial Asset Pricing Models," *Review of Financial Studies*, vol. 3, no. 3 (Fall 1999), pp. 431–467.

to analyze the world in a particular way, and they sell their advice based on finding supporting—not contradictory—evidence.¹⁷

Recall the failure of analysts in 2000 to change their earnings forecasts for the technology sector despite the news that suggested that something was seriously wrong with their view of the whole industry. After being fed an upbeat outlook by corporations for many years, analysts had no idea how to interpret the downbeat news, so most just ignored it.

The propensity to shut out bad news was even more pronounced among analysts in the Internet sector. Many were so convinced that these stocks were the wave of the future that, despite the flood of ghastly news, many downgraded these stocks only *after* they had fallen 80 or 90 percent!

The predisposition to disregard news that does not correspond to one's worldview is called *cognitive dissonance*. Cognitive dissonance is the discomfort we encounter when we confront evidence that conflicts with our view or suggests that our abilities or actions are not as good as we thought. We all display a natural tendency to minimize this discomfort, which makes it difficult for us to recognize our overconfidence.

Prospect Theory, Loss Aversion, and Holding On to Losing Trades

Dave: I see. Can we talk about individual stocks? Why do I end up holding so many losers in my portfolio?

IC: Remember I said before that Kahneman and Tversky had kicked off behavioral finance with prospect theory? A key point in their theory was that individuals form a *reference point* from which they judge their performance. They found that from that reference point individuals are much more upset about losing a given amount of money than they are from gaining the same amount. They called this behavior *loss aversion*, and they suggested that the decision to hold or sell an investment will be dramatically influenced by whether your stock has gone up or down—in other words, whether you have had a gain or loss.

Dave: One step at a time. What is this “reference point” you talk about?

IC: Let me ask you a question. When you buy a stock, how do you track its performance?

Dave: I calculate how much the stock has gone up or down since I bought it.

¹⁷ David Dreman, *Contrarian Investment Strategies*.

IC: Exactly. Often the reference point is the purchase price that investors pay for the stock. Investors become fixated on this reference point to the exclusion of any other information. Richard Thaler from the University of Chicago, who has done seminal work in investor behavior, refers to this as *mental accounting*.¹⁸

When you buy a stock, you open a mental account with the purchase price as the reference point. Similarly, when you buy a group of stocks together, you will either think of the stocks individually or you may aggregate the accounts together.¹⁹ Whether your stocks are showing a gain or loss will influence your decision to hold or sell the stock. Moreover, in accounts with multiple losses, you are likely to aggregate individual losses together because thinking about one big loss is an easier pill for you to swallow than thinking of many smaller losses. Avoiding the realization of losses becomes the primary goal of many investors.

Dave: You're right. The thought of realizing those losses on my technology stocks petrified me.

IC: That is a completely natural reaction. Your pride is one of the main reasons why you avoided selling at a loss. Every investment involves an emotional as well as financial commitment that makes it hard to evaluate objectively. You felt good that you sold out of your Internet stocks with a small gain, but the networking stocks you subsequently bought never showed a gain. Even as prospects dimmed, you not only hung on to those stocks but bought more, hoping against hope that they would recover.

Prospect theory predicts that many investors will do as you did— increase your position, and consequently your risk, in an attempt to get even.²⁰

Dave: Yes. I thought that buying more stock would increase my chances of recouping my losses.

IC: You and millions of other investors. In 1982, Leroy Gross wrote a manual for stockbrokers in which he called this phenomenon the “get-even-itis disease.”²¹ He claimed get-even-itis has probably caused more destruction to portfolios than any other mistake.

¹⁸ Richard Thaler, “Mental Accounting and Consumer Choice,” *Marketing Science*, vol. 4, no. 3 (Summer 1985), pp. 199–214.

¹⁹ Richard H Thaler, “Mental Accounting Matters,” *Journal of Behavioral Decision Making*, vol. 12 (1999), pp. 183–206.

²⁰ Hersh Shefrin and Meir Statman, “The Disposition to Sell Winners Too Early and Ride Losers Too Long: Theory and Evidence,” *Journal of Finance*, vol. 40, no. 3 (1985), pp. 777–792.

²¹ Leroy Gross, *The Art of Selling Intangibles*, New York: New York Institute of Finance, 1982.

It is hard for us to admit we've made a bad investment, and it is even harder for us to admit that mistake to others. But to be a successful investor, you have no choice but to do so. Decisions on your portfolio must be made on a *forward-looking basis*. What has happened in the past cannot be changed. It is a "sunk cost," as economists say. When prospects don't look good, sell the stock whether or not you have a loss.

Dave: I thought the stocks were cheap when I bought more shares. Many were down 50 percent or more from their highs.

IC: Cheap relative to what? Cheap relative to their past price or their future prospects? You thought that a price of 40 for a stock that had been 80 made the stock cheap, yet you never considered the possibility that 40 was still too high. This demonstrates another one of Kahneman and Tversky's behavioral findings: *anchoring*, or the tendency of people facing complex decisions to use an "anchor" or a suggested number to form their judgment.²² Figuring out the "correct" stock price is such a complex task that it is natural to use the recently remembered stock price as an anchor and then judge the current price a bargain.

Dave: If I follow your advice and sell my losers whenever prospects are dim, I'm going to register a lot more losses on my trades.

IC: Good! Most investors do exactly the opposite and realize poor returns. Research has shown that investors sell stocks for a gain 50 percent more frequently than they sell stocks for a loss.²³ This means that stocks that are above their purchase price are 50 percent more likely to be sold than stocks that show a loss. Traders do this even though it is a horrible strategy from a tax standpoint.

Let me tell you of one short-term trader I successfully counseled. He showed me that 80 percent of his trades made money, but he was down overall since he had lost so much money on his losing trades that they drowned out his winners.

After I counseled him, he became a successful trader. Now he says that only one-third of his trades make money, but overall he's way ahead. When things don't work out as he planned, he gets rid of losing trades quickly while holding on to his winners. There is an old adage on Wall Street that sums up successful trading: "Cut your losers short and let your winners ride."

²² Amos Tversky and Daniel Kahneman, "Judgment under Uncertainty: Heuristics and Biases," *Science*, vol. 185 (1974), pp. 1124–1131.

²³ Terrance Odean, "Are Investors Reluctant to Realize Their Losses," *Journal of Finance*, vol. 53, no. 5 (October 1998), p. 1786.

Rules for Avoiding Behavioral Traps

Dave: I don't feel secure enough to trade again soon. I just want to learn the right longer-term strategy. How can I get over these behavioral traps and be a successful long-term investor?

IC: Dave, I'm glad you are not trading, since trading is right for only a very small fraction of my clients.

To be a successful long-term investor, you must set up rules and incentives to keep your investments on track—this is called *precommitment*.²⁴ Set an asset allocation rule and then stick to it. If you have enough knowledge, you can do this yourself or else with an investment advisor. Don't try to second-guess your rule. Remember that the basic factors generating returns change far less than we think as we watch the day-to-day ups and downs of the market. A disciplined investment strategy is almost always a winning strategy.

If you wish, you don't have to eliminate your trading altogether. If you do buy stocks for a short-term trade, set up a stop-loss order to minimize your losses. You don't want to let your losses mount, rationalizing that the stock will eventually come back. Also, don't tell your friends about your trades. Living up to their expectations will make you even more reluctant to take a loss and admit that you were wrong.

Dave: I'll have to admit that I sometimes enjoyed trading.

IC: If you really enjoy trading, set up a small trading account that is completely separate from the rest of your portfolio. All brokerage costs and all taxes must be paid from this account. Consider that the money you put into this trading account may be completely lost because it very well may be. And you should never consider exceeding the rigid limit you place on how much money you put into that account.

If that doesn't work, or if you feel nervous about the market or have a compulsion to trade, call me, I can help. And according to news reports, there are some reformed traders who are establishing Traders' Anonymous (TA) programs designed to help people who cannot resist the temptations of trading too frequently.²⁵ Maybe you should look into those.

²⁴ Hersh Shefrin and Richard Thaler, "An Economic Theory of Self-Control," *Journal of Political Economy*, vol. 89, no. 21 (1981), pp. 392–406.

²⁵ See Paul Sloan, "Can't Stop Checking Your Stock Quotes," *U.S. News & World Report*, July 10, 2000.

Myopic Loss Aversion, Portfolio Monitoring, and the Equity Risk Premium

Dave: Because of how badly I was doing in the market, I even considered giving up on stocks and sticking with bonds, although I know that in the long run that is a very bad idea. How often do you suggest that I monitor my stock portfolio?

IC: Important question. If you buy stocks, it is very likely that the value will drop below the price you paid, if but for a short time soon after your purchase. We have already spoken about how loss aversion makes this decline very disturbing. However, since the long-term trend in stocks is upward, if you wait some period of time before checking your portfolio, the probability that you will see a loss decreases.

