

COPYRIGHT NOTICE:

Robert J. Shiller: The Subprime Solution

is published by Princeton University Press and copyrighted, © 2008, by Princeton University Press. All rights reserved. No part of this book may be reproduced in any form by any electronic or mechanical means (including photocopying, recording, or information storage and retrieval) without permission in writing from the publisher, except for reading and browsing via the World Wide Web. Users are not permitted to mount this file on any network servers.

Follow links for Class Use and other Permissions. For more information send email to: permissions@press.princeton.edu

The key to the subprime solution, to preventing future crises like the current one, as well as mitigating its after-effects, is democratizing finance—extending the application of sound financial principles to a larger and larger segment of society, and using all the modern technology at our disposal to achieve that goal.

Doing this will reduce the long-run incidence of speculative bubbles like the housing bubble that we have just experienced. And to the extent that such bubbles still occur, it will establish a rational context for responding to them, instead of the after-the-fact scurrying for quick fixes that we have seen since the onset of the subprime crisis in 2007.

There used to be tremendous instability in the banking sector. For example, there were severe U.S. banking

crises in 1797, 1819, 1837, 1857, 1873, 1893, 1907, and 1933. Those problems were largely fixed by a number of institutional changes over the years, notably the creation of the Federal Reserve System in 1913 and the New Deal reforms of the early 1930s. But effective reforms haven't reached all segments of our economy, especially the household sector, which continues to limp along with practically medieval financial insight. Unless we think more broadly about financial reforms that will encompass the majority of households, we will continue to experience crises.

As the events leading up to the subprime crisis make plain, it is remarkable that the imperfections of our basic economic institutions have not been more widely discussed. While markets bubble and burst, most people have only minimal protections against their biggest economic risks, hold dangerously undiversified portfolios, and risk ruin when they lose their jobs or fall ill.

These problems are regarded as inevitable features of the system, and the system itself is considered impervious to reform, as if it were a product of nature. But successful institutional reform efforts such as those of the New Deal era belie this widely held orthodoxy. Basic institutional reform is not only possible but necessary.

The subprime crisis has revealed a poverty of imagination on the part of leaders in initiating the reforms

needed to build the new institutional foundations for a more secure economic environment. This chapter suggests ways of beginning just such an institutional reform initiative.

It's the Technology

Institutional reform starts with understanding the available technology. *Information technology* is the story of our time. It is key to the subprime solution. The continued growth of computers, data collection and processing capabilities, “smart” technology, and rapid, inexpensive communications all provide dramatically effective tools to implement the subprime solution—to correct some of the egregious faults in the economy’s institutional foundation.

Along with this expanding information technology, there has been over recent decades a magnificent development of our knowledge in the field of mathematical finance. The field has captured the imaginations of mathematically inclined people, from traditional economics departments, to mathematics departments, to management schools, and now to engineering schools with their new financial engineering programs, and to numerous quant groups at investment banks and hedge funds. This theory, as part of economics, in turn allows us to harness

the full potential of risk-management technology—especially when it is implemented on a sufficiently large scale, as our information technology now allows. The theoretical advances are important, for they tell us where and how to look for opportunities to use financial technology to advance human welfare.

Mathematical finance theory helps us understand how *both* sides of a financial contract can benefit from the contract, and it suggests how we can optimize the participation of the two sides so that human welfare as a whole is enhanced. We must rely on such theory if we are to avoid inconsistent and erratic policy proposals to deal with crises, such as capriciously awarding bailouts to some without properly considering the context, the appropriate incentives, or who is on “the other side,” paying for the bailouts.

Modern financial theory has as an important component in *agency theory*. Agency theory explains how to motivate agents to behave as much as possible in the interests of *all* parties to a transaction, not just themselves. It is a theory that explains how to keep moral hazard under control by structuring financial institutions with just the right balance of incentives.

In a similar vein, the human sciences—psychology, sociology, anthropology, and neurobiology—are increasing our understanding of the mind by leaps and

bounds, and this knowledge is now being applied to finance and economics. We have a much better grasp of how and why people make economic errors, and of how we can restructure institutions to help avoid these errors.

There has been an important revolution with the development, in the past few decades, of the field of behavioral economics, including behavioral finance. This discipline incorporates insights gained in other social sciences. For that reason, many financial theorists of the old school have resisted this revolution, for they fear that it renders their mathematical models useless. On the contrary—it opens up their models to far richer and more successful applications.

Denying the importance of psychology and other social sciences for financial theory would be analogous to physicists denying the importance of friction in the application of Newtonian mechanics. If one is permitted to apply Newtonian mechanics only in realms where friction can be completely disregarded, then one is confining its application largely to astronomy. Once we add a theory of friction, Newtonian mechanics can begin to be applied to earthly problems as well, and it becomes an essential tool for engineers who are designing devices to improve our daily lives. We have a comparable opportunity today with the advent of behavioral economics,

which has the potential to facilitate exciting advances in *financial* engineering.

New institutions can be developed to solve many of the world's fundamental risk problems. But, as noted previously, this can be achieved only if the institutional foundations are retrofitted to produce greater economic growth through steadily expanded asset ownership—especially homeownership.

What follows is a package of proposed reforms that leaders—government, civic, and business, both here and abroad—can forge into a new institutional foundation for the housing market and other asset markets. Taken together, these proposed measures resonate with the spirit and letter of the reforms introduced during the New Deal era as a response to the financial failures of the 1930s, and with other institutional reform initiatives, such as the Basel II reforms deployed to secure today's international banking system.

