

Exercise 3 Source Materials

Excerpts (Preface, Chapter 1) from

Irrational Exuberance

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<http://www.irrationalexuberance.com/>

Preface to the Second Edition

In the preface to the first edition of this book, reproduced following this one, I described this book as a study of the millennium stock market boom, the boom that afflicted much of the world in the years leading up to 2000. A number of those who read the book have told me they think this book addressed a much broader subject. They are right: this book is really about the behavior of all speculative markets, about human vulnerability to error, and about the instabilities of the capitalist system.

When I was writing the first edition, mostly in 1999, the stock market boom seemed invincible. The S&P 500 index had gone up 34% in 1995, 20% in 1996, 31% in 1997, 26% in 1998, and 20% in 1999. Similar strings of stock market price increases had occurred in many other countries. So many years in a row of such spectacular increases could not be the result of mere chance, or so it seemed to many people then—and to the experts who encouraged this view. The stock market boom was widely viewed as the harbinger of a new economic era. But my book took a very different, and much dimmer, view of this stock market boom.

When the book appeared on store shelves in March 2000, I was on sabbatical from Yale, and I embarked on an extended ten-country book tour. Obviously, at that point in history, no one knew that March 2000 was to represent the peak of the market. Talking with so many people about the errors I thought they were making led me to ideas about how to strengthen the arguments presented in this new edition.

A few memories still strike me today, years later, about the kind of human errors that I encountered on my tour. I remember appearing on a radio talk show and hearing a woman tell me that she just *knew* I was wrong: the stock market has a pronounced uptrend; it *has* to go up generally. The tremor in her voice made me wonder what accounted for her emotions.

I also recall seeing a man who came to *two* of my book talks, each time sitting in the back and looking agitated. Why did he come back a second time, and what was upsetting him so?

I remember giving a talk presenting my bearish view of the market to a group of institutional investors, and then listening as a major institutional portfolio manager told me that he agreed with me, but was nevertheless going to ignore everything I had just said as he managed his portfolio. He believed that the views I expressed ultimately did not have enough authority to be taken seriously by his clients and colleagues, and that he could not alter his portfolio allocation based solely on what might seem to be one person's idiosyncratic opinion—even if he himself agreed with it.

But most of what I remember is people cheerfully and with apparent interest listening to my talk and then blithely telling me that they did not particularly believe me. Some kind of collective conclusion had been reached about the stock market—and it had a powerful hold on people's minds.

After 2000, the stock market boom abruptly ended; the U.S. stock market, and the markets in the same countries whose stock prices had also soared, came down substantially from their peaks in 2000. By the time the S&P 500 reached bottom in March 2003 it had fallen by half in real inflation-corrected terms. This outcome led to a change in investor psychology.

I remember having breakfast with a woman and her husband at the very end of 2000, when the market was down substantially from its peak, the tech stocks down more than 50%. She said she did the investing for the family, and in the 1990s she had been a genius. He agreed. Now, she confided, her self-esteem had collapsed. Her perception of the market was all an illusion, a dream, she said. Her husband did not disagree.

But, as profound as the psychological reaction to this stock market drop has been for some people, it appears that collective enthusiasm for stocks is more enduring than one might think; it seems, in large measure, that the enthusiasm is still not over. The stock market has not seen as big a drop as would have been predicted by the extreme overpricing of the market in 2000—at least not yet—and this intense psychological correction has not been experienced by most people.

The stock market has not come down to historical levels: the stock market price-earnings ratio as I define it in this book is still, at this writing, in the mid-20s, far higher than the historical average. Moreover, the market for homes has produced a situation in which median home prices are sometimes ten times buyers' per capita income or more. Irrational exuberance really is still with us.

In a broad sense, this book, from its first edition in 2000, has been about trying to understand the change in thinking of the people whose actions ultimately drive the markets. It is about the psychology of speculation, about the feedback mechanism that intensifies this psychology, about herd behavior that can spread through millions or even billions of people, and about the implications of such behavior for the economy and for our lives. Although the book originally focused directly on current economic events, it was, and is, about how errors of human judgment can infect even the smartest people, thanks to overconfidence, lack of attention to details, and excessive trust in the judgments of others, stemming from a failure to understand that others are not making independent judgments but are themselves following still others—the blind leading the blind.