Two economists tested whether the “monitoring interval” affected the choice between stocks and bonds.²⁶ They conducted a “learning experiment” in which they allowed individuals to see the returns on two unidentified asset classes. One group was shown the yearly returns on stocks and bonds, and other groups were shown the same returns, but instead of annually, the returns were aggregated over periods of 5, 10, and 20 years. The groups were then asked to pick an allocation between stocks and bonds.

The group that saw yearly returns invested a much smaller fraction in stocks than the groups that saw returns aggregated into longer intervals. This was because the short-term volatility of stocks dissuaded people from choosing that asset class, even though over longer periods it was clearly a better choice.

This tendency to base decisions on the short-term fluctuations in the market has been referred to as *myopic loss aversion*. Since over longer periods, the probability of stocks showing a loss is much smaller, investors influenced by loss aversion would be more likely to hold stocks if they monitored their performance less frequently.

Dave: That’s so true. When I look at stocks in the very short run, they seem so risky that I wonder why anyone holds them. But over the long run, the superior performance of equities is so overwhelming, I wonder why anyone doesn’t hold stocks!

IC: Exactly. Shlomo Bernartzi and Richard Thaler claim that myopic loss aversion is the key to solving the *equity premium puzzle*.²⁷ For years, econ-

²⁶ Shlomo Bernartzi and Richard Thaler, “Myopic Loss Aversion and the Equity Premium Puzzle,” *Quarterly Journal of Economics*, 1995, pp. 73–91.

²⁷ See Chapter 8 for a further description of the equity premium puzzle.

omists have been trying to figure out why stocks have returned so much more than fixed-income investments. Studies show that over periods of 20 years or more, a diversified portfolio of equities not only offers higher after-inflation returns but is actually safer than government bonds. But because investors concentrate on an investment horizon that is too short, stocks seem very risky and investors must be enticed to hold stocks with a fat premium. If investors evaluated their portfolio less frequently, the equity premium might fall dramatically.

Bernartzi and Thaler have shown that the high equity premium is consistent with myopic loss aversion and yearly monitoring of returns. But they also showed that if investors had evaluated their portfolio allocation only once every 10 years, the equity premium needed to be only 2 percent to entice investors into stocks. With an evaluation period of 20 years, the premium fell to only 1.4 percent, and it would have been close to 1 percent if the evaluation period were 30 years. Stock prices would have had to rise dramatically to reduce the premium to these low levels.

Dave: Are you saying that perhaps I should not look at my stocks too frequently?

IC: You can look at them all you want, but don't alter your long-term strategy. Remember to set up rules and incentives. Commit to a long-run portfolio allocation, and do not alter it unless there is significant evidence that a certain sector is becoming greatly overpriced relative to its fundamentals, as the technology stocks did at the top of the bubble.

Contrarian Investing and Investor Sentiment: Strategies to Enhance Portfolio Returns

Dave: Is there a way for an investor to take advantage of others' behavioral weakness and earn superior returns from them?

IC: Standing apart from the crowd might be quite profitable. An investor who takes a different view is said to be a *contrarian*, one who dissents from the prevailing opinion. Contrarian strategy was first put forth by Humphrey B. Neill in a pamphlet called "It Pays to Be Contrary," first circulated in 1951 and later turned into a book entitled *The Art of Contrary Thinking*. In it Neill declared: "When everyone thinks alike, everyone is likely to be wrong."²⁸

Some contrarian approaches are based on psychologically driven indicators such as investor "sentiment." The underlying idea is that most

²⁸ Humphrey B. Neill, *The Art of Contrary Thinking*, Caldwell, Idaho: Caxton Printers, 1954, p. 1.

investors are unduly optimistic when stock prices are high and unduly pessimistic when they are low.

This is not a new concept either. The great investor Benjamin Graham stated more than 70 years ago, “[T]he psychology of the speculator militates strongly against his success. For by relation of cause and effect, he is most optimistic when prices are high and most despondent when they are at bottom.”²⁹

Dave: But how do I know when the market is too pessimistic and too optimistic? Is that not subjective?

IC: Not entirely. Investors Intelligence, a firm based in New Rochelle, New York, publishes one of the long-standing indicators of investment sentiment. Over the past 40 years, the company has evaluated scores of market newsletters, determining whether each letter is bullish, bearish, or neutral about the future direction of stocks.

From Investors Intelligence data, I computed an index of investor sentiment by finding the ratio of bullish newsletters to bullish plus bearish newsletters (omitting the neutral category). I then measured the returns on stocks subsequent to these sentiment readings.

The results, shown in Table 19-1, indicate a strong predictive content to the sentiment index. Whenever the index of investor sentiment is high, subsequent returns on the market are poor, and when the index is low, subsequent returns are above average. The index is a particularly strong predictor of market return over the next 9 to 12 months.

The sentiment indicator since January 1986 is plotted in Figure 19-1. The crash of October 1987 was accompanied by investor pessimism. For the next few years, whenever the market went down, as it did in May and December 1988 and February 1990, investors feared another crash, and sentiment dropped sharply. Bullish sentiment also fell below 50 percent during the Iraqi invasion of Kuwait, the bond market collapse of 1994, the Asian crisis of October 1997, the LTCM bailout of the late summer of 1998, the terrorist attacks of September 2001, and the market bottom of October 2002. These have all been excellent times to invest.

It is of note that the VIX Index, the measure of implied market volatility computed from options prices, spikes upward at virtually the same time investor sentiment plunges.³⁰ Anxiety in the market, which can be measured from the premiums on put options, is strongly negatively correlated with investor sentiment.

²⁹ Benjamin Graham and David Dodd, *Security Analysis*, 1st ed., New York: McGraw-Hill, 1934, p. 12.

³⁰ A discussion of the VIX Index is found in Chapter 16.

TABLE 19-1

Investor Confidence and Subsequent Dow Price Returns: Sentiment = Bull/(Bull + Bear)
Bull and Bear from Investors Intelligence, New Rochelle, New York

1970 - 2006		Annualized Returns Subsequent to Sentiment Readings (January 2, 1970 - June 2, 2006)			
Sentiment	Frequency	Three Month	Six Month	Nine Month	Twelve Month
0.2 - 0.3	1.14%	18.52%	15.40%	22.79%	20.74%
0.3 - 0.4	8.34%	12.24%	13.79%	16.52%	15.82%
0.4 - 0.5	15.28%	20.30%	15.02%	13.06%	13.43%
0.5 - 0.6	27.29%	15.98%	13.61%	11.10%	10.21%
0.6 - 0.7	27.60%	8.61%	6.75%	6.66%	6.03%
0.7 - 0.8	15.95%	10.45%	7.17%	7.03%	6.74%
0.8 - 0.9	3.83%	-0.39%	0.23%	-3.32%	-1.79%
0.9 - 1.0	0.57%	0.35%	-3.87%	-9.17%	-10.18%
Overall	100.00%	12.72%	10.35%	9.45%	9.02%

1990 - 2006		Annualized Returns Subsequent to Sentiment Readings			
Sentiment	Frequency	Three Month	Six Month	Nine Month	Twelve Month
.30 - .35	1.28%	20.43%	15.83%	15.51%	20.66%
.35 - .40	3.27%	16.69%	18.19%	18.63%	20.85%
.40 - .45	4.78%	30.10%	22.52%	20.99%	21.24%
.45 - .50	7.12%	33.39%	18.61%	15.25%	15.24%
.50 - .55	15.17%	21.80%	17.98%	15.74%	14.81%
.55 - .60	17.97%	12.92%	11.61%	11.36%	11.05%
.60 - .65	24.85%	4.65%	5.67%	6.91%	6.25%
.65 - .70	14.35%	5.37%	5.34%	4.38%	5.35%
.70 - .75	8.63%	10.64%	7.04%	6.63%	6.43%
.75 - .80	2.57%	3.03%	6.86%	4.51%	5.02%
Overall	100.00%	13.19%	11.04%	10.38%	10.33%

