NEW YORK TIMES BESTSELLER

IRRATIONAL EXUBERANCE

REVISED AND EXPANDED
THIRD EDITION

ROBERT J. SHILLER

WINNER OF THE NOBEL PRIZE

Irrational Exuberance

REVISED AND EXPANDED THIRD EDITION

Robert J. Shiller

Princeton University Press
Princeton and Oxford

Published by Princeton University Press, 41 William Street, Princeton,
New Jersey 08540
In the United Kingdom: Princeton University Press, 6 Oxford Street, Woodstock,
Oxfordshire OX20 1TW

press.princeton.edu

Jacket design by Steve Attardo / NINETYNORTH

Library of Congress Cataloging-in-Publication Data

Shiller, Robert J.
Irrational exuberance / Robert J. Shiller.—Revised and expanded third edition.
pages cm
Includes bibliographical references and index.
ISBN 978-0-691-16626-1 (hardcover : alk. paper)
1. Stocks—United States. 2. Stock exchanges—United States. 3. Stocks—Prices—United States. 4. Real property—Prices—United States. 5. Risk. 6. Dow Jones industrial average. I. Title.
HG4910.S457 2015
332.63'2220973—dc23 2014036705

This book has been composed in Adobe Palatino and Berkeley Old Style Book and Black by Princeton Editorial Associates Inc., Scottsdale, Arizona

Printed on acid-free paper. ∞

Printed in the United States of America

10 9 8 7 6 5 4 3 2 1

Irrational Exuberance

To Ben and Derek

Figures and Tables

Figures

Tables

Preface to the Third Edition

One might think that years after the bursting of the speculative bubbles that led to the 2007–9 world financial crisis, we should be living in a distinctly different post-bubble world. One might think people would have "learned their lesson" and would not again pile into expanding markets, as so many did before the crisis, thereby worsening incipient bubbles. But evidence of bubbles has accelerated since the crisis. Valuations in the stock and bond markets have reached high levels in the United States and some other countries, and valuations in the housing market have been increasing rapidly in many countries. All this has been occurring despite a disappointing world recovery from the financial crisis, an increasingly tense international situation—with deadly wars in Gaza, Iraq, Israel, Syria, and Ukraine—and a wave of potentially disruptive nationalist sentiment and political polarization in the United States, Europe, and Asia.

As of this writing, the International Monetary Fund has just put out a warning of overheated housing markets in Asia, Europe, Latin America, and in Australia, Canada, and Israel.[1] A similar warning has been issued by the Bank for International Settlements.[2]

The bubbly and apparently unstable situation warrants some concern, although not yet generally as extreme as when the first edition of this book issued a warning about the overpriced and vulnerable stock market (see the reprinted 2000 Preface below), or when the second edition of this book issued a warning about the overpriced and vulnerable housing market as well (see the reprinted 2005 Preface below).

By the time this book finds its way into the hands of readers, the markets may be in a very different situation. Markets can change very rapidly, and the optimistic pricing we see at the time of this writing (in October 2014) is hard to predict. Current pricing may not last long when compared with publication lag and the time needed for an issue to become part of readers' agendas. But I am writing for future readers, years hence, who will read about the markets in the mid–second decade of the twenty-first century as just one of many examples described in the book—examples of broader tendencies and uncertainties.

Hence, the themes of the first edition of this book, with some updating, remain relevant today and probably always will be relevant. When the first edition of this book came out in 2000, I took pains to assert that the stock market bubble of that time, while exceptionally large, was really nothing fundamentally new. Chapter 8 in this edition, "New Eras and Bubbles around the World," details how many times we have had similar, if smaller or more localized, stock market booms and crashes. There *was* something relatively new then: the stock market boom that we now know peaked in early 2000 was worldwide in scope. In the first edition, I called it the Millennium Boom, because it came just before the dawn of the new millennium. We might also confidently call it the Millennium Bubble now, after it is over. But this boom or bubble was not really bigger in its collapse than its counterpart, which peaked in 1929. These really large bubbles are rare events, but the Millennium Bubble was not unique in history.