The presumed enlightened opinion that people tend to rely on for economic judgments is often rather like the “man of smoke” in Aldo Palazzeschi’s surrealistic 1911 novel *Il Codice di Perelà*. The protagonist is made only of smoke; he is virtually nothing at all, but he acquires a public persona and authority that is a construct of the collective imagination, until the public changes its mind, deciding he is not the font of truth, whereupon he disappears completely. Events such as that represented in Palazzeschi’s novel are a reality: unsubstantiated belief systems, insubstantial wisps, do create bouts of irrational exuberance for significant periods of time, and these bouts ultimately drive the world economy.

I have revised the book in this second edition to try to extend its argument that variations caused by changing attitudes, irrational beliefs, and foci of attention are an important factor in our changing economic lives, and to examine the consequences for our economy and our future. I have recast the examples of these variations in terms of more recent events. Notably, I have added a chapter (Chapter 2) about the enormous home price boom that many countries have been experiencing since the late 1990s, and I have broadened the discussion throughout the book to consider speculation in real estate. Beyond that, this edition extends and improves the basic arguments in a number of directions. I have been thinking about the issues in this book for five more years since the first edition, and the research on behavioral economics, which I closely follow, has made substantial progress over that interval as well.

The issues that are treated in this book are serious, and of continuing relevance today. People in much of the world are still overconfident that the stock market, and in many places the housing market, will do extremely well, and this overconfidence can lead to instability. Significant further rises in these markets could lead, eventually, to even more significant declines. The bad outcome could be that eventual declines would result in a substantial increase in the rate of personal bankruptcies, which could lead to a secondary string of bankruptcies of financial institutions as well. Another long-run consequence could be a decline in consumer and business confidence, and another, possibly worldwide,

recession. This extreme outcome—like the situation in Japan since 1990 writ large—is not inevitable, but it is a much more serious risk than is widely acknowledged.

Lest raising these possibilities seem alarmist, one should note that we are already living with some of the unpleasant repercussions of past overconfidence. The stock markets of *many* countries dropped by roughly half from their peak around 2000 by 2002 or 2003, and have rebounded only a little. Overinvestment by corporations, encouraged by the booming stock market, led to a collapse of investment spending in the early years of the twenty-first century, and to a worldwide recession.

The boom years of the 1990s created a business atmosphere akin to a gold rush, and led many people to distort their business decisions, the results of which will weigh upon us for many years to come. Part of this change in business atmosphere was a decline in ethical standards, a decline in the belief in integrity, honesty, patience, and trust in business. A string of scandals affecting corporate boards, accounting firms, and mutual funds surfaced after the market dropped.

These extravagant years eventually led to severe budgetary problems for governments, both national and local. In the 1990s—with the stock market going up, investors reaping capital gains, and the economy booming—tax revenues rose, and many governments found it difficult to restrain increases in expenditures. After the stock market decline, tax revenues fell, throwing many governments into severe deficit crises. The average government financial deficit among member countries in the Organization for Economic Cooperation and Development deteriorated from 0.0% of gross domestic product in 2000 to 3.6% in 2004. The government deficits have in turn led to troubled attempts to restrain spending, with uneven consequences for different constituencies.

An additional consequence of the intense stock market boom of the late 1990s was the home price boom, which began around 1997 or 1998 and then intensified after 2000 throughout many countries of the world. The home price boom appears to have begun around the time in 1997 that the stock market boom was engendering a proliferation of “new era” theories about the economy, and it is still going very strongly in many cities despite a stock market correction. We have yet to see the full consequences of these price changes.

Speculative instability appears to be increasingly important to the world economy. We are focusing more intently on the unpredictable markets. It is not that the existing stock markets are demonstrably becoming more volatile. Volatility occurs in spurts, so it is hard to discern a clear uptrend. But at least the number of people participating in these markets is increasing, and the scope of speculative markets, the kind of risks that are traded, is broadening. More and more electronic markets are being created every year, trading a wider and wider range of risks, and more and more people, in both advanced and emerging countries, are being drawn in to participate in these markets.

People will increasingly fear that their livelihoods really depend on their wealth, wealth that is highly unstable because of market changes. So, over the longer run, people will increasingly pay attention to market movements. There is an increasing perception that the price of assets matters very much to our lives. People increasingly believe that they must defend their private property and doubt that they can depend on social institutions to save them if things turn out badly. They see merciless capitalism as the wave of the future.