Since these proposals in some cases represent significant departures from established practice, there will be those who will doubt that they can ever be put into practice. But we have to remember that the history of finance is one of periodic major breakthroughs in method and form. These breakthroughs have often happened at times of financial crisis, just as the innovations of the New Deal

era occurred during the Great Depression. And the time for further institutional innovations is now right.

The changes proposed here are significant, but a number of them have been tried on a smaller scale, and all are distinctly within the realm of possibility. The net effect of this package of reforms would be to stress-proof the whole economy, building greater ballast into the institutional framework so that buyers and sellers are better able to conduct business with confidence rather than through desperate speculative moves.

A New Information Infrastructure

Promoting an improved information infrastructure—the knowledge base used by people and firms to manage their financial affairs—is not only good policy but also good economics. According to economic theory, information that is freely available is a public good, which tends to be undersupplied by the private sector. Moreover, the lack of information can have systemic effects, a negative externality that government should try to prevent. Strengthening the information infrastructure would have a fundamental impact in altering the social contagion and information cascades that underlie the formation of speculative bubbles.

Government promotion of a fundamentally improved information infrastructure can capitalize on the advances we have made in recent years in both information technology and behavioral economics. Thus far some apparently promising innovations in information technology have proven unsatisfactory in practice because they have not been properly human-engineered. For example, public use of financial planning web sites, the financial engines, while growing, is still not widespread. This is probably the case because people tend not to take action on important financial matters based on information that is provided to them only by computer. They must talk to a person before they make major changes in their financial behavior. Behavioral economics offers many such lessons for the proper use of information technology.

In this section I consider six major ways of improving the information infrastructure: promoting comprehensive financial advice, establishing a consumer-oriented government financial watchdog, adopting default conventions and standards that work well for most individuals, improving the disclosure of information regarding financial securities, creating large national databases of fine-grained data pertaining to individuals' economic situations, and creating a new system of economic units of measurement.

Comprehensive Financial Advice

Low-income individuals who took out risky subprime mortgages, with interest rates that would soon be adjusted upward, were often unaware of the known risks inherent in such mortgages. They had no clue that there was a real risk that, in the event of a crisis, they would not be able to refinance their mortgages. Why not? Because there was little economic impetus to provide such information through established communication channels. Thus these new homeowners unwittingly assumed hazardous risks.

Financial advice magazines did indeed report on these risks. So, while the higher-income subscribers to those publications got the story and stuck overwhelmingly to conventional fixed-rate mortgages, many lower-income people were left with personal tragedies.

The first step in correcting this failure of public education is to promote comprehensive financial advice for everyone through institutions that will make sure that all individuals, not just the most wealthy, receive such advice. Most financial advisers ignore middle- to lower-income customers because they can make money only by charging a fee based on the fraction of assets under management or by receiving commissions contingent on

the purchase or sale of a security—income available only through servicing wealthier clients. As part of their efforts to operate efficiently and profitably, many financial advisers also streamline their practices, limiting their advice to narrow windows, such as portfolio management advice or tax strategies.

Most people *need* broad elementary financial advice, and they need to get it from knowledgeable and trustworthy sources. Unfortunately only wealthier people feel they can *afford* such advice.

The alternative is for financial advisers to offer their services for a flat hourly fee, in much the same way as do other professionals, such as lawyers or accountants. The National Association of Personal Financial Advisors has a sound approach to the problem. It requires its member advisers to sign a fiduciary oath not to accept remuneration from third parties for the sale of financial products or for referrals. But it remains a relatively small organization. Meanwhile, most other financial advisers have resisted the move to fee-only practices, for the simple reason that there is not enough demand for such services at the prices they would have to charge.

As a result, low-income people are left with only biased sources of advice. For example, when they are home buyers, they typically deal with a real estate agent and a mortgage broker. The real estate agent represents the

seller of the house and thus has an incentive to make the sale happen at a good price for the seller. The mortgage broker has an incentive to arrange a loan that carries a high interest rate. Moreover, mortgage brokers who may appear to be helping their clients obtain a mortgage at the best rate are often, unknown to those clients, collecting fees from the lenders.

The U.S. government in effect subsidizes financial advice by making it tax deductible. But this tax deduction works only to encourage high-income people to seek out financial advice. People in low tax brackets do not benefit significantly from itemized deductions and thus usually do not itemize. Moreover, the deduction for financial advice is a miscellaneous deduction, which, even for those who do itemize, is deductible only to the extent that the sum of such deductions exceeds 2% of adjusted gross income. Thus low-income taxpayers have little or no tax incentive to pay for financial advice.

The government needs to reverse this bias and effectively subsidize fee-only, comprehensive, independent financial advice for everyone. One way to do this would be to set up a co-pay arrangement like that already in place for Medicare, Medicaid, and private health insurance plans, under which the practitioner can apply for partial reimbursement of fees. The analogy to health insurance is apt: we need both medical and financial advice on

an ongoing basis, and failure to obtain either ultimately imposes costs on society when our health—medical or financial—suffers. Another form of subsidy would be to switch the current incentive for financial advice from an itemized deduction to a refundable tax credit that is obtainable upon filing one's income tax return, even if one does not choose to itemize.

Qualification for the subsidy should require that the adviser sign a statement that he or she will accept no other remuneration from third parties for this customer, so that the advice rendered is impartial. Professionals who collect commissions for selling financial products are certainly providing a helpful service, for otherwise many useful products would not reach their intended markets. But their commissions—and their current tax deductibility on personal income taxes via basis calculations for capital gains—ought to be incentive enough for them to pursue such commission-based sales without having their fees further subsidized by the government.