In the second edition (2005), I made much of the fact that for the United States as a whole, the boom in home prices nationwide that had begun in the late 1990s was the biggest ever, or biggest at least since 1890, when my data began. But, at the same time, the new chapter that was added to that edition also recounted earlier housing bubbles, and, if you look at centuries past, land price bubbles. Centuries ago, real estate speculation would have been more likely an investment in land—a farm or a town lot for building a home. Another big change in the second half of the twentieth century was a massive decline in lending standards for home mortgages. That decline, and the magnitude of the housing boom around the world (which we might now, after the collapse of home prices in many areas after 2006, confidently call a bubble) was unique. We might call this the Ownership-Society Boom, associated as it was with a slogan used by George W. Bush in his 2004 U.S. presidential campaign to describe his plan to promote widespread ownership of homes, stocks, and other investments. (I will call the current stock market boom, from 2009 to the time of this writing in 2014, the New-Normal Boom, after a term popularized by Bill Gross [then of PIMCO] in 2009.)

But there is really nothing new about these bubbles—not fundamentally new. They are repeats of approximately the same phenomenon, of new era stories proliferating by word-of-mouth contagion, of the distinct feel of mass enthusiasm for one kind of investment.

Improving information technology may accelerate their dynamics. Changing patterns of investing are also a factor. The rising impact of international investors and of institutional investors in single-family homes has been much noted in recent years. But the basic bubble phenomenon is the same. In the future, we will surely have even bigger such bubbles, each built up around its new and different new era story, and we will have to invent new names for them.

I was not expecting to hear about housing bubbles when I visited Colombia in mid-2013. Yet over and over again I heard about their amazing real estate boom. While taking me through the seaside resort town of Cartagena, my limousine driver pointed out a number of ordinary-looking homes that had recently sold for millions of U.S. dollars.

The Banco de la República, Colombia's central bank, has on their website a home price index for three major cities: Bogotá, Medellín, and Cali. The index shows home price increases of 69% in real (inflation-adjusted) terms since 2004. That rate of price growth recalls the U.S. experience, with the S&P/Case-Shiller Ten-City Home Price Index for the United States rising 131% in real terms from its bottom in 1997 to its peak in 2006.

The vulnerability we have to bubbles in Colombia and all over the world reveals our continuing lack of understanding of these phenomena. Just what is a speculative bubble? The *Oxford English Dictionary* defines a bubble as "anything fragile, unsubstantial, empty, or worthless; a deceptive show. From 17th c. onwards often applied to delusive commercial or financial schemes." The problem is that words like *show* and *scheme* suggest a deliberate creation, rather than a widespread social phenomenon that is not directed by any central impresario.

Maybe the word *bubble* is used too carelessly. Eugene Fama certainly thinks so. Fama, the most important proponent of the "efficient markets hypothesis," denies that speculative bubbles exist. In his 2014 Nobel lecture, Fama states that the word *bubble* refers to "an irrational strong price increase that implies a predictable strong decline."[3] If that is what *bubble* means, and if *predictable* means that we can specify the date when a bubble bursts, then I agree with him that there may be little solid evidence that bubbles exist. But that is not my definition of a bubble, for speculative markets are just not so predictable.

In the second edition of this book, I tried to give a better definition of a bubble that accords with more enlightened usage of that term. The definition, given in Chapter 1, describes a situation in which news of price increases spurs investor enthusiasm, in a sort of psychological epidemic. That seems to be the core of the meaning of the word as it is most consistently used.

Implicit in this definition is a suggestion about why it is so difficult for "smart money" to profit by betting against bubbles: the psychological contagion promotes a mindset that justifies the price increases, so that participation in the bubble might be called almost rational. But it is not rational.