There is a name for this economic system—"the ownership society"—and President George W. Bush, among others, likes to use this term. People must take ownership of their own future, and plan for their future as property owners in many senses of the word. There is indeed much to be said for the ownership society in terms of its ability to promote economic growth. But by its very nature it also invites speculation, and, filtered through the vagaries of human psychology, it creates a horde of risks that we must somehow try to manage.

I do not know the future, and I cannot accurately predict the ups and downs of the markets. But I do know that, despite a significant slip in confidence since 2000, people still place too much confidence in the markets and have too strong a belief that paying attention to the gyrations in their investments will someday make them rich, and so they do not make conservative preparations for possible bad outcomes.

Outline of This Book

The book begins with two introductory chapters placing the ups and downs of the stock market and the real estate market in historical context. Chapter 2, new to this edition, presents an analysis of the real estate market that parallels the analysis of the stock market in Chapter 1, from the first edition. Both chapters allow us to see how remarkable recent fluctuations in these markets have been, and to gain overall perspectives on trends in the markets.

Part I discusses the structural factors that drive market bubbles. This part begins, in Chapter 3, with a discussion of the precipitating factors that cause market fluctuations: events outside the markets, such as politics, technology, and demography. The list of twelve precipitating factors that have been driving markets recently has been changed only a little from the first edition, even though the considerations for the list now include real estate as well as the stock market. Chapter 4 argues that the effect of these precipitating factors is enhanced by certain amplifying mechanisms that operate with some lags, so that the relation of market movements to the precipitating factors is never clear. When the events are interpreted as boding well for investments, these amplification mechanisms can, over time, reinforce confidence in the market despite its already high price. Price increases beget further price increases, thus amplifying the precipitating factors and beginning a speculative bubble. When the

events are interpreted as boding ill for investments, the amplification mechanisms can work in a downward direction, with price decreases begetting more price decreases.

Part II considers cultural factors that further reinforce the structure of the speculative bubble. The news media, discussed in Chapter 5, are critical, since they amplify stories that have resonance with investors, often regardless of their validity. Chapter 6 analyzes the “new era” theories that tend to arise spontaneously from time to time. In this edition, the analysis applies to both the stock market and the real estate market. The popularity of these theories is seen to derive from activity in the markets themselves, not from disinterested analysis of the true merit of these stories. Chapter 7 looks at the major stock market booms around the world in the past half century and describes the kind of new era theories that arose in association with many of them.

Part III considers psychological factors that underlie market behavior. Chapter 8 argues that, with the true value of the markets so poorly defined by economic and financial theory, and so difficult for the public to compute, the public relies on some largely psychological anchors for market value. Chapter 9 describes some important results from social psychology and sociology that help us understand why so many different people change their opinions at the same time.

Part IV investigates attempts on the part of academic and popular thinkers to rationalize market bubbles. Chapter 10 considers the efficient markets theory. Chapter 11 discusses the theory, often advanced during a bubble, that the public has just learned some important fact—even though the “fact” either is questionable or has already been widely known for some time.

Part V, Chapter 12, considers the implications of speculative bubbles for individual investors, institutions, and governments. Several prescriptions for urgently needed policy changes are offered at this time of vulnerability in both the stock market and the real estate market, as are suggestions of ways in which individual investors can lower their exposure to the consequences of a “burst” bubble.

I have also created a Web site, irrationalexuberance.com, which will present new information related to the topics in this book and will provide regular updates for some of the data and charts shown in this book.

One

The Stock Market in Historical Perspective

When Alan Greenspan, as chairman of the Federal Reserve Board, first used the term *irrational exuberance* to describe the behavior of stock market investors, the world fixated on those words.¹ He spoke at a black-tie dinner in Washington, D.C., on December 5, 1996, and the televised speech was followed the world over. As soon as he uttered these words, stock markets dropped precipitously. In Japan, the Nikkei index dropped 3.2%; in Hong Kong, the Hang Seng dropped 2.9%; and in Germany, the DAX dropped 4%. In London, the FT-SE 100 was down 4% at one point during the day, and in the United States, the next morning, the Dow Jones Industrial Average was down 2.3% near the beginning of trading. The sharp reaction of the markets all over the world to those two words in the middle of a staid and unremarkable speech seemed absurd. This event made for an amusing story about the craziness of markets, a story that was told for a time around the world.

The amusing story was forgotten as time went by, but not the words *irrational exuberance*, which came to be referred to again and again. Gradually they became Greenspan's most famous quote—a catch phrase for everyone who follows the market.