Out-of-Favor Stocks and the Dow 10 Strategy

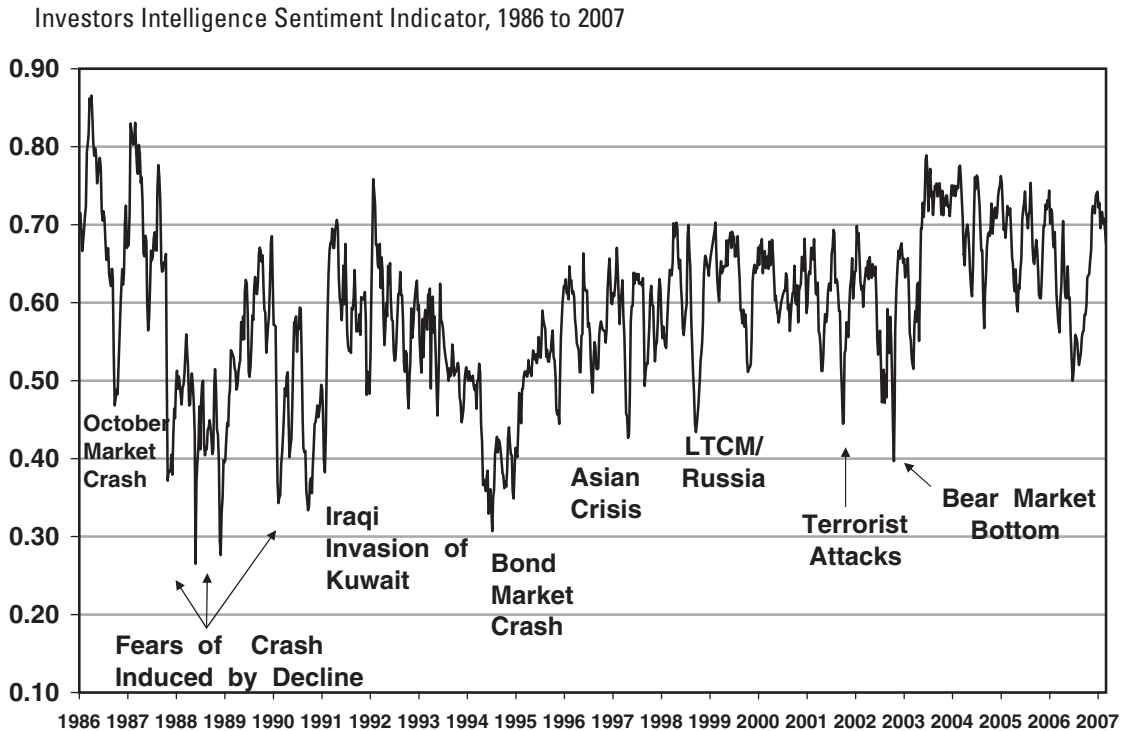
Dave: Can you use contrarian strategy to pick individual stocks?

IC: Yes. Contrarians believe that the swings of optimism and pessimism infect individual stocks as well as the overall markets. Therefore, buying out-of-favor stocks can be a winning strategy.

Werner De Bondt and Richard Thaler examined portfolios of both past stock winners and losers to see if investors became overly optimistic or pessimistic about future returns from studying the returns of the recent past.³¹ Portfolios of winning and losing stocks were analyzed

³¹ Werner F. M. De Bondt and Richard H. Thaler, "Does the Stock Market Overreact?" *Journal of Finance*, vol. 49, no. 3 (1985), pp. 793-805.

FIGURE 19-1



over five-year intervals. Portfolios that had been winners in the past five years subsequently lagged the market by 10 percent, while the subsequent returns on the loser portfolio beat the market by 30 percent.

One of the explanations for why this strategy works relates to the representativeness heuristic we talked about before. People extrapolate recent trends in stock prices too far in the future. Although there is some evidence that short-term momentum is positive in stock returns, over the longer term many stocks that have done poorly outperform, and stocks that have done well underperform. Another strategy based on out-of-favor stocks is called the *Dogs of the Dow* or the *Dow 10 strategy*.³²

Dave: There has been so much to absorb from today's session. It seems like I fell into almost all of these behavioral traps. The comforting news is that I'm not alone and that your counseling has helped other investors.

³² This strategy is discussed in great detail in Chapter 9.

IC: Not only have they been helped but they have also prospered. For many people, success in investing requires a much deeper knowledge of themselves than does success in their jobs or even in their personal relationships. There is much truth to an old Wall Street adage, "The stock market is a very expensive place to find out who you are."

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5
PART

**BUILDING WEALTH
THROUGH STOCKS**

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20

CHAPTER

FUND PERFORMANCE, INDEXING, AND BEATING THE MARKET

I have little confidence even in the ability of analysts, let alone untrained investors, to select common stocks that will give better than average results. Consequently, I feel that the standard portfolio should be to duplicate, more or less, the DJIA.

BENJAMIN GRAHAM¹

How can institutional investors hope to outperform the market . . . when, in effect, they are the market?

CHARLES D. ELLIS, 1975²

There is an old story on Wall Street. Two managers of large equity funds go camping in a national park. After setting up camp, the first manager mentions to the other that he overheard the park ranger warning that black bears had been seen around this campsite. The second manager smiles and says, "I'm not worried; I'm a pretty fast runner." The first

¹ Benjamin Graham and Seymour Chatman (ed.), *Benjamin Graham: The Memoirs of the Dean of Wall Street*, New York: McGraw-Hill, 1996, p. 273.

² Charles D. Ellis, "The Loser's Game," *Financial Analysis Journal*, July/August 1975.

manager shakes his head and says, "You can't outrun black bears; they've been known to sprint over 25 miles an hour to capture their prey!" The second manager responds, "Of course I know that I can't outrun the bear. The only thing that's important is that I can outrun you!"

In the competitive world of money management, performance is measured not by absolute returns but the returns relative to some benchmark. These benchmarks include the S&P 500 Index, the Wilshire 5000, the Russell indexes, and the latest "style" of indexes popular on Wall Street. But there is a crucially important difference about investing compared to virtually any other competitive activity: Most of us have no chance of being as good as the average in a pursuit that others practice for hours to hone their skills. But anyone can be as good as the *average* investor in the stock market with no practice at all.

The reason for this surprising statement is based on a very simple fact: since the sum of each investor's holdings must be equal to the market, the performance of the whole market must, by definition, be the *average* dollar-weighted performance of each and every investor. Therefore, for each investor's dollar that outperforms the market, there must be another investor's dollar that underperforms the market. By just matching the performance of the overall market, you are guaranteed to do no worse than average.

But how do you match the performance of the whole market? Until 1975, this goal would have been virtually impossible for all but the most affluent investors. Who can hold shares in each of the thousands of firms listed on U.S. exchanges?

But since the mid-1970s, index mutual funds and then exchange-traded funds (ETFs) have been developed to match the performance of these broad stock indexes. Over the last several decades the average investor could match the performance of a wide variety of market indexes with very low costs and a very modest investment. And, over the last several years, new indexes have been developed, based on the research discussed in Chapter 9, that may allow investors to outperform the averages.

THE PERFORMANCE OF EQUITY MUTUAL FUNDS

Many claim that striving for average market performance is not the best strategy. If there are enough poorly informed traders who consistently underperform the market, then it might be possible for informed investors or professionals to outperform the market.

Unfortunately, the past record of the vast majority of such actively managed funds does not support this contention. There are two ways to

measure long-term fund returns. One is to compute the returns of all funds that have survived over the period examined. But the long-term returns on these funds suffer from *survivorship bias* that overestimates the returns available to investors. This survivorship bias exists because poorly performing funds are often terminated, leaving only the more successful ones with long-term track records to be included in the data. The second, and more accurate, method is to compute, year by year, the average performance of all equity mutual funds in existence.

Both of these computations are shown in Table 20-1. From January 1971 through December 2006, the average equity mutual fund returned 10.49 percent annually, 1.06 percentage points behind the Wilshire 5000 and 1.04 percentage points behind the S&P 500 Index. Indeed, the survivor funds returned 0.80 percentage points more per year but still lagged the averages. And all these fund returns exclude sales and redemption fees that would reduce their net returns to investors even more.³

The underperformance of mutual funds does not happen every year. Actively managed equity funds did on average outperform the Wilshire 5000 and the S&P 500 indexes during the period from 1975 through 1983 when small stocks returned a spectacular 35.32 percent per year. Equity mutual funds generally do well when small stocks outperform large stocks, as many money managers seek to boost performance by buying smaller-sized firms.

³ Fund data provided by the Vanguard Group. See John C. Bogle, *Bogle on Mutual Funds*, Burr Ridge, Ill.: Irwin Professional Publishing, 1994, for a fuller description of these data.