The story in every country is different, reflecting its own news, which does not always jibe with news in other countries. For example, the current story in Colombia appears to be that the country's government, now under the well-regarded management of President Juan Manuel Santos Calderón, has brought down inflation and interest rates to developed-country levels while all but eliminating the threat posed by the FARC rebels, thereby injecting new vitality into the Colombian economy. That is a good enough story to drive a housing bubble.

New era stories drive high expectations for investing returns but not necessarily high confidence. The high expectations during the upswing of a bubble may be more in the form of a sort of wishful thinking rather than an expression of confidence. In bubble times, there seems to be a tendency for complacency, as an aspect of social psychology, even if people haven't individually concluded that there is no risk.

Indeed, once you draw their attention to the risks, people are not so confident during a growing bubble. Figure 5.4, which plots investor valuation confidence, was actually exceptionally low at the all-time U.S. stock market peak in early 2000. People were certainly aware at some level of risks. Moreover, in a survey of homebuyers that Karl Case and I have been conducting over the years, we pose the following question to recent homebuyers directly: "Buying a house in this area today involves: 1. A great deal of risk; 2. Some risk; 3. Little or no risk." The answers are puzzling. In 2004, when the housing market was showing its fastest price increases, only 19% said "little or no risk." It is not as if everyone thought that "home prices can never fall" during the bubble, though they are often accused of having thought that. In the 2009 survey, at the depths of the worst recession since the Great Depression of the 1930s, the percentage of respondents choosing that option was actually lower, at 17.2%.[4]

During bubbles, it seems that the psychological ambience is rather one of public inattention to the thought that prices could fall, rather than firm belief that they can never fall. The new era stories are not new strongly held convictions—they are merely ideas foremost in people's minds that serve as justification both for the actions of others and of themselves.

Because bubbles are essentially subtle social-psychological phenomena, they are, by their very nature, difficult to control. Regulatory action since the financial crisis might diminish bubbles in the future, but it is yet to be seen whether such actions will be sufficient.

Liquid public markets for home prices do not exist that would allow skeptics of housing bubbles to take short positions against these bubbles, which would, if it were possible, have the effect of incorporating their doubts into the market prices. As we discuss in Chapter 11, if it is difficult to short the market, then a basic premise of the efficient markets theory is not met. The so-called "smart money" can stop investing in homes altogether, but afterward will not be able to take actions to stop others from bidding prices even further up and up. Any large group of investors, from anywhere in the world, for example, could bid local home prices up to crazy levels if they get the idea to do so, or any large institutional investors, playing some kind of game, could do so too. There is no reputable theory to say that, in the absence of the possibility of short sales, they cannot. Many have tried to make such short sales for single-family homes possible, so far with little success.

In the past few years, some high-tech institutional players, such as the Blackstone Group, have begun to invest in single-family homes, and the presence of these players might tend to alter the dynamics of home price bubbles, reducing month-to-month momentum in these markets. But high short-term momentum in home prices, as well as the longer-term real estate bubbles, are surely still with us.

The word *bubble* creates a mental picture of an expanding soap bubble, which is destined to pop suddenly and irrevocably. But speculative bubbles are not so easily ended; indeed, they may deflate somewhat, as the story changes, and then reflate.

It would seem more accurate to refer to these episodes as speculative epidemics. We know that a new epidemic can suddenly appear just as an older one is fading if a new form of the virus appears, or if some environmental factor increases the contagion rate. Similarly, a new speculative bubble can appear anywhere if a new story about the economy appears and if it has enough narrative strength to spark a new contagion of investor thinking.

This is what happened in the bull market of the 1920s in the United States, with its peak in 1929. We have distorted that history by thinking of bubbles as a period of dramatic price growth, followed by a sudden turning point and a major and definitive crash. In fact, a major boom in real stock prices in the United States after "Black Tuesday" brought them halfway back to 1929 levels by 1930. This was followed by a second crash, another boom from 1932 to 1937, and a third crash.