What if, when they were buying their homes in the run-up to the subprime crisis, low-income people had had access to good-quality, comprehensive financial advice, delivered to them one-on-one, Suze Orman-style, by trusted advisers? The crisis might never have occurred. While the true magnitude and extent of the housing bubble may not have been apparent to many financial

advisers as it was happening, most of them must at least have had some sense that the housing boom might not continue. Surely they would have known when a low-income family was taking on excessive risk with an adjustable-rate mortgage or a mortgage that was simply too large for their income.

Another example, from after the bursting of the bubble, will illustrate the necessity for financial advice that springs from a pure incentive to help the client, and compensation based solely on the time taken to do so. Today, with falling home prices, many elderly people who need care and special services are postponing moving to a continuing care retirement community (CCRC) because they are unwilling to accept the loss of value of their homes if they sell now. They need to sell their houses before they can move into a CCRC, in order to be able to pay the entrance fees, but they are worrying about the decline in home prices and are thus deferring this important step. Many of them will hold out for years, hoping to sell their homes at a better price, and this trend is already being reflected in high vacancy rates in CCRCs today. Thus these elderly homeowners may go for years without proper care, often in isolation and loneliness. All they really need is to have a trusted counselor, expert in the specialty of elder finance, who will, for an hourly fee, consider all aspects of their situation—including

health needs and tax consequences—and put things into perspective. Losing, say, \$30,000 on the quick sale of a house in a slow market may in the final analysis be the right thing to do, given their other concerns.

There is, of course, the question of how many will actually avail themselves of financial advice, even if its cost is reduced considerably. We will only know the answer if we set the subsidy in place. If we provide the impetus for a new financial advice industry by subsidizing it, the hope is that its practitioners will find new marketing strategies, new delivery channels for their advice, or new means of bundling their advice with other products and services—strategies designed to induce people who have never before done so to start using personalized financial advice.

If government makes the business of providing such useful and impartial advice economically viable by subsidizing it, then it is likely that business will make the necessary investments to deploy new information technology on a significantly expanded scale. The provision of low-cost financial advice would be a natural application for such technology. The financial engine web sites will be reinvented so that they operate hand-in-hand with the personal advice furnished by advisers, and thus work effectively for most people. These sites might further evolve, wiki-style, into places where people can

share financial information with each other and with a variety of experts.

If we reform our tax policy to subsidize the services of fee-only, comprehensive financial advisers, technology will carry us forward into new dimensions of democratized financial sophistication that we cannot now imagine.

A New Financial Watchdog

The second step in correcting the inadequacies of our information infrastructure, as outlined by legal scholar Elizabeth Warren, would be for the government to set up what she calls a financial product safety commission, modeled after the Consumer Product Safety Commission. Its primary mission would be to protect the financial consumer, to serve as an ombudsman and advocate. It would provide a resource for information on the safety of financial products and impose regulations to ensure such safety. Remarkably, such concern for the safety of financial products is not the primary charge of any major financial regulatory agency in the United States today.

The National Highway Traffic Safety Administration maintains data on highway and motor vehicle safety and statistics on accidents. In the same way, we must fund a government organization empowered to accumulate

information on the actual experience that individuals have with financial products—and the “accidents,” rare as well as commonplace, that happen with them—with an eye toward preventing such accidents in the future.

The U.S. Treasury’s 2008 *Blueprint for a Modernized Financial Regulatory Structure* (Henry Paulson, Richard Steel, and David Nason) proposed a business-conduct regulator that resembles Warren’s financial product safety commission. The proposal emphasized that the domains of regulatory authorities should be defined in terms of their objectives—and consumer protection is indeed plausible as the domain for a separate regulatory agency.

Default-Option Financial Planning

The third step in renovating the information infrastructure is to set up standardized default-option financial plans that operate well when people are inattentive and fail to act. A default option is the choice that is automatically made if an individual fails to make an intentional choice among available options. One might say that the fundamental cause of the subprime crisis was that many people simply did not pay attention. They fell into traps of one sort or another because they did not know or understand what was happening in the marketplace. When

their attention lapses, consumers are more likely to accept whatever financial contract is offered first, or seems standard or conventional. Therefore designing standard contracts, including prudent default options, should be a serious enterprise for both government and business. Careful research has revealed how immensely susceptible people are to whatever they see as standard provisions in their decisions about investments.

The economist Brigitte Madrian and her colleagues studied how individuals choose whether to participate in an employer-sponsored retirement savings plan. They found that automatic enrollment of the employee in a retirement plan boosts participation immensely, even if the employee is free to drop the plan at any time by merely asking to opt out. Moreover, employees in these plans typically accept the default-option contribution rate and portfolio allocation that are built into the plans. Because of such research, the U. S. Congress decided to encourage such plans, and the Pension Protection Act of 2006 paved the way for widespread adoption of such plans.

Richard Thaler and Shlomo Benartzi have argued for a “Save More Tomorrow” plan that deducts from paychecks automatically from any increases in pay for deposit into a saving plan, and this helps overcome

employee inertia in starting a saving plan.* Their plan also received a boost from the Pension Protection Act of 2006, and has now been adopted by thousands of employers.

The government can do much more along these lines to encourage the ultimate democratization of finance. The help of the government is needed as a facilitator of progress in the private sector. I noted in Chapter 1 that one of the great innovations to come out of the housing crisis of the Great Depression was the extension of mortgage terms from the then-common period of five years to fifteen years or more, providing borrowers with a greater cushion of time to pay off their mortgages. The change was made by the Home Owners' Loan Corporation in 1933, and, while that government-sponsored enterprise no longer exists, its legacy lives on today in the form of long-term mortgages. Why didn't the private sector make the adjustment itself, without government intervention? The answer apparently lies in the difficulty of introducing new products in the face of initial buyer resistance and entrenched social norms. The cost of educating the public about the wisdom of a new form of mortgage is a type of public good, yet the private firm

*Richard Thaler and Shlomo Benartzi, "Save More Tomorrow™: Using Behavioral Economics to Increase Saving," *Journal of Political Economy* 112(S1):S164–S187, 2004.

that incurs it may never fully recoup the cost, since the benefits will be shared by all firms that choose to offer the new mortgage.

