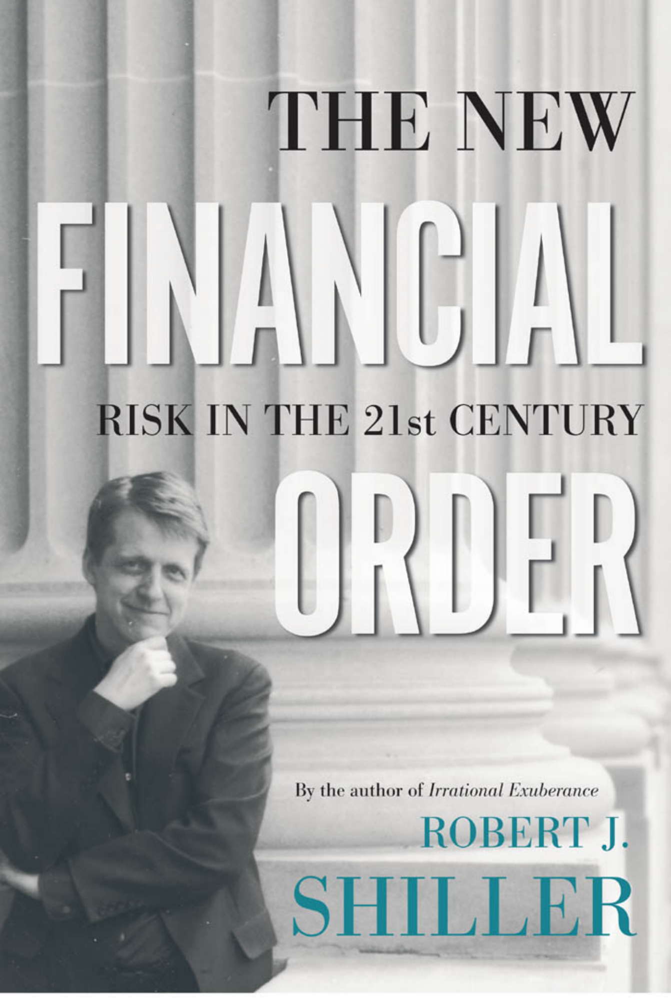
THE NEW
FINANCIAL
RISK IN THE 21st CENTURY
ORDER
By the author of *Irrational Exuberance*
ROBERT J.
SHILLER

The New Financial Order

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RISK IN THE 21ST CENTURY

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
3 Market Place
Woodstock, Oxfordshire OX20 1SY

Library of Congress Cataloging-in-Publication Data

Shiller, Robert J.
The new financial order : risk in the 21st century /
Robert J. Shiller.
p. cm.
Includes bibliographical references and index.
ISBN 0-691-09172-2 (alk. paper)
1. Risk management. 2. Information technology. I. Title.
HD61 .S55 2003
368—dc21 2002042563

British Library Cataloging-in-Publication Data is available

Book design by Dean Bornstein

This book has been composed in Adobe Galliard and Formata
by Princeton Editorial Associates, Inc., Scottsdale, Arizona

Printed on acid-free paper. ∞

www.pupress.princeton.edu
Printed in the United States of America

10 9 8 7 6 5 4 3 2 1

I returned, and saw under the sun, that the race is not to the swift, nor the battle to the strong, neither yet bread to the wise, nor yet riches to men of understanding, nor yet favor to men of skill; but time and chance happeneth to them all.

—Ecclesiastes 9:11

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Preface

Economic gains achieved through technological progress do not themselves guarantee that more people will lead good lives. Just as enormous economic insecurity and income inequality pervade the world today, worsening conditions can develop even as technological advances mark greater levels of economic achievement. But new risk management ideas can enable us to manage a vast array of risks—those present and future, near and far—and to limit the downside effects of capitalism's "creative destruction." Application of these ideas will not only help reduce downside risks, but it will also permit more positive risk-taking behavior, thereby engendering a more varied and ultimately more inspiring world.