Why do people still refer to *irrational exuberance* years later? I believe that the words have become a useful name for the kind of social phenomenon that perceptive people saw with their own eyes happening in the 1990s, and that in fact, it appears, has happened again and again in history, when markets have been bid up to unusually high and unsustainable levels under the influence of market psychology.

Many perceptive people were remarking, as the great surge in the stock market of the 1990s continued, that there was something palpably irrational in the air, and yet the nature of the irrationality was subtle. There was not the kind of investor euphoria or madness described by some storytellers, who chronicled earlier speculative excesses like the stock market boom of the 1920s. Perhaps those storytellers were embellishing the story. Irrational exuberance is not *that* crazy. The once-popular terms *speculative mania* or *speculative orgy* seemed too strong to describe what we were going through in the 1990s. It was more like the kind of bad judgment we all remember having made at some point in our lives when our enthusiasm got the best of us. *Irrational exuberance* seems a very descriptive term for what happens in markets when they get out of line.

Irrational exuberance is the psychological basis of a speculative bubble. I define a speculative bubble as a situation in which news of price increases spurs investor enthusiasm, which spreads by psychological contagion from person to person, in the process amplifying stories that might justify the price increases and bringing in a larger and larger class of investors, who, despite doubts about the real value of an investment, are drawn to it partly through envy of others' successes and partly through a gambler's excitement. We will explore the various elements of this definition of a bubble throughout this book.

Greenspan's "irrational exuberance" speech in 1996 came near the beginning of what may be called the biggest historical example to date of a speculative upsurge in the stock market. The Dow Jones Industrial Average (from here on, the Dow for short) stood at around 3,600 in early 1994. By March 1999, it passed 10,000 for the first time. The Dow peaked at 11,722.98 in January 14, 2000, just two weeks after the start of the new millennium. The market had tripled in five years. Other stock price indexes peaked a couple of months later. In the years since, as of this writing, the stock market has never been so high again. It is curious that this peak of the Dow (as well as other indexes) occurred in close proximity to the end of the celebration of the new millennium: it was as if the celebration itself was part of what had propelled the market, and the hangover afterward had brought it back down.

The stock market increase from 1994 to 2000 could not obviously be justified in any reasonable terms. Basic economic indicators did not come close to tripling. Over this same interval, U.S. gross domestic product rose less than 40% and corporate profits rose less than 60%, and that from a temporary recession-depressed base. Viewed in the light of these figures, the stock price increase appears unwarranted.

Figure 1.1 shows the monthly real (corrected for inflation using the Consumer Price Index) Standard and Poor's (S&P) Composite Stock Price Index, a more comprehensive index of stock market prices than the Dow, based, since 1957, on 500 stocks rather than just the 30 stocks that are used to compute the Dow.² Inflation correction was used because the overall level of prices has been very unstable over parts of this period (the government printed a lot of money,

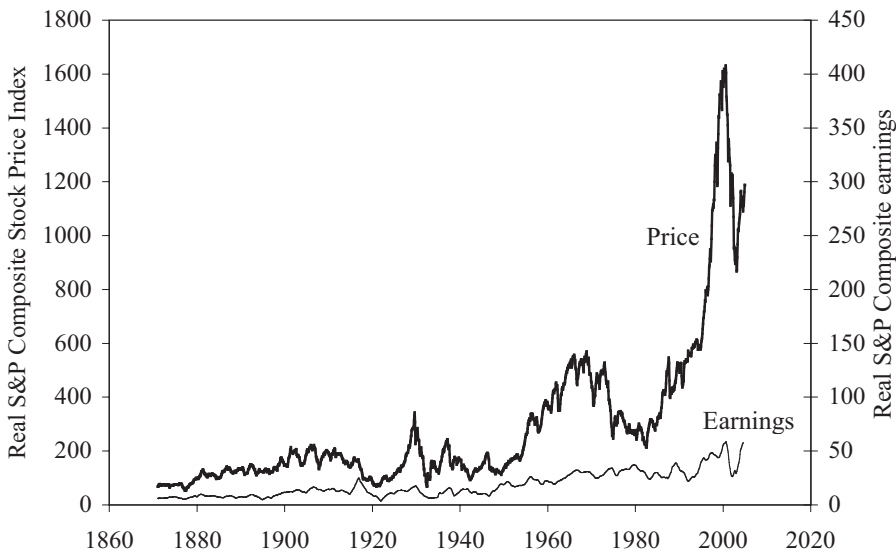


Figure 1.1

Stock Prices and Earnings, 1871–2005

Real (inflation-corrected) S&P Composite Stock Price Index, monthly, January 1871 through January 2005 (upper curve), and real S&P Composite earnings (lower curve), January 1871 to September 2004. *Source:* Author's calculations using data from S&P Statistical Service; U.S. Bureau of Labor Statistics; Cowles and associates, *Common Stock Indexes*; and Warren and Pearson, *Gold and Prices*. See also note 3.