This calls for the authoritative assertion of new standard boilerplate for common contracts such as mortgages. Most individuals will accept a standard contract if it is put forward by those whom they consider experts, and they will not try to judge the issues for themselves. A new HOLC could, as we shall discuss below, make improved mortgage contracts the standard by accepting as collateral for loans to mortgage lenders only mortgages including the new features. Such a standard-setting enterprise by the new HOLC would in turn be likely to drive an array of other financial innovations, such as the development of derivative markets for income risks and home-price risks.

In the subprime crisis many mortgage borrowers blandly accepted the mortgage terms that were offered them, in many cases likely thinking that these somehow had the imprimatur of experts—even when no consumer protections whatsoever were in place. Changing the standard mortgage contract would thus constitute a huge improvement in the information infrastructure. And reform in this area might encourage a concerted effort by experts in business and government to decide on other kinds of financial advice and improved mortgage products that

could be made standard and generic for most people, thereby democratizing the information available to consumers. Other mortgage products could certainly still be developed, for those borrowers who might take the initiative to go beyond the default option.

Another possible default option would be a requirement that every mortgage borrower have the assistance of a professional akin to a civil law notary. Such notaries practice in many countries, although not in the United States. In Germany, for example, the civil law notary is a trained legal professional who reads aloud and interprets the contract and provides legal advice to both parties before witnessing their signatures. This approach particularly benefits those who fail to obtain competent and objective legal advice. The participation of such a government-appointed figure in the mortgage lending process would make it more difficult for unscrupulous mortgage lenders to steer their clients toward sympathetic lawyers, who would not adequately warn the clients of the dangers they could be facing.

Improved Financial Disclosure

The fourth step in enhancing the information infrastructure is to improve the disclosure of information that is relevant to people's financial and economic lives. Appar-

ently almost no one had an economic incentive to do the investigative work to unearth and interpret information about the off-balance-sheet accounting that eventually doomed the Enron Corporation in 2001. Nor was there anyone with an economic incentive to reveal the excesses of the structured investment vehicles that banks were using to move certain risks off their balance sheets before the 2007 crisis. Word never got out in a way that was useful to the broad public.

Those who bought residential-mortgage-backed securities based on subprime mortgages typically did so with little more information than that contained in the ratings given them by rating agencies. And while the rating agencies themselves release additional information, the ratings are the only easily interpreted and compared pieces of information, and even these are released only with caveats.

When John Moody in 1915 offered to the public the securities rating system (with letter grades like Aaa) he was making an early step toward democratizing finance by providing a reader-friendly disclosure of information. Disclosure of financial information took another step forward in the United States in 1934 with the creation of the Securities and Exchange Commission. The SEC now sponsors a web site called EDGAR that provides detailed information on public securities and the companies that issue them, including real-time access to filings made

with the SEC. When SEC Chairman Arthur Levitt in the late 1990s brought plain English into securities documentation he too was democratizing finance and improving disclosure. The effectiveness of that disclosure was further enhanced in 2000 with the SEC's issuance of Regulation Fair Disclosure (Regulation FD), which directed firms to post their announcements electronically and immediately, thus making material information available at the same time to all investors, large and small.

Despite the significant strides the SEC has made in making information available to the public, however, people still find it very difficult to evaluate the risk of securities. Thus the subprime residential-mortgage-backed securities were grossly misjudged because no one outside the rating agencies understood the information to correctly gauge the soundness of the mortgages on which they were based. The stage was perfectly set for unscrupulous mortgage originators to lend to low-income people who were likely to default, and for mortgage securitizers to sell the soon-to-default mortgages off to unsuspecting investors.

There have been important proposals for enhanced disclosure, but there has been little action.* Both govern-

* *Enhancing Disclosure in the Mortgage-Backed Securities Markets*, SEC Staff Report, 2003.

ment regulators and private information providers have to think much further how we can provide real understanding to the public about securities. As information technology continues to advance, the costs of providing information continue to fall, and the scope for creative and meaningful disclosure, at constant or even declining cost, should generally widen over time.

This means developing creative new presentation modes, going beyond the traditional securities ratings. There should be more simple, standardized disclosure modes, analogous to the standardized nutrition labeling on packages of food, that make it very easy for people to assess risks.

In his 2001 book *Republic.com*, legal scholar Cass Sunstein argued that the requirement for electronically disseminated disclosures, modeled after the SEC's, should be expanded to cover many other organizations whose activities could possibly affect the climate of our communications. The required disclosure of questionable activities can sometimes be enough to stop undesirable activities in their tracks. Sunstein wrote of the importance for a democratic republic of exposure to a broad spectrum of information: "To be sure, such a system depends . . . on some kind of public domain in which a wide range of speakers have access to a diverse

public—and also to particular institutions and practices, against which they seek to launch objections.”

In our age of electronic communications, mandatory disclosure of information is more feasible than ever before. A business conduct regulator, such as proposed by Henry Paulson and his Treasury colleagues, could require mortgage lenders and other financial firms that interact with the general public to disclose on the Internet activities that appear questionable—such as predatory lending—thus opening them up to public scrutiny.