The New Financial Order proposes a radically new risk management infrastructure to help secure the wealth of nations: to preserve the billions of minor—and not so minor—economic gains that sustain people around the world. Most of these gains seldom make the news or even evoke much public discussion, but they can enrich hard-won economic security and without them any semblance of progress is lost. By radically changing our basic institutions and approach to management of all these risks both large and small we can do far more to improve our lives and our society than through piecemeal tinkering.

Just as modern systems of insurance protect people against catastrophic risks in their lives, this new infrastructure would utilize financial inventions that protect people against systemic risks: from job loss because of changing technologies to threats to home and community because of changing economic conditions.

If successfully implemented, this newly proposed financial infrastructure would enable people to pursue their dreams with greater confidence than they can under existing modes of risk management. Without such a means to greater security, it will be difficult for young people, whose ideas and skills represent the raw materials for a growth-oriented information society, to take the risks necessary to convert their intellectual energies into useful goods and services for society.

Historically, economic thinkers have been limited by the state of relevant risk management principles of their day. Recent advances in financial theory, information technology, and the science of psychology allow us to design new inventions for managing the technological and economic risks inherent in capitalism—inventions that could not have been envisioned by past thinkers. Karl Marx, the instigator of the communist movement, had no command of such risk management ideas when he published *Das Kapital* in 1867. Nor did John Maynard Keynes, the principal expositor of modern liberal economic policy, when he published the *General Theory of Employment, Interest and Money* in 1936. Nor did Milton Friedman, the chief expositor of economic libertarianism, when he published *Capitalism and Freedom* in 1962.

Ultimately, *The New Financial Order* is about applying risk management technology to the major problems of our lives. That is, it depicts an electronically integrated risk management culture designed to work in tandem with the already existing economic institutions of capitalism to promote wealth. The book does not promise utopia, nor is it a solution to all of our problems. It is not motivated by any political ideology, nor by sympathies with one or another social class. It does offer steps we can realistically take to make our lives much better. By presenting new ideas about basic risk management technology, this book does not propose a finished blueprint for the future. Instead, it describes a new direction that will inevitably be improved by future experimentation, innovation, and new advances in financial theory, in the manipulation of relevant risk-related information, and in the ability of social scientists to draw on psychology to design user-friendly techniques to help people manage income-related risks.

I began working on this book in 1997 as a culmination of years of thinking and writing about how to improve institutions for dealing with risks, both to individuals and to society. In 1993 I published a technical monograph, *Macro Markets: Creating Institutions for Managing Society's Largest Economic Risks,* accompanied by a series of scholarly articles on the general topic of risk management with Allan Weiss, Karl Case, Stefano Athanasoulis, and others. But these pieces neither drew the big picture nor addressed the big issues that I thought needed to be stressed to a broad audience.

At that time I had planned to use this book to integrate my thinking about risk management into a broader picture of our society and economy. I had hoped to correct the egregious public misunderstanding of technological and economic risks, and convey a clearer, more accurate picture of the actual risks people face. Also, I had hoped to explain how the presence of various forms of risk, many hidden in plain sight, prevent us from achieving our highest potential.

But I was interrupted in 1999 by the increasingly impressive evidence of an enormous boom in the stock market, a boom that proved of historic proportions. On the advice of my fellow economist and life-long friend Jeremy Siegel, I decided to set aside the work on this book to write a book about the stock market boom—a classic example of the very kind of misperception and mismanagement of long-term risks that I had written about in the scholarly literature. With the help of Princeton University Press, I managed to get *Irrational Exuberance* into bookstores in mid-March 2000, precisely at the peak of the market and of the tech bubble.

Irrational Exuberance concluded by saying that not only was the level of the stock market exaggerated but society's attention to the stock market, and the importance we attach to it, were also exaggerated. The stock market will not make us all rich, nor will it solve our economic problems. It is foolhardy for citizens to pay attention to the world of business only for the purpose of picking stocks, and even more foolhardy to think stock prices will go nowhere but up.

The New Financial Order picks up where my earlier research and *Irrational Exuberance* together leave off. By showing how we misconstrue risk and by bringing significant new ideas to bear on this problem, I hope to explain how we can fundamentally resolve the economic risk predicament. We are indeed entering a new economic era, robust stock market or not, and we need to think about the implications of emerging technologies—the real drivers of global economic change—not just on individual companies and their stock prices but on all of us. We need to understand how the technology of the past has shaped our institutions. And we need to change our thinking in a vigorous, creative way to navigate this new environment. *The New Financial Order* outlines critical means of making this ideal a reality.