TABLE 20-1

Equity Mutual Funds and Benchmark Returns: Annual Compound Returns (Excluding Sales and Redemption Fees), January 1971 through December 2006 (Standard Deviations in Parentheses)

	All Funds	"Survivor" Funds	Wilshire 5000	S&P 500	Small Stocks	All Funds Minus Wilshire 5000	"Survivor" Funds Minus Wilshire 5000
1971- 2006	10.49% (16.6%)	11.29% (16.4%)	11.55% (17.4%)	11.53% (17.0%)	13.47% (22.3%)	-1.06%	-0.26%
1975- 1983	18.83% (12.9%)	20.13% (13.1%)	17.94% (15.0%)	15.74% (15.5%)	35.32% (14.3%)	0.89%	2.19%
1984- 2006	10.80% (15.0%)	10.99% (14.7%)	12.26% (16.2%)	12.77% (16.1%)	10.15% (19.2%)	-1.46%	-1.27%

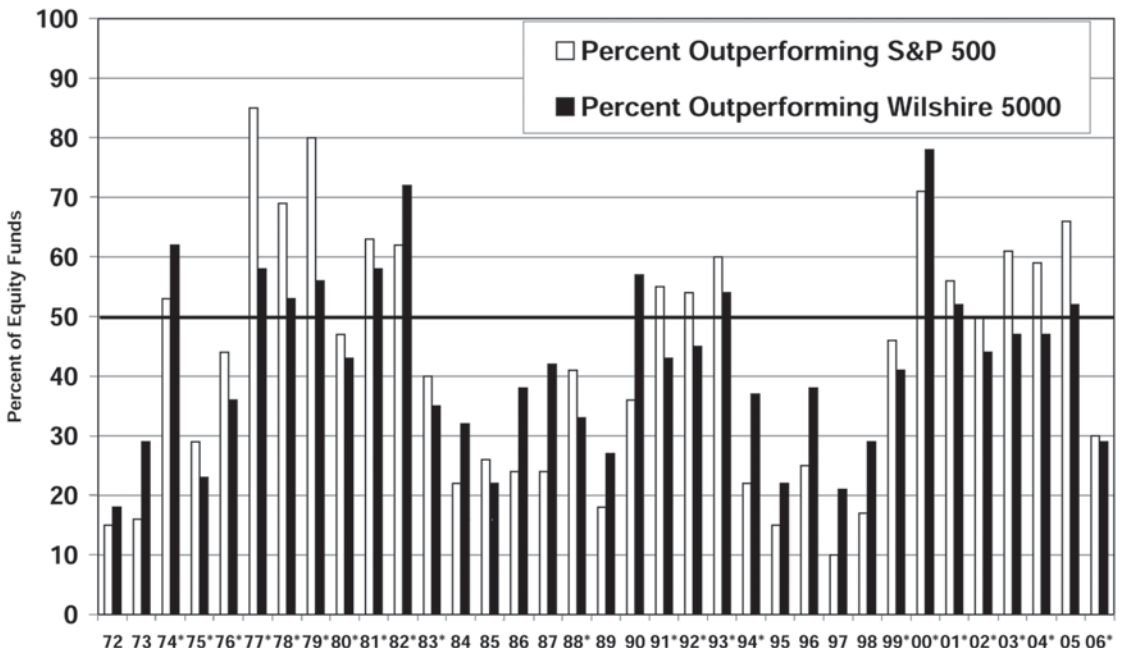
Since 1983, when the small stocks surge ended, the performance of the average mutual fund has been worse, falling nearly 1½ percentage points per year behind either the Wilshire 5000 or the S&P 500 Index.

The percentage of general equity funds that has outperformed the Wilshire 5000 and the S&P 500 Index each year from 1972 to 2006 is displayed in Figure 20-1. During this 35-year period, there were only 11 years when a majority of mutual funds beat the Wilshire 5000. All but 2 of these years occurred during a period when small stocks outperformed large stocks. In the last 25 years there have been only 5 years when the average equity mutual fund outperformed the broad market.

The underperformance of mutual funds did not begin in the 1970s. In 1970, Becker Securities Corporation startled Wall Street by compiling the track record of managers of corporate pension funds. Becker showed that the median performance of these managers lagged behind the S&P 500 by 1 percentage point and that only one-quarter of them were able to

FIGURE 20-1

Yearly Percentage of General Equity Funds That Outperform the S&P 500 and the Wilshire 5000 (Excluding Sales and Redemption Fees), 1972 through December 2006



* Small stocks outperform S&P 500.

outperform the market.⁴ This study followed on the heels of academic articles, particularly those by William Sharpe and Michael Jensen, that also confirmed the underperformance of equity mutual funds.

Figure 20-2 displays the distribution of the difference between the returns of 138 mutual funds that have survived since January 1972 and the Wilshire 5000.

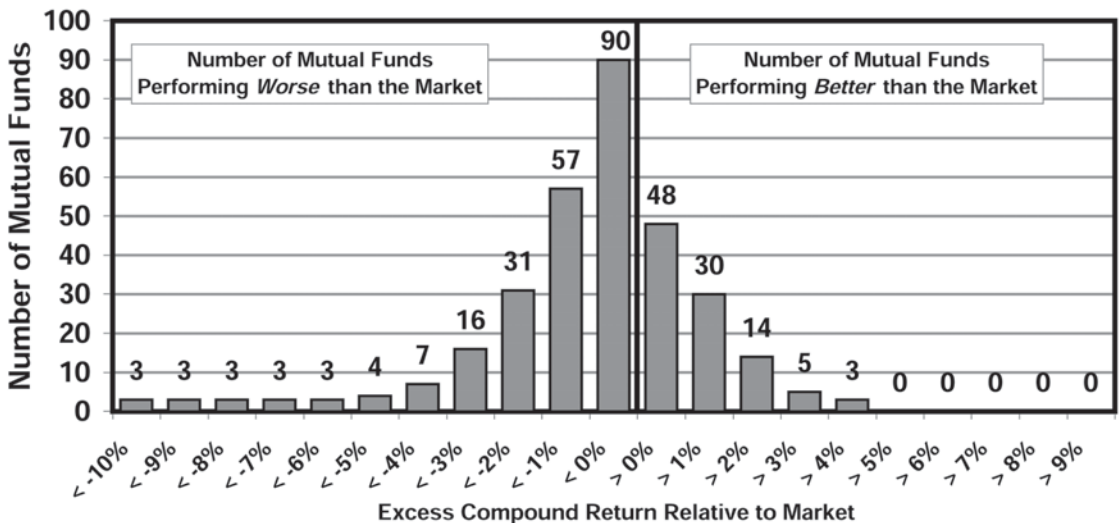
Only 48, or less than 40 percent, of the 138 funds that have survived over the past 35 years have been able to outperform the Wilshire 5000. Only 30 have been able to outperform the market by more than 1 percent per year, while only 14 have bettered the market by at least 2 percent. On the other hand, over 65 percent of the surviving funds underperformed the market, and almost two-thirds of those underperformed by more than 1 percent per year. And, as noted above for Table 20-1, the actual returns on these funds are worse since these returns exclude sales and redemption fees.

Despite the generally poor performance of equity mutual funds, there are some winners. The best-performing mutual fund over the entire period is Fidelity's Magellan Fund, whose 16.07 percent annual

⁴ Burton G. Malkiel, *A Random Walk Down Wall Street: The Time Tested Strategy for Successful Investing*, 5th ed., New York: Norton, 1990, p. 362.

FIGURE 20-2

Performance of Surviving Mutual Funds Relative to the Wilshire 5000, January 1972 through December 2006



return from 1971 through December 2006 beat the market by over 4 percentage points per year. Close behind was Mutual Shares Z, run by Franklin Templeton, with a return of 16.04 percent over the same period. In a virtual tie in third and fourth places are the Columbia Acorn Fund (previously known as the Liberty Acorn Fund), run by Charles McQuaid and Robert Mohn, and the Sequoia Fund, run by the investment firm of Ruane, Cunniff, & Goldfarb that closely follows Warren Buffett's philosophy and has a large portion of its holdings in Berkshire Hathaway. These two have enjoyed annual returns of 15.57 and 15.54 percent, respectively.

Despite these sparkling returns, chance may have played a large role in these outperformers. The probability that a fund would beat the Wilshire 5000 by 4 percentage points or more over this period by chance alone is 1 in 12. That means out of the 138 funds examined, one would expect 11 to have done this well.

Yet luck could not explain Magellan's performance from 1977 through 1990. During that period, the legendary stock picker Peter Lynch ran the Magellan Fund and outperformed the market by an incredible 13 percent per year. Magellan took somewhat greater risks in achieving this return,⁵ but the probability that Magellan would outperform the Wilshire 5000 by this margin over that 14-year period by luck alone is only 1 in 500,000!

FINDING SKILLED MONEY MANAGERS

It is easy to determine that Magellan's performance during the Lynch years was due to his skill in picking stocks. But for more mortal portfolio managers, it is extremely difficult to determine with any degree of confidence whether the superior returns of money managers are due to skill or luck. Table 20-2 computes the probability that managers with better-than-average stock-picking ability will outperform the market.⁶

The results are surprising. Even if money managers choose stocks that have an expected return of 1 percent per year better than the market, there is only a 61.9 percent probability that they will exceed the average market return after 10 years and only a 70.1 percent probability

⁵ The standard deviation of the Magellan Fund over Lynch's period was 21.38 percent, compared to 13.88 percent for the Wilshire 5000, while its correlation coefficient with the Wilshire was 0.86.

⁶ Money managers are assumed to expose their clients to the same risk as would the market, and the money managers have a correlation coefficient of 0.88 with market returns, which has been typical of equity mutual funds since 1971.