which pushed all prices up) so that the uncorrected numbers would give a misleading impression of the real increase in the stock market. The stock prices are shown from 1871 through 2005 (upper curve), along with the total earnings (corporate profits per share) that the corporations that comprise the index made in doing their business (lower curve) for the same years.³

Large stock price increases occurred in many countries at around the same time, and the peaks in the stock markets were often roughly simultaneous, in many countries, in early 2000. Figure 1.2 shows the paths of stock prices for ten countries. As can be seen from Figure 1.2, between 1995 and 2000 the real stock market valuations of Brazil, France, China, and Germany roughly tripled, while that of the United Kingdom roughly doubled. The year 1999, the year before the peak, saw real stock price increases averaging, over these ten countries, 58%. All countries' prices went up sharply in 1999; in fact the smallest increase, occurring in the United Kingdom, was still an impressive +16%. In the course of 1999, stock markets in Asia (Hong Kong, Indonesia, Japan, Malaysia, Singapore, and South Korea) and Latin America (Chile and Mexico) all made spectacular gains. It was a truly spectacular worldwide stock market boom.

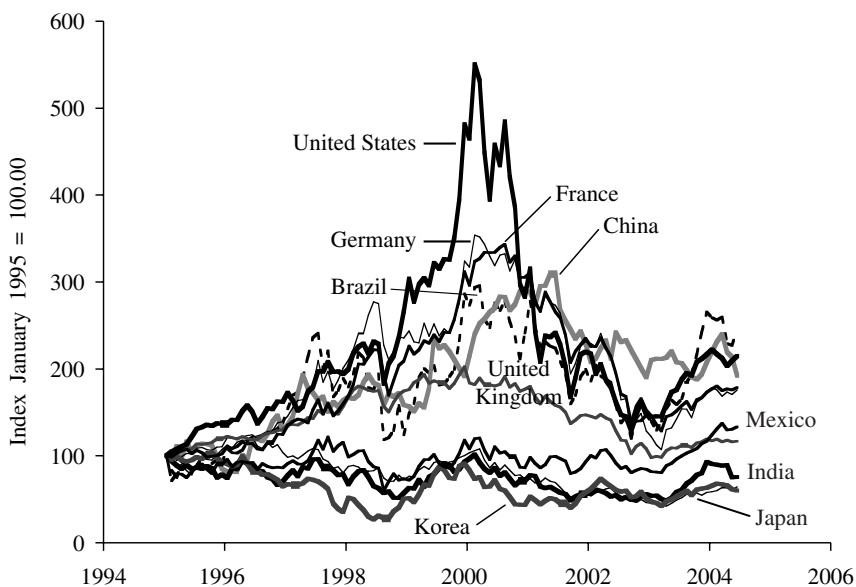


Figure 1.2

Stock Prices in Ten Countries, January 1995–June 2004

Real (inflation-corrected) monthly closing prices in Brazil (Bovespa), China (SE Shang Composite), France (CAC), Germany (DAX), India (Sensex), Japan (Nikkei), Korea (KOSPI), Mexico (Mexbol), United Kingdom (FTSE 100), and the United States (NASDAQ Composite), deflated by the monthly consumer price index for the country, all rescaled to January 1995 = 100. *Source:* Bloomberg and International Monetary Fund International Financial Statistics.

Looking back to Figure 1.1, which shows a longer history for the S&P index, we can see how differently the market has behaved recently as compared with the past. We see that the market had generally headed up ever since it had bottomed out in July 1982, until March 2000. The spiking of prices in the years 1995 through 2000 has been most remarkable: the price index looks like a rocket taking off through the top of the chart, only to sputter and crash. This largest stock market boom ever may be referred to as the *millennium boom*.⁴

The boom and crash in the stock market in the years surrounding the peak in 2000 is clearly related to the behavior of earnings. As can be seen in Figure 1.1, S&P Composite earnings grew very fast in the late 1990s before they crashed after 2000. But historically the earnings movements were generally less dramatic than the stock price movement. Earnings in fact seem to have been oscillating around a slow, steady growth path that has persisted for over a century.