As an aid to critical readers of this book, I have also assembled a number of technical and background papers as well as news clips relating to the themes of this book. They are on the web site http://www.newfinancialorder.com.

Acknowledgments

My style of writing has changed over the years. I now make use of as many minds as I can to filter existing ideas, to suggest new ones, to search out the facts, and to discover what I really need to know. Sometimes it seems I spend more time talking to others than writing, but I feel that it has been time well spent. And so for this book I owe an unusual debt to others.

Of all the people who have collaborated with me on this book, Allan Weiss, my former student at Yale and president of the firm we founded in 1991, Case Shiller Weiss, Inc. (now a subsidiary of Fiserv, Inc.), stands out. He has been a brilliant originator of ideas. Allan and I worked together to develop our concepts of regional real estate futures markets, home equity insurance, and a macro-market instrument we call macro securities.

My editor at Princeton University Press, Peter Dougherty, has helped form my thinking in fundamental ways, and I owe a deep debt to him. His genius stands behind this book, and I never would have done it without his help and ideas. I have also developed a close intellectual relationship with Henning Gutmann, until recently an editor at Yale University Press, and have spent many hours talking with him about the ideas in this book.

Stefano Athanasoulis, a former student of mine at Yale, is another close collaborator. For five years now we have worked to develop a mathematical theory of optimal market definition that has helped refine some of the ideas in this book, particularly that of a market for claims on the combined national incomes of the world, an idea that we first published together.

Many of the ideas in this book ultimately derive from a tradition here at Yale, where I have now been immersed for twenty years. The late James Tobin was a formative influence. His fundamental development of the mathematical theory of diversification, his innovations in practical risk management, such as the Yale tuition postponement option that he created, and his sincere concern for the unlucky in our society, have all been inspirations. Work that he and William Nordhaus have done on accurately measuring economic welfare has also encouraged me to think that genuine improvements in our society can result from quantitative research. Work that William Brainard did with Trenery Dolbear on management of life's risks was a direct precursor to the macro markets that I discuss here. John Geanakoplos's work on information and incomplete markets and Martin Shubik's work on trading systems have also been an influence.

Other colleagues at our firm Case Shiller Weiss, Inc., were important to this book. Karl Case helped develop the idea of real estate futures markets. He led me to appreciate the importance of devising good indexes for measurement of core concepts and provided the first impetus to this research. Howard Brick, David Costa, Jay Coomes, Neil Krishnaswami, Linda Ladner, Terry Loebs, James Mealey, and others at Case Shiller Weiss, Inc., have also been involved in the discovery process.

Allan Weiss and I have founded a second firm, Macro Securities Research, LLC, now being led in its early stages by Chief Operating Officer Sam Masucci. Its purpose is to create new risk management vehicles. Neil Gordon, Larry Hirshik, Julius Levin, Tom Skinner, and others have been helpful in getting our enterprise started. Our advisory committee, including John Campbell, Franco Modigliani, and Jeremy Siegel, has been helpful as well.

Earlier drafts of portions of this book were presented as the Spruill Lecture at the University of North Carolina in February 1998, as a public lecture at the London School of Economics in November 1998, as the McKenna lecture at St. Vincent College in January 1999, as the Jundt Lecture at Gonzaga University in March 1999, as the Samuel Levin Lecture at Wayne State University in April 2001, as the Kenneth Arrow Lecture at Stanford University in May 2001, as the Henry George lecture at the University of Scranton in September 2001, as an "In the Company of Scholars" lecture at Yale University in January 2002, as a public lecture at the European Central Bank in Frankfurt in May 2002, at the Finance Seminar at the University of Chicago in October 2002, and finally at the Hong Kong Economic Association meetings in December 2002. The feedback from people at these various lectures has been very helpful.