TABLE 20-2

Probability of Outperforming the Wilshire 5000, Based on Returns, Risk, and Correlations from 1972 through December 2006

Expected Excess Return	Holding Period (years)						
	1	2	3	5	10	20	30
1%	53.8%	55.4%	56.6%	58.5%	61.9%	66.6%	70.1%
2%	57.6%	60.7%	63.0%	66.6%	72.8%	80.4%	85.3%
3%	61.3%	65.7%	69.0%	73.9%	81.7%	90.0%	94.1%
4%	64.8%	70.4%	74.5%	80.2%	88.5%	95.5%	98.1%
5%	68.2%	74.8%	79.3%	85.5%	93.2%	98.3%	99.5%

that they will exceed the average market return after 30 years. If managers pick stocks that will outperform the market by 2 percent per year, there is still only a 72.8 percent chance that they will outperform the market after 10 years. This means there is a one-in-four chance that they will still fall short of the average market performance. The length of time needed to be reasonably certain that superior managers will outperform the market will most certainly outlive their trial period for determining their real worth.

Detecting a bad manager is an equally difficult task. In fact, a money manager would have to underperform the market by 4 percent a year for almost 15 years before you could be statistically certain (defined to mean being less than 1 chance in 20 of being wrong) that the manager is actually poor and not just having bad luck. By that time, your assets would have fallen to half of what you would have had by indexing to the market.

Even extreme cases are hard to identify. Surely you would think that a manager who picks stocks that are expected to outperform the market by an average of 5 percent per year, a feat achieved by no surviving mutual fund since 1970, would quickly stand out. But that is not necessarily so. After one year there is only a 7-in-10 chance that such a manager will outperform the market. And the probability rises to only 74.8 percent that the manager will outperform the market after two years.

Assume you gave a young, undiscovered Peter Lynch—someone who over the long run will outperform the market with a 5 percent per

year edge—an ultimatum: that he will be fired if he does not at least match the market after two years. Table 20-2 shows that the probability he will beat the market over two years is only 74.8 percent. This means there is almost a one-in-four chance that he will still underperform the market and you will fire Lynch, judging him incapable of picking winning stocks!

Persistence of Superior Returns

Do some money managers have “hot hands,” meaning that if they outperformed the averages in the past, they are likely to do it again in the future? The conclusions of numerous studies are not clear-cut. There is some evidence that funds that outperform in one year are more likely to outperform the next.⁷ This short-run persistence is probably due to the fact that managers follow a particular “style” of investing and styles often stay in favor over several years.

But over longer periods, the ability of fund managers to continue to outperform the market finds less support. Elton, Gruber, and Blake claim that outperformance persists over three-year periods,⁸ but Burton Malkiel, Jack Bogle, and others disagree.^{9,10} In any case, performance can change suddenly and unpredictably. Perhaps Magellan’s underperformance after Peter Lynch left the fund did not surprise some investors. But Bill Miller’s hot hand with Legg Mason’s Value Trust, which recorded a record 15 consecutive years of beating the S&P 500 Index, suddenly and unexpectedly turned cold in 2006 and 2007.

REASONS FOR UNDERPERFORMANCE OF MANAGED MONEY

The generally poor performance of funds relative to the market is not due to the fact that managers of these funds pick losing stocks. Their performance lags the benchmarks largely because funds impose fees and trading costs that are often as high as 2 percent or more per year. First, in seeking superior returns, a manager buys and sells stocks, which involves brokerage commissions and paying the bid-ask spread, or the difference be-

⁷ Darryll Hendricks, Jayendu Patel, and Richard Zeckhauser, “Hot Hands in Mutual Funds: Short-Run Persistence of Relative Performance, 1974–1988,” *Journal of Finance*, vol. 48, no. 1 (March 1993), pp. 93–130.

⁸ Edwin J. Elton, Martin J. Gruber, and Christopher R. Blake, “The Persistence of Risk-Adjusted Mutual Fund Performance,” *Journal of Business*, vol. 69, no. 2 (April 1996), pp. 133–157.

⁹ Burton G. Malkiel, *A Random Walk Down Wall Street*, 8th ed., New York: Norton, 2003, pp. 372–274.

¹⁰ John C. Bogle, *The Little Book of Common Sense Investing*, Hoboken, N.J.: Wiley, 2007, Chap. 9.

tween the buying and the selling price of shares. Second, investors pay management fees (and possibly sales, or “load,” fees) to the organizations and individuals that sell these funds. Finally, managers are often competing with other managers with equal or superior skills at choosing stocks. As noted earlier, it is a mathematical impossibility for everyone to do better than the market—for every dollar that outperforms the average, some other investor’s dollar must underperform the average.

A LITTLE LEARNING IS A DANGEROUS THING

It is interesting that an investor who has some knowledge of the principles of equity valuations often performs worse than someone with no knowledge who decides to index his portfolio. For example, take the novice—an investor who is just learning about stock valuation. This is the investor to whom most of the books entitled *How to Beat the Market* are sold. A novice might note that the stock has just reported very good earnings but its price is not rising as much as he believes is justified by this good news and so he buys the stock.

Yet informed investors know that special circumstances caused the earnings to increase and that these circumstances will not likely be repeated in the future. Informed investors are therefore more than happy to sell the stock to novices, realizing that the rise in the price of the stock is not justified. Informed investors make a return on their special knowledge. They make their return from novices who believe they have found a bargain. Uninformed indexed investors, who do not even know what the earnings of the company are, often do better than the investor who is just beginning to learn about equities.

The saying “a little learning is a dangerous thing” proves itself to be quite apt in financial markets. Many seeming anomalies or discrepancies in the prices of stocks (or most other financial assets, for that matter) are due to the trading of informed investors with special information that is not easily processed by others. When a stock looks too cheap or too dear, the easy explanation—that emotional or ignorant traders have incorrectly priced the stock—is usually wrong. Most often there is a good reason why stocks are priced as they are. This is why beginners who buy individual stocks on the basis of their own research often do quite badly.

PROFITING FROM INFORMED TRADING

As novices become more informed, they will no doubt find some stocks that are genuinely undervalued or overvalued. Trading these stocks will

begin to offset their transactions costs and their poorly informed, losing trades. At some point, a trader might become well enough informed to overcome the transactions costs and match, or perhaps exceed, the market return. The key word here is *might* because the number of investors who have consistently been able to outperform the market is small indeed. And for individuals who do not devote much time to analyzing stocks, the possibility of consistently outperforming the averages is remote.

Yet the apparent simplicity of picking winners and avoiding losers lures many investors into active trading. We learned in Chapter 19 that there is an inherent tendency of individuals to view themselves and their performance as above average. The investment game draws some of the best minds in the world. Many investors are wrongly convinced that they are smarter than the next guy who is playing the same investing game. But even being just as smart as the next investor is not good enough. For being average at the game of finding market winners will result in underperforming the market as transactions costs diminish returns.

In 1975, Charles D. Ellis, a managing partner at Greenwood Associates, wrote an influential article called "The Loser's Game." In it he showed that, with transactions costs taken into account, average money managers must outperform the market by margins that are not possible given that they themselves are the major market players. Ellis concludes: "Contrary to their oft articulated goal of outperforming the market averages, investment managers are not beating the market; the market is beating them."¹¹

HOW COSTS AFFECT RETURNS

Trading and managerial costs of 2 or 3 percent a year might seem small compared to the year-to-year volatility of the market and to investors who are gunning for 20 or 30 percent annual returns. But such costs are extremely detrimental to long-term wealth accumulation. Investing \$1,000 at a compound return of 11 percent per year, the average nominal return on stocks since World War II, will accumulate \$23,000 over 30 years. A 1 percent annual fee will reduce the final accumulation by almost a third. With a 3 percent annual fee, the accumulation amounts to just over \$10,000, less than half the market return. Every extra percentage point of annual costs requires investors aged 25 to retire two years later than they would have in the absence of such costs.

¹¹ Charles D. Ellis, "The Loser's Game," *Financial Analysts Journal*, July/August 1975, p. 19.

THE INCREASED POPULARITY OF PASSIVE INVESTING

Many investors have realized that the poor performance of actively managed funds relative to benchmark indexes strongly implies that they would do very well to just *equal* the market return of one of the broad-based indexes. Thus, the 1990s witnessed an enormous increase in *passive investing*, the placement of funds whose sole purpose was to match the performance of an index.

The oldest and most popular of the index funds is the Vanguard 500 Index Fund.¹² The fund, started by visionary John Bogle, raised only \$11.4 million when it debuted in 1976, and few thought the concept would survive. But slowly and surely indexing gathered momentum, and the fund's assets reached \$17 billion at the end of 1995.

In the latter stages of the 1990s bull market, the popularity of indexing soared. By March 2000, when the S&P 500 Index reached its all-time high, the fund claimed the title of the world's largest equity fund with assets over \$100 billion. Indexing became so popular that in the first six months of 1999 nearly 70 percent of the money that was invested went into index funds.¹³ By 2007, all Vanguard 500 Index funds had attracted over \$200 billion in assets, but the largest single equity mutual fund is the American Growth Fund with assets of \$185 billion.¹⁴

One of the attractions of index funds is their extremely low cost. The total annual cost in the Vanguard 500 Index Fund is only 0.18 percent of market value (and as low as 2 basis points for large institutional investors). Because of proprietary trading techniques and interest income from loaning securities, Vanguard S&P 500 Index funds for individual investors have fallen only 9 basis points behind the index over the last 10 years, and its institutional index funds have actually outperformed the index.¹⁵

THE PITFALLS OF CAPITALIZATION-WEIGHTED INDEXING

Despite their past success, the popularity of indexing, especially those funds linked to the S&P 500 Index, may cause problems for index

¹² Five years before the Vanguard 500 Index Fund, Wells Fargo created an equally weighted index fund called "Samsonite," but its assets remained relatively small.