No price action quite like that around 2000 has ever happened before in the entire stock market history shown in Figure 1.1. There was of course the famous stock run-up of the 1920s, culminating in the 1929 crash. Figure 1.1 reveals this boom as a cusp-shaped price pattern for those years. If one corrects for the market's smaller scale then, one recognizes that this episode in the 1920s does somewhat resemble the recent stock market increase, but it is the only historical episode that comes even close to being comparable.

There was also a dramatic run-up in the late 1950s and early 1960s, culminating in a flat period for half a decade that was followed by the 1973–74 stock market debacle. But the price increase during this boom was less dramatic than the run-up of the 1990s.

Price Relative to Earnings

Figure 1.3 shows the price-earnings ratio, that is, the real (inflation-corrected) S&P Composite Index divided by the ten-year moving average real earnings

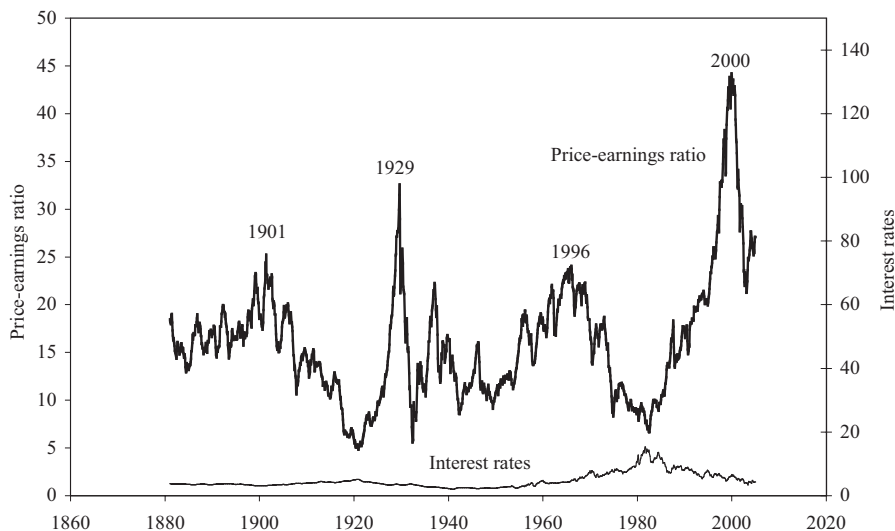


Figure 1.3

Price-Earnings Ratio and Interest Rates, 1881–2005

Price-earnings ratio, monthly, January 1881 to January 2005. Numerator: real (inflation-corrected) S&P Composite Stock Price Index, January. Denominator: moving average over preceding ten years of real S&P Composite earnings. Years of peaks are indicated. *Source:* Author's calculations using data shown in Figure 1.1. Interest rate is the yield of long-term U.S. government bonds (nominal), January 1881 to January 2005 (author's splicing of two historical long-term interest rate series).⁵

on the index. The points shown reflect monthly data, January 1881 to January 2005. The price-earnings ratio is a measure of how expensive the market is relative to an objective measure of the ability of corporations to earn profits. I use the ten-year average of real earnings for the denominator, along lines proposed by Benjamin Graham and David Dodd in 1934. The ten-year average smoothes out such events as the temporary burst of earnings during World War I, the temporary decline in earnings during World War II, and the frequent boosts and declines that we see due to the business cycle.⁶ Note again that there was an enormous spike after 1997, when the ratio rose until it hit 47.2 intraday on March 24, 2000. Price-earnings ratios by this measure had never been so high. The closest parallel was September 1929, when the ratio hit 32.6.

In 2000 earnings were quite high in comparison with the Graham and Dodd measure of long-run earnings, but nothing here was startlingly out of the ordinary. What was extraordinary in 2000 was the behavior of price (as also seen in Figure 1.1), not earnings.