Improved Financial Databases

The fifth step toward an improved information infrastructure is for the government to subsidize the creation of large economic databases on both individuals and all firms, under a protocol that allows this information to be used to develop risk-management contracts and at the same time assures privacy.

We have already seen the development of large private databases of information on the incomes and economic activities of individuals, but these databases are fragmented and rarely used for good economic purposes. No one has the whole financial picture; only pieces are visible.

⁴Cass Sunstein, *Republic.com* (Princeton, N.J.: Princeton University Press, 2001), p. 201.

A protocol for the sharing of information among such databases needs to be developed, so that the current fragmented sources can be pooled. The enlarged pool of data should then be used for beneficial purposes, such as providing consumers and homeowners with more accurate pictures of their financial situations. Such enlarged databases would permit the financial engine web sites to offer customized, real-time information to their customers—information that relates to their particular circumstances.

Large publicly available databases of privacy-protected data on individual incomes are a real possibility, given that income taxes are now largely filed electronically. It is already possible for an individual in the United States to make information on his or her tax return available to financial counterparties by filing Form 4506-T. The government would of course have to take the next step, making identity-protected information appropriately and widely available for the public good. Other databases could be linked to the income database. This would permit, for example, the construction of an array of up-to-date and specific personal income indices by occupation, demographics, or health status. The data could then serve as the basis for the settlement of individually tailored risk-management contracts, such as the livelihood insurance described below. Risk-management engines could access the complete, fine-grained picture

of the nation's economic situation—a degree of transparency that remains impossible today. A whole new world of risk management would be opened up.

Improved databases will permit the development of better measures of ability to pay in the case of mortgage workouts. Given our constantly improving information technology and expanded financial databases, we ought to be able to see econometric advances that make this possible. Indeed, in just the past twenty years, credit-history-based econometric measures of ability to pay, notably the FICO score, have emerged as major forces in the lending industry. But the FICO score is not responsive to general economic conditions and is not used systematically to adjust repayment schedules. FICO is ultimately limited by the scope of the database that supports it. A whole new world of such measures could be made available for use in a democratized system of financial contracting.

A New System of Economic Units of Measurement

So many people find understanding our economic system a challenging task. To help them, the government needs to set up a new system of economic units of measurement. This part of the subprime solution would be a truly revolutionary step, akin to the creation of the metric system after the French Revolution. Such a system

would help prevent human error in economic thinking, which underlies many economic problems, including the subprime crisis.

Units of measurement would be defined for many common economic values, including income, profits, and wages. But of greatest importance would be new units of measurement for inflation.

I have been arguing for years that we can help avoid confused thinking about inflation by adopting an inflation-indexed unit of account, like the *unidad de fomento* (UF) that the government of Chile created in 1967 and that has since been adopted by other Latin American governments.

The UF is just the daily price of a market basket of goods and services, as measured by an interpolated Chilean consumer price index. But it has been singled out for publication by the government as a unit of account for commerce, replacing money. People in Chile commonly quote prices in UFs, although they still make actual payments in pesos using the peso-UF exchange rate (which is commonly available, in particular on a web site). By giving this unit of account a simple name, encouraging people to use it as a standard of value for commerce, and training them to think in indexed terms, its government has made Chile the most inflation-aware country in the world.

In contrast, the traditional currency units used by countries all over the world are a poor measure of value, since their buying power changes unpredictably over time. Measuring value in pesos or dollars is like measuring length with a ruler that expands or contracts from year to year. Engineers would find design a daunting task indeed with a meter rod that changed constantly—but that is exactly what people have to contend with when they deal in terms of money. No wonder they become confused. In the modern information-rich economy, there is no reason why the medium of exchange and the unit of value measurement need still be the same.

I would give these inflation-indexed units a simple name, *baskets*, to make clear that they represent the value of the market basket of goods and services upon which the consumer price index is calculated. If sellers name their prices in baskets, they are effectively asking to be paid in terms of the real goods and services that underlie the consumer price index—to be paid in real things rather than unstable currency. When we have a simple word to describe inflation-indexed quantities, even young children will learn to do inflation indexation, merely by using the word.

The government should write the tax code in terms of baskets, rather than dollars, to fully index the tax system and to force people to learn the new units. Credit

card point-of-sale terminals and other electronic payment systems could be programmed to accept payments in baskets.

If people had become accustomed to such inflation-indexed units of measurement, the recent housing boom might have been averted. One of the most significant errors that have infected the housing market in recent decades has been the failure on the part of the general public to understand inflation. The governments of the major countries of the world have been publishing consumer price indices for nearly a century now, and the public at some level is able to use them. But confusion about inflation remains widespread and causes huge errors.

When U.S. inflation was very high, in the early 1980s, people could hardly afford to buy a home with conventional mortgages, since the inflation-zapped interest rates often approached 20% a year, and the purchase of a house worth just three years' income would entail mortgage payments approaching 60% of one's income. As inflation continued, mortgage payments would eventually come down dramatically in real terms, but that would not happen for years. Few could afford the early payments in those years, and so it became very difficult to buy a home. Home prices dropped, though the price drop was limited because there was an intense supply response to the high interest rates: residential investment

as a share of U.S. GDP fell to 3.2%, the lowest point ever recorded in the period since World War II. All this could have been prevented if people had simply adopted inflation-indexed mortgages, but the public seemed unable to grasp the concept. Yet it would have been perfectly natural for them to do so had they already become accustomed to dealing in baskets.

The stock market was low in value in the early 1980s, reflecting the fact that nominal interest rates were very high, even though real (inflation-corrected) interest rates were not. This outcome is called the Modigliani-Cohn effect after the economists Franco Modigliani and Richard Cohn, who documented it in the late 1970s.