¹³ Heather Bell, "Vanguard 500 Turns 25, Legacy in Passive Investing," *Journal of Index Issues*, Fourth Quarter 2001, pp. 8–10.

¹⁴ Vanguard's number includes assets of its 500 Index Fund open to both individuals and institutions.

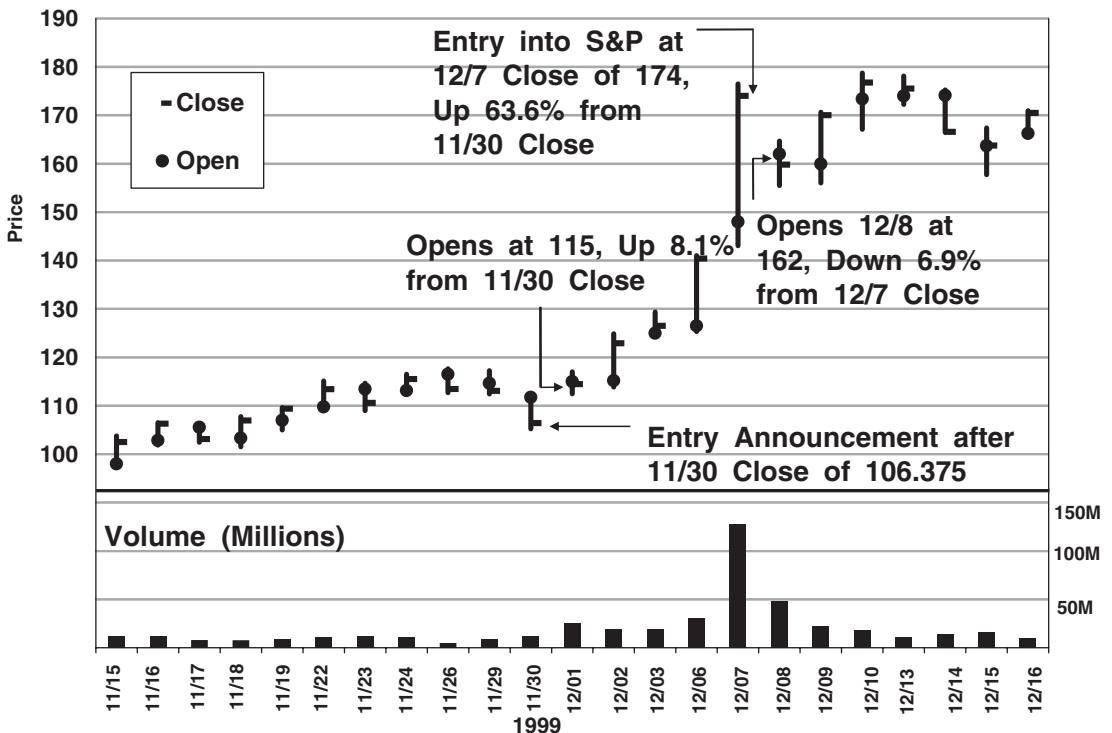
¹⁵ The Vanguard Institutional Index Fund Plus shares, with a minimum investment of \$200 million, have outperformed the S&P 500 Index by 7 basis points in the 10 years following the fund's inception on July 7, 1997.

investors in the future. The reason is simple. If a firm's mere entry into the S&P 500 causes the price of its stock to rise, index investors will ultimately hold overpriced stocks that will depress future returns.

An extreme example of overpricing occurred when Yahoo!, the well-known firm, was added to the S&P 500 Index in December 1999. Yahoo!'s price during this period is graphically depicted in Figure 20-3. Standard & Poor's announced after the close of trading on November 30 that Yahoo! would be added to the index on December 8. The next morning, Yahoo! opened up almost \$9 per share at \$115 and continued upward to close at \$174 a share on December 7, when index funds had to buy the shares in order to match the index. In just 5 trading days between the announcement of Yahoo!'s inclusion in the index until it formally became a member, the stock surged 64 percent. Volume during those 5 days averaged 37 million shares, more than three times the average on the previous 30 days. On December 7, when index funds had to

FIGURE 20-3

Price of Yahoo! around Its Admission to the S&P 500



own the stock, volume hit 132 million shares, representing \$22 billion of Yahoo! stock traded.

This story is repeated with virtually every stock added to the index, although the average size of the gain is considerably less than Yahoo!'s. Standard & Poor's published a study in September 2000 that had determined how adding a stock to an S&P index influenced the price. This study noted that from the announcement date to the effective date of admission in the S&P 500 Index, shares rose by an average of 8.49 percent.¹⁶ During the next 10 days following their entrance, these stocks fell by an average of 3.23 percent, or about one-third of the preentry gain. Yet one year after the announcement, these postentry losses were wiped out, and the average gain of new entrants was 8.98 percent. All these percentages were corrected for movements in the overall market. A more recent study has shown that although the preentry gain has fallen in recent years, the price of stocks admitted to the S&P 500 still has jumped over 4 percent in response to the announcement.¹⁷

FUNDAMENTALLY WEIGHTED VERSUS CAPITALIZATION-WEIGHTED INDEXATION

Despite the overpricing of new entrants into the S&P 500 Index, virtually all indexes that have a significant investment following, such as those created by Standard & Poor's, the Russell Investment Group, or Wilshire Associates, are *capitalization weighted*. That means that each firm in the index is weighted by the *market value*, or the current price times the number of shares outstanding. More recently, most of these indexes adjust the quantity of shares by subtracting *insider holdings*, which include large positions held by insiders and governments from total shares outstanding. Government holdings can be especially large in the emerging economies. The number of shares after this adjustment is called *float-adjusted shares*, where "float" refers to the number of shares that are readily available to buy.¹⁸

Capitalization-weighted indexes have some very good properties. First, as noted earlier in the chapter, these indexes represent the *average*

¹⁶ Roger J. Bos, *Event Study: Quantifying the Effect of Being Added to an S&P Index*, New York: McGraw-Hill, Standard & Poor's, September 2000.

¹⁷ See David Blitzler and Srikant Dash, "Index Effect Revisited," *Standard & Poor's*, September 20, 2004.

¹⁸ Practically there is no bright line between those shares "readily available" and those that are not. Holdings by index funds may actually be less available than those of close family members.

dollar-weighted performance of all investors, so that for anyone who does better than the index, someone else must do worse. Second, these portfolios, under certain assumptions, give investors the “best” trade-off between risk and return. This means that for any given risk level, these capitalization-weighted portfolios give the highest returns, and for any given return, these portfolios give the lowest risk. This property is called *mean-variance efficiency*.

But the assumptions under which this desirable property prevails are very stringent. Capitalization-weighted portfolios are optimal only if the market is *efficient* in the sense that the price of each stock is an unbiased estimate of the true underlying value of the enterprise. This does not mean that the price of each stock is always right; but it does mean that there is no other easily obtainable information that allows investors to make a better estimate of its true value. Under efficient markets, if a stock goes from \$20 to \$25 a share, the best estimate of the change in the underlying value of the enterprise is also 25 percent. There are *no* factors unrelated to fundamental value that could have changed the stock price.

But, as we learned in Chapter 9, there are many reasons why stock prices change that do not reflect changes in the underlying value of the firm. Transactions made for liquidity, fiduciary, or tax reasons can impact stock prices, as well as speculators acting on unfounded or exaggerated information. When stock price movements can be caused by factors unrelated to fundamental changes in firm value, market prices are “noisy” and are no longer unbiased estimates of true value. I call this way of looking at the market as the “noisy market hypothesis,” and I find it an attractive alternative to the efficient market hypothesis that has dominated the finance profession over the last 40 years.

If the noisy market hypothesis is a better representation of how markets work, the capitalization-weighted indexes are no longer the best portfolios for investors. A better index is a *fundamentally weighted* index, in which each stock is weighted by some measure of a firm’s fundamental financial data, such as dividends, earnings, cash flows, and book value, instead of the market capitalization of its stock.¹⁹

Fundamentally weighted indexes work in the following manner. Assume earnings are chosen as the measure of firm value. If E represents the total dollar earnings of the stocks chosen for the index, and E_j is the earnings from a particular firm j , then the weight given to firm j in the index is E_j/E , its percentage share of total earnings.

¹⁹ As a matter of full disclosure, I am the senior investment strategy advisor at WisdomTree Investment, Inc., a company that issues fundamentally weighted ETFs.