I am indebted to Luiz Abreu, Kenneth Arrow, Aleksander Askeland, Sohrab Behdad, Amar Bhide, Murray Biggs, Michael Boozer, David Bradford, Diane Coyle, David Darst, Brad DeLong, Keith Dengenis, Mohamed El-Erian, Herb Gintis, Nader Habibi, Robert Hall, Henry Hansmann, Robert Hockett, Jeeman Jung, Stephen Kaplan, Michael

Krause, Stefan Krieger, David Laster, Gil Mehrez, Felipe Morandé, Stephen Morris, Jessica Paradise, Mats Persson, Andrew Powell, John Quiggin, Tano Santos, Ian Shapiro, Jeremy Stein, Lars Svensson, James Tobin, Robert Townsend, Andrei Ukhov, Salvador Valdés-Prieto, Marek Weretka, and Janet Yellen for helpful comments, discussions, and suggestions along the way.

Many Yale students have worked with me on this book, including Claudio Aragón Ricciuto, Marlon Castillo, Michael Cheung, Chian Choo, Peter Devine, Peter Fabrizio, Sunil Gottipati, Makiko Harunari, Monali Jhaveri, Fadi Kanaan, Jay Kang, George Korniotis, Lingfeng Li, Adrienne Lo, Junzhao Ma, Nicola Mok, Gaye Mudderisoglu, Patrick Nemeroff, Steven Pawliczek, Michael Pyle, Virginia Raemy, Isabel Reichardt, Kira Ryskina, Zaruhi Sahakyan, Philip Shaw, Bjorn Tuypens, Michael Volpe, and Maxine Wolfowitz. I have spent hours talking with most of them about the book, and each of them has individually helped me carry the ideas further with their own thoughts and research.

I also owe much gratitude to Carol Copeland, a loyal and dedicated assistant, who has constantly provided help in my research efforts. Glena Ames provided technical assistance in making this book a reality.

Most of the research that over my academic career has led to this book was supported by the U.S. National Science Foundation. For over ten years the Russell Sage Foundation has been supporting the conferences on behavioral economics that Richard Thaler, George Akerlof, and I have been organizing, and that have kept me involved with and abreast of some of the latest work on psychology in economics. The Smith Richardson Foundation gave me a research grant specifically for writing this book.

My wife Virginia Shiller, a clinical psychologist at the Yale Child Study Center, has been a lifelong inspiration to my work on human behavior for economics. Her support of my work on this book was exceptional, especially given that she was also writing a book of her own at the same time. She also read the entire manuscript and suggested some fundamental changes. Our sons, Ben and Derek, are now old enough to engage me in intellectual discussions; both have signed on as research assistants and have made their own contributions.

I also acknowledge my debt to the many others in the university, business, legal, and government communities who have thought seriously about our economic institutions. I have had the pleasure of being in the economics profession for decades and of observing the parade of theorists who have presented their models over the years. Listening to them can be frustrating at times. I am tempted sometimes to dismiss much of their work as overly academic and irrelevant. But later, I realize that my thinking has been fundamentally changed by understanding their models. I have also had the opportunity, with Case Shiller Weiss, Inc., and Macro Securities Research LLC, to observe the financial world as a participant, which has enabled me to watch this immense ferment of ideas in action. Hearing excitingly new or different financial ideas proposed is also often frustrating because they often turn out to be very hard to implement. Like pipe dreams, they seem far from reality, which rudely seems to place obstacles in their way. But, again, I recognize later that much of this thinking represents progress that eventually accumulates, over many years, into real and practical financial technology with genuine social utility.

The New Financial Order

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INTRODUCTION

The Promise of Economic Security

WALL STREET, along with the City of London and other world financial centers, has served as the liveliest laboratory for new ideas in all of capitalism. Modern finance—not only securities and banking but also insurance and public finance—grows out of powerful theories, both mathematical and psychological, and has produced economic inventions of the greatest utility. Despite some awful financial scandals that surface from time to time, these inventions *really work,* most of the time. The inventions work because the fundamental ideas are sound and because finance professionals have learned to apply them effectively to real people, with all their psychological biases and quirks.