As inflation came down after the early 1980s, the stock market went up. This excessive movement of the stock market might have been prevented if accounting had been performed in terms of baskets, so that the public would have been less confused by so-called money illusion, the tendency to think of prices in nominal, not real, terms.

The housing boom since the 1990s is also due in part to the public's difficulty with understanding inflation. We remember home prices from long ago since they are such important purchases for us, and so the contrast between those prices and the prices today attracts our attention much more than the contrast between the price of a loaf of bread then and now. We get the false impression that

homes have been a spectacular investment when in fact their increase in value, measured in baskets, even over many decades, would generally have been—at least until the recent housing boom—nil.

In 2008 the National Association of Realtors (NAR) launched a \$40 million public awareness campaign entitled “Home Values.” The campaign was designed to put thousands of advertising spots on radio and television, as well as ads in the print media, on billboards, and on bus shelters. These repeat the slogan “On average home values nearly double every ten years.” The association claims that this statement is supported by their data for the past thirty years. Indeed it should be, for in the past thirty years consumer prices have nearly doubled twice, and we are at the end of a home-price bubble that caused real values to double once: that’s three decades of doubling in nominal terms. It is deceptive to suggest from these data that homes will be spectacular investments, but the NAR can get away with it because of public confusion about inflation.

Indeed, even the Great Depression of the 1930s was intimately related to confusion about inflation. As Ben Bernanke points out in his 2000 book *Essays on the Great Depression*, it is now well known that, while prices in general were falling in the early 1930s, real wages (wages corrected for inflation) were high, and higher in countries that were harder hit by unemployment.

A simple story of the Great Depression is that employers could not cut the nominal wages of their workers enough to keep real wages constant, because cutting nominal wages would be misperceived by employees and their unions as a terrible insult, as an invitation to a fight. As a result, companies could not remain profitable while keeping their entire labor forces employed: their revenues would have fallen more than their costs did. The effects of the Great Depression would never have been as severe as they were if it weren't for confusion over inflation.

If people had been accustomed to quoting wages in baskets before the Depression, employees would have seen their real wages rising and presumably would not have had the same angry response to nominal wage cuts. Employers would not have had to shut down operations to remain solvent.

If we had been accustomed to quoting home prices in baskets since 1890, then people would generally have known that home prices haven't basically changed in a hundred years (until the recent bubble), and they would never have gotten the idea—as they did in the early 2000s—that home prices always go up.

Creating a new system of economic measurements would have countless other beneficial effects. In the context of some themes discussed earlier in this book, it is worth noting that we have allowed inflation (and income growth)

to erode some of the important financial protections that were the product of enlightenment in years past.

When the Federal Deposit Insurance Corporation was created in 1934, the insured limit was \$5,000—and this was twelve years' average per capita personal income. That limit was last raised in 1980, reflecting inflation and income growth, to \$100,000. But \$100,000 is less than three years' average per capita personal income today.

The insured limits of the Securities Investor Protection Corporation (SIPC), which protects customers when brokerage firms fail, were also last raised in 1980. They remain at \$100,000 in cash accounts and \$500,000 in securities—figures which may still sound large but which are not large enough to prevent panicked withdrawals by substantial numbers of brokerage customers should a major crisis ensue.

The erosion of these important protections has been compromising the resilience of our economic system. Defining the insurance limits of the FDIC and SIPC in nominal currency terms has been a serious design error. Defining the limits in terms of baskets would be better—and it would be even better to use another indexed unit of account tied to nominal personal income rather than inflation.

While the U.S. Congress has shown some inclination to make the appropriate fixes from time to time, as with the Federal Deposit Insurance Reform Act of 2005, the

institutions remain seriously compromised by their lack of consistency. It is only through adopting a new system of economic units of measurement—so that correctly defining a quantity becomes as easy as saying a word—that we will avoid such mistakes in the future.

Information Infrastructure: A Summary

These six steps, taken together, would unleash the power of better information and help prevent economic crises like the current one from ever starting. Once we provide the economic and governmental incentives for the development of a better information infrastructure, and once that infrastructure has been in place for several years, then imagination and entrepreneurship will take over, pushing us into uncharted territory in the exploitation of that information. We will witness the creation of entirely new kinds of for-profit information providers, both computer-based and human-services-based, all interacting with each other to promote improved financial decision making by individuals and businesses.

New Markets for Risks That Really Matter

The history of finance over the centuries has been one of gradual expansion of the scope of markets. Over time,

more and more kinds of risks are traded, and there are more and more opportunities for hedging those risks. Now is the time to encourage the further development of markets in a way that truly democratizes them, that is, so that the markets cover the specific risks that ultimately matter to individual people.*

New Markets for Real Estate

Most urgently needed is a truly liquid market for real estate, especially the single-family homes that constitute the single largest asset of most households.

I and my colleagues have been campaigning for innovative new markets for real estate for twenty years. Our big breakthrough came when the Chicago Mercantile Exchange (CME, now part of the CME Group, after its 2007 merger with the Chicago Board of Trade) created single-family home-price futures markets using the S&P/Case-Shiller Home Price Indices that Karl Case and I initially developed. These markets—spearheaded by Felix Carabello, John Labuszewski, and Anthony Zaccaria—were launched in May 2006 for ten U.S. cities

* A more extensive earlier development of these ideas for new markets is presented in Robert J. Shiller, *Macro Markets: Creating Institutions for Managing Society's Largest Economic Risks* (Oxford: Oxford University Press, 1993).

and for a composite U.S. index. They are the only true home-price futures markets in the world today. Despite efforts of market makers Jonathan Reiss and Fritz Siebel, liquidity in these markets is low, but we still have high hopes for them.