Part of the explanation for the remarkable price behavior between 1990 and 2000 may have to do with the unusual behavior of corporations' profits as reflected in their earnings reports. Many observers remarked then that earnings growth in the five-year period ending in 1997 was unusual: real S&P Composite earnings more than doubled over this interval, and such a rapid five-year growth of real earnings had not occurred for nearly half a century. But 1992 marked the end of a recession during which earnings were temporarily depressed.⁷ Similar increases in earnings growth following periods of depressed earnings from recession or depression have happened before. In fact, there was more than a quadrupling of real earnings from 1921 to 1926 as the economy emerged from the severe recession of 1921 into the prosperous Roaring Twenties. Real earnings doubled during the five-year periods following the depression of the 1890s, the Great Depression of the 1930s, and World War II.

It was tempting for observers in 2000, at the peak of the market, to extrapolate this earnings growth and to believe that some fundamental changes in the economy had produced a new higher growth trend in earnings. Certainly, expansive talk about the new millennium at the time encouraged such a story. But it would have been more reasonable, judging from the cyclical behavior of earnings throughout history, to predict a reversal of such earnings growth.

The bust in corporate profits between 2000 and 2001, the biggest drop in profits in percentage terms since 1920–21, is certainly part of the story about the drop in the market. The drop certainly pulled the support out of ideas that the new high-tech economy was infallible. But there is a question of how to interpret the drop in earnings. As we shall discuss in Chapter 4, the drop in earnings could be seen in many dimensions, and in part as just an indirect consequence of the changes in investor psychology that produced the decline in the market. Part of the crash in earnings after 2000 was also just a technical accounting reaction to the stock price decline, since companies were required

by accounting rules to deduct from earnings the impairment in value of some of their stock market holdings, holdings that were far reduced in value after the crash in the stock market.

Other Periods of High Price Relative to Earnings

There have been three other times when the price-earnings ratio as shown in Figure 1.3 attained high values, though never as high as the 2000 value. The first time was in June 1901, when the price-earnings ratio reached a high of 25.2 (see Figure 1.3). This might be called the “Twentieth Century Peak,” since it came around the time of the celebration of the new century. (The advent of the twentieth century was celebrated on January 1, 1901, not January 1, 1900.)⁸ This peak occurred as the aftermath of a doubling of real earnings within five years, following the U.S. economy’s emergence from the depression of the 1890s.⁹ The 1901 peak in the price-earnings ratio occurred after a sudden spike in the ratio, which took place between July 1900 and June 1901, an increase of 43% within eleven months. A turn-of-the-century optimism, associated with expansion talk about a prosperous and high-tech future, appeared.

After 1901, there was no pronounced immediate downtrend in real prices, but for the next decade prices bounced around or just below the 1901 level and then fell. By June 1920, the stock market had lost 67% of its June 1901 real value. The average real return in the stock market (including dividends) was 3.4% a year in the five years following June 1901, barely above the real interest rate. The average real return (including dividends) was 4.4% a year in the ten years following June 1901, 3.1% a year in the fifteen years following June 1901, and -0.2% a year in the twenty years following June 1901.¹⁰ These are lower returns than we generally expect from the stock market, though had one held on into the 1920s, returns would have improved dramatically.

The second instance of a high price-earnings ratio occurred in September 1929, the high point of the market in the 1920s and the second-highest ratio of all time. After the spectacular bull market of the 1920s, the ratio attained a value of 32.6. As we all know, the market tumbled from this high, with a real drop in the S&P Index of 80.6% by June 1932. The decline in real value was profound and long-lasting. The real S&P Composite Index did not return to its September 1929 value until December 1958. The average real return in the stock market (including dividends) was -13.1% a year for the five years following September 1929, -1.4% a year for the next ten years, -0.5% a year for the next fifteen years, and 0.4% a year for the next twenty years.¹¹

The third instance of a high price-earnings ratio occurred in January 1966, when the price-earnings ratio as shown in Figure 1.3 reached a local maximum of 24.1. We might call this the “Kennedy-Johnson Peak,” drawing as it did on the prestige and charisma of President John Kennedy and the help of his vice-president and successor, Lyndon Johnson. This peak came after a dramatic bull

market and after a five-year real price surge, from May 1960, of 52%. This surge, which took the price-earnings ratio to its local maximum, corresponded to a surge in real earnings of 36%. The market reacted to this earnings growth as if it expected the growth to continue, but of course it did not. Real earnings increased little in the next decade. Real prices bounced around near their January 1966 peak, surpassing it somewhat in 1968 but then falling back, and real stock prices were down 56% from their January 1966 value by December 1974. Real stock prices would not be back up to the January 1966 level until May 1992. The average real return in the stock market (including dividends) was -2.6% a year for the five years following January 1966, -1.8% a year for the next ten years, -0.5% a year for the next fifteen years, and 1.9% a year for the next twenty years.