For example, the total earnings of all stocks in the S&P 500 Index in 2006 were about \$735 billion. Google's earnings came to about \$3 billion, so in an earnings-weighted fundamental index, Google would have a weight of 0.41 percent. However, because Google has about twice the P-E ratio of the average firm in the S&P 500 Index, its weight in the market capitalization-weighted S&P 500 is 0.85 percent, about twice as high. Since Google does not yet pay any dividends, its weight in a dividend-weighted fundamental index would be zero.

In a capitalization-weighted index, stocks are never sold no matter what price they reach. This is because if markets are efficient, the price represents the fundamental value of the firm and no purchase or sale is warranted.

However, in a fundamentally weighted index, if a stock price rises but the fundamental, such as earnings, does not, then shares are sold until the value of the stock in the index is brought down to the original levels. The opposite happens when a stock falls for reasons not related to fundamentals—in this case shares are purchased at the lower price to bring the stock's value back to the original levels. Making these sales or purchases is called *rebalancing* the fundamentally weighted portfolio, and it usually takes place once per year.

One of the advantages of fundamentally weighted portfolios is that they avoid “bubbles,” those meteoric increases in the prices of stocks that are not accompanied by increases in dividends, earnings, or other objective metrics of firm values. This was certainly the case in 1999 and early 2000 when the technology and Internet stocks jumped to extraordinary valuations based on the hope that their profits would eventually justify their price. Any fundamentally weighted portfolio would have sold these stocks as their prices rose, while capitalization-weighted indexes continued to hold them because the efficient market hypothesis assumes that all price increases are justified.

Note that fundamental indexation does not identify which stocks are over- or undervalued. It is a “passive” index, and the purchases and sales of individual stocks are made according to a predetermined formula. Certainly some overpriced stocks will be bought and some underpriced stocks sold. But it can be shown that if prices are determined by the noisy market hypothesis, then, on average, a portfolio that buys stocks that go down more than fundamentals and sells stocks that go up more than fundamentals will boost returns over a capitalization-weighted index and reduce risk.²⁰

²⁰ Robert D. Arnott, Jason C. Hsu, and Philip Moore, “Fundamental Indexation,” *Financial Analyst Journal* vol. 61, no. 2 (March/April 2005). Also Social Science Research Network (SSRN).

THE HISTORY OF FUNDAMENTALLY WEIGHTED INDEXATION

The motivation for fundamentally weighted indexation began in the international markets. In the 1980s, when Japan's stock market was in a bubble, many investors with internationally diversified portfolios were seeking a consistent way to reduce the weight of Japanese stocks. At that time Morgan Stanley Capital International (MSCI) formulated an international index that weighted each country by GDP rather than market capitalization and fortunately reduced the allocation to Japanese stocks.²¹

In 1987 Robert Jones of Goldman Sachs's quantitative asset management group developed and managed a U.S. stock index in which the weights of each firm in the index were corporate profits. Jones referred to his strategy as "economic investing" because the proportion of each firm in the index was related to its economic importance rather its market capitalization.²² Later David Morris, founder and CEO of Global Wealth Allocation, devised a strategy that combined several fundamental factors into one "wealth" variable.²³

In 2003, Paul Wood and Richard Evans published research on a fundamentally based approach that evaluated a profit-weighted index of the 100 largest companies.²⁴ In early 2005, Robert D. Arnott of Research Affiliates, along with Jason Hsu and Philip Moore, published a paper in the *Financial Analyst Journal* entitled "Fundamental Indexation" that exposed the flaws of capitalization-weighted indexes and laid the case for fundamentally based strategies.²⁵ In December 2005, the first fundamentally weighted ETF was launched by Powershares to track an index constructed by Research Affiliates based on sales, cash flows, book values, and dividends.²⁶ Six months later, WisdomTree Investments launched 20 ETFs based on dividends and followed up in 2007 with six more based on earnings.²⁷

²¹ Henry Fernandez, "Straight Talk," *Journal of Indexes*, July/August 2007.

²² Robert Jones, "Earnings Basis for Weighting Stock Portfolios," *Pensions and Investments*, August 6, 1990.

²³ To see a complete set of the FTSE/GWA Index rules, go to www.ftse.com/Indices/FTSE_GWA_Index_Series/Downloads/FTSE_GWA_Index_Rules.pdf.

²⁴ Paul C. Wood and Richard E. Evans, "Fundamental Profit-Based Equity Indexation," *Journal of Indexes*, Second Quarter 2003.

²⁵ Arnott, Hsu, and Moore, "Fundamental Indexation."

²⁶ For a full description of the FTSE/RAFI Index methodology, visit www.ftse.com/Indices/FTSE_RAFI_Index_Series/2006Downloads/FTSE_RAFI_Indexrules.pdf.

²⁷ As a matter of full disclosure, I am the senior investment strategy advisor at WisdomTree Investment, Inc., a company that issues fundamentally weighted ETFs.

The historical evidence to support fundamentally weighted indexation is impressive. From 1964 through 2005, the compound annual return on a dividend-weighted index based on virtually all U.S. stocks was 11.88 percent per year, 123 basis points above a like capitalization-weighted portfolio based on the same stocks while the volatility and beta of the dividend-weighted portfolio was less than the capitalization-weighted portfolio. This return outperformance with lower volatility was reported across size sectors and internationally. Specifically, from 1996 through 2005, a dividend-weighted MSCI EAFE Index outperformed an EAFE Index by nearly 5½ percentage points per year.²⁸

The long-term outperformance of fundamentally weighted indexes principally relies on their emphasis of value-based strategies. Stocks with higher-than-average dividend yields or lower-than-average P-E ratios receive higher weights in fundamentally weighted indexes than capitalization-weighted indexes. But fundamentally weighted indexes are better diversified than portfolios of only value stocks, and historically they have had better risk-returns trade-offs. In any case, fundamentally weighted indexes have very attractive characteristics that challenge the supremacy of capitalization-weighted indexes for long-term investors.

CONCLUSION

The past performance of actively managed equity funds is not encouraging. The fees that most funds charge do not provide investors with superior returns and can be a significant drag on wealth accumulation. Furthermore, a good money manager is extremely difficult to identify, for luck plays some role in all successful investment outcomes.

When costs are taken into account, most actively managed funds significantly lag the benchmark indexes. Index funds, be they capitalization weighted or fundamentally weighted, are an extremely attractive way to accumulate stocks for long-term investors.

But the past success of these capitalization-weighted indexes does not mean that they will always remain the best choice for investors. The enormous popularity of index funds, particularly those tied to the S&P 500 Index, cause prices of newly named stocks in the index to jump in price, a phenomenon that will likely reduce future returns.

The development of fundamentally indexed portfolios may offer an answer to some of the deficiencies of capitalization-weighted indexes.

²⁸ More data can be found on the Web site at www.wisdomtree.com.

This will be especially true if stock prices behave more like the noisy market hypothesis and less like the efficient market hypothesis. If some investors chronically chase the wrong type of stocks, it may indeed be possible to “beat the market.”

21 CHAPTER

STRUCTURING A PORTFOLIO FOR LONG-TERM GROWTH

[The] long run is a misleading guide to current affairs. In the long run we are all dead. Economists set themselves too easy, too useless a task if in tempestuous seasons they can only tell us when the storm is long past, the ocean will be flat.

JOHN MAYNARD KEYNES, 1924¹

My favorite holding period is forever.

WARREN BUFFETT, 1994²

No one can argue with Keynes's statement that in the long run we are all dead. But a vision of the long run must serve as a guide for action today. Those who keep their focus and perspective during trying times are far more likely to emerge as successful investors. Knowing that the sea will be flat after the storm passes is not useless, as Keynes asserted, but enormously comforting.

¹ John Maynard Keynes, *A Tract on Monetary Reform*, London: Macmillan, 1924, p. 80.

² Linda Grant, "Striking Out at Wall Street," *U.S. News & World Report*, June 20, 1994, p. 58.

PRACTICAL ASPECTS OF INVESTING

To be a successful long-term investor is easy in principle but difficult in practice. It is easy in principle because buying and holding a diversified portfolio of stocks, forgoing any forecasting ability, is available to all investors, no matter what their intelligence, judgment, or financial status. Yet it is difficult in practice because we are all vulnerable to emotional forces that can lead us astray. Tales of those who have quickly achieved great wealth in the market tempt us to play a game very different from that of the long-term investor.

Selective memory also pushes us in the wrong direction. Those who follow the market closely often exclaim: "I knew that stock (or the market) was going up! If I had only acted on my judgment, I would have made a mint!" But hindsight plays tricks on our minds. We forget the doubts we had when we made the decision not to buy. Hindsight can distort our past experiences and affect our judgment, encouraging us to play hunches and try to outsmart other investors, who in turn are playing the same game.