Such derivative markets have the potential to tame speculative bubbles in real estate. Without such markets, there is no way for investors to sell real estate short. There is no way for skeptical investors, who perceive that a bubble is in progress, to express this opinion in the market, except by actually getting out of the market, that is, selling their homes, which is of course a drastic and very difficult step.

If we *did* have a liquid market in real estate futures by city, then any skeptic anywhere in the world could, through his or her actions in the marketplace, act to reduce a speculative bubble in a city, for such a bubble represents a profit opportunity for short sellers. If the market were widely watched, then home builders would see the projected price declines and scale back their own activities, thus averting huge construction booms such as the one we have recently witnessed in the United States. If home builders adopted the enlightened practice of hedging their homes while they were still in production, then the losses would be felt before they even began building.

Some concerns have been expressed over the years that the creation of derivative markets might possibly *increase*, rather than decrease, the volatility of the underlying prices. However, according to a survey of the scholarly literature by financial economist Stewart Mayhew, “The empirical evidence suggests that the introduction of derivatives does not destabilize the underlying market—either there is no effect or there is a decline in volatility—and that the introduction of derivatives tends to improve the liquidity and informativeness of markets.”*

The relevance of these findings to the market for homes is not entirely clear; the residential real estate market is exceptionally illiquid, and its prices are very salient to the broad public. However, in my mind, this is all the more reason to believe that introducing futures and bringing professionals into the market for homes will improve its functioning. Indeed, as economist Milton Friedman pointed out half a century ago, trading professionals ought to help stabilize markets at least to some extent, for if they are *destabilizing* markets (buying high and selling low), they are *losing* money—not a strategy that will keep them in business for long.

*Stewart Mayhew, “The Impact of Derivatives on Cash Markets: What Have We Learned?” Terry College of Business, University of Georgia, February 3, 2000, http://www.terry.uga.edu/finance/research/working_papers/papers/impact.pdf.

The prices in the CME housing futures markets have been predicting large declines in home prices in the United States almost since the markets' inception in May 2006. Had these markets been around and matured even earlier, well before 2006, and had they been widely known and understood, then the boom in construction whose consequences we now see would probably never have happened: builders would have seen the handwriting on the wall in the form of the authoritative price predictions that such markets generate.

Many substantial institutions see great potential in these futures markets. These markets could allow them to launch important retail risk management products, and then hedge the risks they acquire in doing so. But they also say that these markets are not really useful until they are liquid. They will not be liquid until the institutions start to trade. There is a "chicken and egg problem." To circumvent this, the futures markets need a catalyst to get the chickens together. The catalyst could result from some of the innovations to be described below, or from the exchange or from the government. The markets need an incentive for market makers to provide liquidity that in turn would draw other participants into the market.

Other kinds of markets for macro real estate risks include options, swaps, forwards, and similar derivative

instruments. The CME launched an options market for single-family home prices in 2006, based on the S&P/Case-Shiller Home Price Indices, at the same time that it launched single-family home-price futures.

Pensions, endowments, and other global investors would find these markets, if they are liquid, fundamental to their activities. Real estate is a major asset class, comparable in size to the entire stock market, and should represent an important element of diversification for portfolio managers. An array of derivative markets would enable institutional investors to access this asset class in a more thorough and systematic way than they can today.

Commercial real estate is also starting to see such markets develop. The IPD indexes of commercial real estate in the United Kingdom have already seen the origination of over £15 billion of notional value. That is still quite small compared to the total value of commercial real estate in the United Kingdom, but it is an encouraging beginning.

Other New Markets

I place greatest emphasis on real estate markets in this book because real estate has been so important to business fluctuations, and particularly so in the current crisis. But there are many other kinds of new markets that need

to be, and will be, created as we move to a more fully developed financial sector.

Foremost among these will be markets for long-term claims on incomes—individual incomes, incomes by occupation, incomes by region, and national incomes. These markets are important because they represent livelihood risk, the most important risk that each individual faces. Markets for occupational incomes—such as futures, forwards, swaps, and exchange-traded notes—will ultimately make it possible for people to hedge their lifetime income risks. The markets would be of fundamental importance for the issuers of continuous-workout mortgages, discussed below.

National incomes, sometimes measured by gross domestic product or GDP, deserve their own markets as well. These could in fact already exist, since GDP accounting is well developed, and data are maintained for every country in the world.

Stefano Athanasoulis and I have campaigned for governments to issue debt indexed to their GDPs. Stephany Griffith-Jones and Inge Kaul at the United Nations Development Program, Eduardo Borensztein and Paolo Mauro at the International Monetary Fund, and Kristin Forbes at the Council of Economic Advisors, have also advocated such ideas. This could be perpetual debt that pays a share of GDP as dividend. My colleague Mark

Kamstra of York University, who has been working with me to promote the adoption of such government securities in Canada, has suggested calling these trills, since it would be natural to have each share pay a trillionth of a year's GDP. This would mean that one Canadian trill would be currently paying an annual dividend of about CA\$1.50, and one U.S. trill would be paying an annual dividend of about US\$15.00.

These dividends would go up or down through time depending on the level of economic success of the country. The market price of one Canadian trill might today be in the vicinity of CA\$30, and that of one U.S. trill roughly US\$300. The price of a trill would fluctuate with information about the future prospects of the country, just as a company's stock price fluctuates with information about the future prospects of the company. Presumably there would be a lively and interesting market for these securities.