Since the second edition of this book, there has been much discussion of the price-earnings ratio that John Campbell of Harvard University and I had developed and that this book featured from its first edition: real price divided by the ten-year average of real earnings. The press has seemed to adopt the name I had sometimes given it, the CAPE (for Cyclically Adjusted

Price-Earnings ratio), so now I regularly call it that, too. This ratio has appeared as the third figure of the first chapter of this book in all editions, though the name "CAPE" did not appear in the earlier editions of this book. The ratio may be regarded as adjusting the usual price-earnings ratio, which is based on one-year earnings, for the business cycle, correcting for the sudden spikes in the price-earnings ratio that occur after business recessions when earnings may be very low, by averaging earnings over a long period of time.

As of this writing, the CAPE for the United States stands at 26, higher than ever before except for the times around 1929, 2000, and 2007, all major market peaks. But this book is not primarily about the current situation in asset markets but about getting a sense of reality about the nature and dynamics of these markets.

The current edition of this book is partly motivated by work I did with George Akerlof for our 2009 book *Animal Spirits*, a book whose title correctly suggests some overlap of topics with *Irrational Exuberance*. The ancient term "animal spirits" (in Latin, *spiritus animalis*) refers to the fluctuations in the basic driving force in human actions; it is a term that was resurrected by the economist John Maynard Keynes, who gives a view of the economy as involving fundamental psychological instabilities. Both fluctuations in irrational exuberance and animal spirits are still very much a part of our lives. We must still summon our whole arsenal of social sciences to try to understand them.

Outline of This Book

Reproduced here are the Prefaces for the 2005 and 2000 editions of the book, to give a sense how this book has evolved over the financial ups and downs. The 2005 Preface was issued just before the peak of the Ownership-Society Bubble. The 2000 Preface appeared with the first edition, just as the market was reaching the peak of the Millennium Bubble.

The book proper begins with three introductory chapters that place in historical context the ups and downs of the three major markets for investors: the stock market, the bond market, and the real estate market. Chapter 2 is new to this third edition of the book, added in response to widespread concern about a possible bond market bubble. The three chapters allow us to see how remarkable fluctuations in these markets have been, and to gain overall perspectives on trends in the markets.

Part One discusses the structural factors that drive market bubbles. This part begins, in Chapter 4, with a discussion of the precipitating factors that cause market fluctuations: events outside the markets, such as politics, technology, and demography. The chapter lists precipitating factors that are ultimately, largely through their effects on investor psychology, behind three recent stock market booms: the Millennium Boom, 1982–2000; the Ownership-Society Boom, 2003–7; and the New-Normal Boom, 2009 to the present. It is important even today to go through the precipitating factors of past booms to help us appreciate the diverse kinds of things that may drive booms of the future.

Part Two considers cultural factors that further reinforce the structure of the speculative bubble. The news media, discussed in Chapter 6, are critical, since they amplify stories that have resonance with investors, often regardless of their validity. Chapter 7 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 8 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 Three considers psychological factors that underlie market behavior. Chapter 9 argues that, with the true value of the markets so poorly defined by economic and financial theory, and so difficult to compute, the public relies on some largely psychological anchors for market value. Chapter 10 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 Four investigates attempts on the part of academic and popular thinkers to rationalize market bubbles. Chapter 11 considers the efficient markets theory. Chapter 12 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 Five, Chapter 13, 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 for ways in which individual investors can lower their exposure to the consequences of a "burst" bubble.

This edition of the book has also added, as an appendix, the revised version of the Nobel lecture I gave at the Nobel Prize events in Stockholm in December 2013. The Nobel lecture puts many of the arguments of the book into a broader context, with additional references to academic discussions of some of the basic conclusions here.

I have created a website, 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.

Preface to the Second Edition, 2005

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 eponymous surrealistic 1911 novel. 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 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