We see evidence in these past episodes of temporarily high prices that irrational exuberance is not a new thing, and that such episodes do not end well. We will return to a discussion of the predictive power of the price-earnings ratio in Chapter 10.

Interest Rates

Figure 1.3 includes a plot of interest rates, long-term government bond yields. Interest rates are one of the most discussed terms relating to the level of the stock market. During the stock market boom of the 1990s, it was widely noted that interest rates were falling. In fact, interest rates have been falling more or less ever since 1982, the bottom of the stock market. The idea that the decline in interest rates can explain the rise in the stock market was widely accepted during the 1990s.

The Monetary Policy Report that was submitted in conjunction with Alan Greenspan's testimony before Congress in July 1997¹² argued that there was a noticeable negative correlation between the ten-year bond yield and the price-earnings ratio since 1982. Indeed, there did appear to be a relation between interest rates and the price-earnings ratio. In fact, between the mid-1960s and the early 1980s, interest rates were rising and the price-earnings ratio was declining. Between the early 1980s and the late 1990s, when Greenspan spoke, interest rates were falling and stock prices were rising. This relation between the stock market and the ten-year interest rate came to be known as the "Fed Model." In the late 1990s and the early 2000s, it became fashionable to use the Fed Model to justify the level of the market. Indeed, with declining interest rates one might well think that stock prices should be rising relative to earnings, since the prospective long-term return on a competing asset, bonds, was declining, making stocks look more attractive in comparison. In the late 1990s it sometimes seemed that one heard reference to the Fed Model almost ad nauseam on the television business shows.

However, the evidence for the Fed Model is rather weak.¹³ Over the whole period shown in Figure 1.3, there was not a strong relation between interest rates and the price-earnings ratio. In the Great Depression, interest rates were unusually low, which, by the Fed Model, would imply that the stock market should have been very high relative to earnings. That was not the case.

Interest rates continued to decrease after the peak in the market after 2000, and then we saw the opposite of the predictions of the Fed Model: both the price-earnings ratio and the interest rates were declining. Since this happened, one has heard a lot less about the Fed Model.

Although interest rates must have some effect on the market, the behavior of the stock market is not just a predictable reaction to interest rates. There is a lot more going on in the stock market, and a lot more for us to try to understand about its behavior. We will return to interest rates in Chapter 10.

Worries about Irrational Exuberance

I thought in 2000 that most people I met, from all walks of life, were puzzled over the apparently high levels of the stock market. It seemed that they were unsure whether the market levels made any sense, or whether they were indeed the result of some human tendency that might have been called irrational exuberance. They seemed unsure whether the high levels of the stock market might have reflected unjustified optimism, an optimism that might have pervaded our thinking and affected many of our life decisions. They seemed unsure what to make of any sudden market correction, wondering if the previous market psychology could ever return.

Even Alan Greenspan seemed unsure. He made his “irrational exuberance” speech two days after I had testified before him and the Federal Reserve Board that market levels were irrational, but a mere seven months later he reportedly took an optimistic “new era” position on the economy and the stock market. In fact, Greenspan was always very cautious in his public statements, and did not commit himself to either view. In the public exegesis of his remarks it was often forgotten that, when it comes to such questions, even he did not know the answers.

Years after the 2000 peak of the market, the market is down significantly, but still is very high by historical standards. The news media are tired of describing the high levels of the market, and discussion of these levels is usually omitted from considerations of market outlook. And yet, deep down, people know that the market is still highly priced, and they are uncomfortable about this fact.

Lacking answers from our wisest men, many are inclined to turn to the wisdom of the markets to answer our questions, to use the turns of the stock market as fortune tellers use tea leaves. But before we begin assuming that the market is revealing some truth about this new era, it behooves us to reflect on

the *real* determinants of market moves and how these market moves, in their effects, filter through the economy and our lives.

Many of those real determinants are in our minds. They are the “animal spirits” that John Maynard Keynes thought drove the economy.¹⁴ These same animal spirits drive other markets, such as the real estate market, to which we now turn as another case study of speculative behavior, before we begin our analysis of the causes of such behavior in Part I of this book.