The primary subject matter of finance is the management of risks. Finance looks at the various forms of human disappointments and economic suffering as risks to which probabilities can be attached. Finance poses arrangements that reduce these disappointments and blunt their impact on individuals by dispersing their effects among large numbers of people. Finance helps us realize our dreams by enabling creators and innovators to pursue their ideas without bearing all of the risks themselves and encourages them to take great risks for good purposes, as when entrepreneurs start new companies financed by venture capitalists.

Unfortunately, the insights of finance have been applied in only a limited way. Risk sharing has been used primarily for certain narrow kinds of insurable risks, such as stock market crashes or hurricanes, or for managing the risks of conventional investments, such as diversifying investment portfolios or hedging commodity risks, benefits that often accrue mainly to the already-well-off members of our society. Finance has substantially neglected the protection of our ordinary riches, our careers, our homes, and our very abilities to be creative as professionals.

We need to democratize finance and bring the advantages enjoyed by the clients of Wall Street to the customers of Wal-Mart. We need to extend finance beyond our major financial capitals to the rest of the world. We need to extend the domain of finance beyond that of physical capital to human capital, and to cover the risks that really matter in our lives. Fortunately, the principles of financial management can now be expanded to include society as a whole. And if we are to thrive as a society, finance must be for all of us—in deep and fundamental ways.

Democratizing finance means effectively solving the problem of gratuitous economic inequality, that is, inequality that cannot be justified on rational grounds in terms of differences in effort or talent. Finance can thus be made to address a problem that has motivated utopian or socialist thinkers for centuries. Indeed, financial thinking has been more rigorous than most other traditions on how to reduce random income disparities.

Equipped with modern digital technology, we can now make these financial solutions a reality. Right now we are witnessing an explosion of new information systems, payment systems, electronic markets, online personal financial planners, and other technologically induced economic innovations, and consequently much in our economy will be changed within just a few years. Almost all of our economy will be transformed within just a few decades. This new technology can do cheaply what once was expensive by systematizing our approach to risk management and by generating vast new repositories of information that make it possible for us to disperse risk and contain hazard.

Society can achieve a greater democratization of finance and stabilization of our economic lives through radical financial innovation. We must make this happen, given the economic uncertainty of our future at a time of global change and given the problems and inadequacies of today's financial arrangements. This book presents ideas for a new financial order, a new financial capitalism, and a new economic infrastructure, and further describes how such ideas can realistically be developed and implemented.

Incentives for Great Works without Moral Hazard

Financial arrangements exist to limit the inhibitions that fear of failure places on our actions and to do this in such a way that little moral hazard is created. Moral hazard occurs when financial arrangements encourage people to engage in destructive rather than productive acts, such as phony work done only to impress investors, wanton spending, or accounting malfeasance.

An entrepreneur may feel discouraged from starting an exciting new business because the risk of failure is too high. Modern financial arrangements can often solve this problem. For instance, this entrepreneur might find a venture capital firm that will agree to bear the risks, paying the entrepreneur a salary yet providing the entrepreneur some incentive for inspired work by offering shares in the upside if the company does well. The risk that might have prevented the entrepreneur from ever launching the business seems to disappear. Actually, the risk does not disappear, but its *effects* virtually disappear as the risks to the individual business are blended into large international portfolios where they are diversified away to almost nothing among the ultimate bearers of the risk, the international investors. International portfolio managers from Kabuto-Cho to Dalal Street to Piazza Affari to Avenida Paulista each take on some of this entrepreneur's risk, but as less than a millionth of their total portfolio—so small a part of their portfolios that they do not feel any of this entrepreneur's risk. The entrepreneur is now protected, at virtually no cost to anyone, and can launch an exciting new business without fear. Thus do financial arrangements foster individual creativity and achievement. This is the essential wisdom of finance and its principle of diversification.

As noted above, this inspirational effect of risk management on the entrepreneur can work very well if the venture capital firm is careful to avoid moral hazard, that is, incentives for the entrepreneur to burn down the plant or to pursue flashy opportunities that have only the *appearance* of potential for success, to postpone dealing with problems for fear of revealing them to others, or to continue too long in an enterprise that is clearly failing.