For most investors, going down this path leads to disastrous results. We take far too many risks, our transactions costs are high, and we often find ourselves giving into the emotions of the moment—pessimism when the market is down and optimism when the market is high. This leads to frustration as our misguided actions result in substantially lower returns than we could have achieved by just staying in the market.

GUIDES TO SUCCESSFUL INVESTING

Achieving good returns in stocks requires keeping a long-term focus and a disciplined investment strategy. The principles enumerated below are taken from the research described in this book and enable both new and seasoned investors to better achieve their investing goals.

1. Keep your expectations in line with history. Historically stocks have returned 6.8 percent after inflation over the last two centuries and have sold at an average P-E ratio of about 15.

A 6.8 percent annual real return, which includes reinvested dividends, will double the *purchasing power* of your stock portfolio on average every decade. If inflation stays within the 2 to 3 percent range, nominal stock returns will range between 9 and 10 percent per year, which doubles the money value of your stock portfolio every seven to eight years.

Despite this excellent long-run record, stock returns are not independent of the level of earnings. In Chapter 7 we learned that the long-term real return on the stock market is approximated by the earnings yield, which is the inverse of the price-to-earnings (or P-E) ratio. A 6.8 percent return is consistent with a market that sells at about 15 times estimated earnings.

But there is no reason why a 15 P-E ratio will always be the “right” ratio for stock prices. Chapter 8 maintains that there are good economic reasons why the stock market may rise to a higher P-E ratio in the future. The decrease in transactions costs, the ability to diversify internationally, and the greater stability of the macroeconomy may cause investors to bid the price of stocks higher and may lead to a higher justified level of prices, perhaps at 20 times earnings. If stocks do reach and stay at that level, forward-looking real returns will decline to the lower earnings yield of 5 percent per year after inflation, a return that is still considerably above the yields available on bonds.

2. Stock returns are much more stable in the long run than in the short run. Over time stocks, in contrast to bonds, compensate investors for higher inflation. Therefore, as an investor’s horizon becomes longer, a larger fraction of one’s assets should be in equities.

The percentage of your portfolio that you should hold in equities depends on individual circumstances. But based on historical data, an investor with a long-term horizon should keep an overwhelming portion of his or her financial assets in equities. Chapter 2 showed that over holding periods of 20 years or longer, stocks have both a higher return and lower risk than standard corporate or government bonds.

The only long-term risk-free assets are Treasury inflation-protected securities, or TIPS. In recent years the real yield on these bonds has ranged between 2 and 3 percent, which is about 4 percentage points a year below the historical returns on stocks. The difference between the returns on stocks and the returns on bonds is called the equity premium, and historically it has favored stocks in all countries where data are available.

3. Invest the largest percentage of your stock portfolio in low-cost stock index funds that span a global portfolio.

Chapter 20 showed that the broad-based indexes, such as the Wilshire 5000 and the S&P 500 Index, have outperformed nearly two out of three mutual funds since 1971. By matching the market year after year, an indexed investor is likely to be near the top of the pack when the long-term returns are tallied.

There are many ways in which to match the returns on major stock indexes. The last decade has witnessed the explosive growth of both exchange-traded funds (ETFs) and index mutual funds. Both investment vehicles closely track their respective indexes, have low turnover, and are very tax efficient. Investors in capitalization-weighted index funds should insist on a total annual expense ratio under 0.20 percent.

4. Invest at least one-third of your equity portfolio in international stocks, currently defined as those not headquartered in the United States. Stocks in high-growth countries often become overpriced and yield poor returns for investors.

Today the United States has less than one-half of the world's equity capital, and that fraction is declining rapidly. Owning foreign stocks is a must in today's global economy. In the future, the geographic location of the firm's headquarters will lose its importance as an investment factor. What, where, and to whom a firm sells its products will dominate a new classification system.

As Chapter 10 explains, traditional risk-return analysis on historical data indicates that more than one-third of dollar-based portfolios should be invested in stocks headquartered outside the United States. Despite the increase in the short-term correlation between country returns, the case for international investing is persuasive. In all countries studied, the return on stocks has handily beaten bonds and fixed-income assets over the last century. Do not overweight high-growth countries, as the data presented in Chapter 9 show that investors often overpay for growth.

5. Historically, value stocks—those with lower P-E ratios and higher dividend yields—have superior returns and lower risk than growth stocks. Tilt your portfolio toward value by buying passive indexed portfolios of value stocks or, more recently, fundamentally weighted index funds.

Chapter 9 demonstrated that stocks with low P-E ratios and high dividend yields have outperformed the market over the past 50 years and have done so with lower risk. One reason for this outperformance is that prices of stocks are often influenced by factors not related to their true value, such as liquidity and tax-motivated transactions, rumor-based speculation, and buying and selling by momentum traders. In these circumstances, stocks priced low relative to their fundamentals will likely offer investors a better risk and return profile.

Investors can take advantage of temporary mispricings by buying low-cost passively managed portfolios of value stocks or newly developed *fundamentally weighted indexes* that weight each stock by its share of

dividends or earnings rather than by its market value. Fundamentally weighted indexes have had higher returns and lower risks historically than capitalization-weighted indexes.

6. Finally, establish firm rules to keep your portfolio on track, especially if you find yourself giving in to the emotion of the moment. If you are particularly anxious about the market, sit down and reread the first two chapters of this book.

Swings in investor emotion almost always send stock prices beyond their fundamental values. The temptations to buy when everyone is bullish and sell when everyone is bearish are hard to resist. Since it is so difficult to stand apart from this market sentiment, most investors who trade frequently have poor returns. Chapter 19 shows how behavioral finance helps investors understand and avoid common psychological pitfalls that cause poor market performance. Chapters 1 and 2 keep investors focused on the big picture about risk and return.

IMPLEMENTING THE PLAN AND THE ROLE OF AN INVESTMENT ADVISOR

I wrote *Stocks for the Long Run* to spell out what returns could be expected on stocks and bonds and to analyze the major factors influencing those returns. Many investors will consider this book a “do-it-yourself guide” to choosing stocks and structuring a portfolio. But knowing the right investments is not the same as implementing the right investment strategy. As Peter Bernstein so aptly indicates in his foreword to this edition, there are many pitfalls on the path to successful investing that prevent investors from achieving their intended goals.

The first pitfall is trading frequently in an attempt to “beat the market.” Many investors are not satisfied earning a 10 percent annual return on stocks when they know there are always stocks that will double or triple in price over the next 12 months. Finding such gems is extremely gratifying, and many dream of buying the next corporate giant in its infancy. But the evidence is overwhelming that such investors suffer poor returns as transactions costs and bad timing sink returns.

Investors who have been burned by picking individual stocks often turn to mutual funds in their search for higher returns. But choosing a mutual fund poses similar obstacles. “Hot managers” with superior past performance replace “hot stocks” as the new strategy to beat the market. As a result, many investors end up playing the same game as they had with individual stocks and also suffer below-average returns.

Those who finally abandon trying to pick the best funds are tempted to pursue an even more difficult strategy. They attempt to beat the market by timing market cycles. Surprisingly, it is often the best-informed investors who fall into this trap. With the abundance of financial news, information, and commentary at our beck and call, it is extraordinarily difficult to stay aloof from market opinion. As a result, one's impulse is to capitulate to fear when the market is plunging or to greed when stocks are soaring.

Many try to resist this impulse. The intellect may say "Stay the course!" but this is not easy to do when one hears so many others—including well-respected "experts"—advising investors to beat a hasty retreat. It is easier to follow what everyone else is doing rather than act independently. And as John Maynard Keynes aptly stated in *The General Theory*, "Worldly wisdom teaches that it is better for reputation to fail conventionally than to succeed unconventionally."³ Standing against the crowd is hard because failing by following the advice of other "experts" is far more acceptable than failing by rejecting the investment consensus.

What does all this mean to the reader of this book? Proper investment strategy is as much of a psychological as an intellectual challenge. As with other challenges in life, it is often best to seek professional help to structure and maintain a well-diversified portfolio. If you should decide to seek help, be sure to select a professional investment advisor who agrees with the basic principles of diversification and long-term investing that I have espoused in these chapters. It is within the grasp of all to avoid investing pitfalls and reap the generous rewards that are available in equities.

CONCLUDING COMMENT

The stock market is exciting. Its daily movements dominate the financial press and mark the flows of billions of dollars of investment capital.

But stock markets are far more than the quintessential symbol of capitalism or repositories of wealth. Stock markets are now found in virtually every country in the world, be it communist or capitalist. They are the driving forces behind the allocation of the world's capital and the fundamental engines of economic growth. They are the key to enriching

³ John Maynard Keynes, *The General Theory of Employment, Interest, and Money*, New York: Harcourt, Brace & World, 1965, First Harbinger Edition, p. 158. (The book was originally published in 1936 by Macmillan & Co.)

the lives of both workers and investors around the globe. The main thesis of this book, that stocks represent the best way to accumulate wealth in the long run, remains as true today as it was when I published the first edition of *Stocks for the Long Run* in 1994.

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