Finance has not been perfect in containing moral hazard—witness the recent Wall Street scandals in the United States. But it would be absurd to junk the system because of a few failures. We should instead adapt and extend finance's insights by applying its essential wisdom to the management of economic risks faced by everyone, and similarly spread the payoffs to everyone. Financial institutions can be strengthened to short-circuit fiascoes like that at Enron Corporation, where moral hazard escaped the controls, where top management, using some clever financial innovation as a foil, dishonestly ran off with the money at the expense of their employees.

Six Ideas for a New Financial Order

In this book I present six fundamental ideas for a new risk management infrastructure. The first three are intended primarily for the private sector: insurance, financial markets, and banking, respectively. The risk management concepts in these three ideas are the same, but they are applied to different risk management industries. Each industry—insurance, financial markets, and banking—has evolved its own methods of dealing with moral hazard, defining contracts, and selecting clients. At a time of fundamental innovation in risk management, it is prudent to build on these methods, respecting each industry's unique body of knowledge and extending and democratizing finance through them.

The next three ideas are designed primarily for development by the government, both through taxation and social welfare and through agreements with other countries. Government has a natural role in risk management because long-term risk management requires the stability of law, because most individuals have limited ability to construct appropriate long-term risk contracts, because fundamental institutions must be managed in the public interest, and because major international agreements require coordination with an array of government policies.

The first idea is to extend the purview of insurance to cover long-term economic risks. *Livelihood insurance* would protect against long-term risks to individuals' paychecks. In contrast to life insurance, which was invented at a time when deaths of young adults with dependents were much more common than they are today, livelihood insurance would protect against currently very significant risks—the uncertainties in our livelihoods that unfold over many years. *Home equity insurance* would protect the economic value of the home but would go far beyond today's homeowners' policies by protecting not just against specific risks to homes such as fires but also against all risks that impinge on the economic value of homes. In the form offered here, first proposed by my colleague Allan Weiss and me in 1994, the problem of moral hazard is dealt with by tying the insurance contracts to indexes of real estate prices.[1]

The second idea for a new financial order is for *macro markets,* which I first proposed in my 1992 Clarendon Lectures at Oxford University and in my 1993 book, and that has been a campaign of mine ever since.[2] It envisions large international markets for long-term claims on national incomes and occupational incomes as well as for illiquid assets such as real estate. Some of these markets could be far larger in terms of the value of the risks traded than anything the world has yet experienced, dwarfing today's stock markets. Even a market for the combined gross domestic products (GDPs) of the entire world, a market for the sum total of everything of economic value, should be established.[3] These markets would be potentially more important in the risks they deal with than any financial markets today, and they would remove pressures and volatility from our overheated stock market. Individual and institutional investors could buy and sell macro securities as they do stocks and bonds today.

The third idea is *income-linked loans.* Banks and other lending institutions would provide loans that are contingent on incomes to individuals, corporations, and governments. The loan balance would automatically be reduced if income falls short of expectations. Income-linked loans would effectively allow borrowers to sell shares in their future incomes and in income indexes corresponding to their own incomes. Such loans would provide protection against the hardship and bankruptcy that afflicts so many borrowers today.

The fourth idea is *inequality insurance,* which is designed to address definitively, within a nation, the serious risk that income in the future will be distributed among people far less equally than it now is, that the rich will get richer and the poor poorer. It reframes the progressive income tax structure so that over time it fixes the amount of inequality rather than fixing arbitrary tax brackets.

The fifth idea is *intergenerational social security,* which would reframe social security to be more truly a social insurance system, allowing genuine and complete intergenerational risk sharing. Intergenerational social security's defining characteristic would be a plan to pool the risks that different generations hold, risks that today are primarily dealt with only informally and then only to a limited extent within the extended family.

The sixth idea is *international agreements* to manage risks to national economies. These unprecedented agreements among governments of nations would resemble private financial deals, but they would surpass such deals in scope and horizon.

Beyond these six ideas for risk management, this book proposes components of a new economic information infrastructure: new *global risk information databases* (GRIDs) to provide the information that would allow effective risk management, and *indexed units of account,* new units of measurement and electronic money for better negotiating risks.