Most importantly, a market for trills would allow countries to hedge their national economic risks. If the U.S. government had issued trills over the years, and if a substantial fraction of the national debt were trills, then the U.S. government would find that it had freed up sufficient resources to allow it to deal promptly with an emergency like the subprime crisis. In an economic slowdown, the government would find that the burden of interest on the national debt would, in effect, fall below expectations.

It would thus have more resources available to deal with the crisis. That is fundamental risk management, applied on a national scale.

Of course trills have never yet been issued by any government. There have been some GDP-linked securities, notably Argentina's issue in 2005 of GDP warrants. To establish these better, further work should be done on improving the timelines and replicability of GDP numbers, and reducing the tendency for substantial subsequent revisions.

New Retail Risk-Management Institutions

The new markets described above are intended to create a general infrastructure for risk management. But the general public cannot be expected to use sophisticated risk-management techniques. For example, most people will never trade in futures markets: they are not accustomed to doing so, and such trading poses significant challenges to the uninformed. For them we need to design simple retail products that will allow them to participate in these new markets, thus truly achieving the democratization of finance.

The analogy is to the kind of risk management that grain elevators provide to individual farmers. Farmers do not generally hedge their risks on futures markets; that

is often too difficult a strategy for the individual farmer. But a farmer will sign a contract for delivery of his grain to the local grain elevator, and that contract pushes some of the farmer's market risk to the owner of the elevator—who will in turn hedge the risk in the futures markets.

That simple concept is a model for vastly improved risk management for individuals. Retail organizations can channel the benefits of the risk markets described above to individuals.

Continuous-Workout Mortgages

A new kind of home mortgage that I call a *continuous-workout mortgage* would have terms that are adjusted continuously (in practice probably monthly) in response to evidence about changing ability to pay and changing conditions in the housing market. The mortgage contract would schedule an automatic workout every month—much as is currently done on a one-time-only basis during the mortgage workouts offered to defaulting homeowners. Continuous-workout mortgages would be privately issued, and the government would be involved only in providing appropriate regulation and infrastructure.

One type of continuously adjusted mortgage made its appearance as far back as the high-inflation, high-interest-rate period of the late 1970s to the early 1980s.

The price-level-adjusted mortgage (PLAM) advocated by Franco Modigliani allowed payments to respond monthly to changes in a single economic indicator: the inflation rate as measured by the consumer price index. Today we can do much better than the PLAM, for the consumer price index would be only one of many factors to be taken into account in any mortgage workout.

The continuous-workout mortgage would exemplify the democratization of finance since the benefits of such mortgages would naturally accrue to *everyone*. The workouts would be systematized and automated, so that they would land in the laps of all who could appropriately benefit from them—not just those who were savvy about finding a good lawyer, proactive in asserting their rights, or prone to arousing sympathy as conspicuously needy.

I argued in the last chapter that bailouts of some sort are a necessary part of the subprime solution, to avoid an economic crisis that would destroy public confidence and possibly lead to systemic failure. Unfortunately, such bailouts have a side effect: they encourage moral hazard. People may act irresponsibly because they come to *expect* bailouts. But this side effect is a serious problem only when the bailouts are neither arranged in advance nor freely chosen by all parties. If people pay in advance, in a free market, for the right to a bailout, then it is no

longer a bailout; it is an insurance policy. If it nevertheless encourages undesirable behavior, it is at least undesirable behavior whose costs have been covered.

Continuous-workout mortgages are one way of providing for a “responsible” bailout. These financial devices, set up in advance, would do what bankruptcy courts do on an emergency basis after the fact: they would adjust the terms of a loan to the borrower’s ability to pay. But, unlike bankruptcy proceedings, continuous-workout mortgages operate on an ongoing basis, responding to fluctuations in income as they occur and not allowing problems to build up to crisis level. Think of them as regular checkups and preventive care rather than a sudden trip to the emergency room. Nor do they entail the embarrassment and loss of reputation associated with a bankruptcy. Indeed continuous-workout mortgages continue to function under circumstances that otherwise would trigger a bankruptcy claim, allowing the lender to continue collecting a stream of payments that, while perhaps reduced, is at least uninterrupted.

There remains of course a potential moral hazard with continuous-workout mortgages: a borrower might deliberately lose his job in order to trigger reductions in loan payments or, worse yet, work in the shadow economy and not report any income. Moral hazard is inherent in all

risk management, including insurance and bankruptcy, and risk-management institutions can, with sufficient diligence, reduce it to manageable levels. Dealing with moral hazard is likely to be much more effective if the responses to income loss are planned in advance, rather than as part of an ad hoc bailout, by risk-management institutions that have an incentive to contain moral hazard.

One way to structure continuous-workout mortgages to reduce moral hazard is to write into the loan contract a payment formula that relies not only on the borrower's actual income but also on indicators of the earning ability of others in the same geographic area and occupational category. Under such a plan, a borrower could intentionally reduce her own income, but this would not have much effect on the payment schedule, since she could not influence the other indicators. So-called occupational income indices, if designed properly, could achieve the ideal of loan terms truly dependent on ability to pay while minimizing moral hazard.

Continuous-workout mortgages clearly ought to be a central pillar of any plan to deal with the subprime crisis. The fact that mortgage workouts are now being advocated so strongly, and by people of so many political persuasions, implies that the workouts should be institutionalized,

regularized, and made permanent. Continuous-workout mortgages do just that.

Home Equity Insurance

Decreases in home values can reduce or even eliminate a homeowner's equity, making it difficult or impossible for the owner to refinance with a new mortgage. The homeowner may conclude that it is impossible to move to another home, even if such a move would allow her to take advantage of a lucrative job offer. The mortgage may eventually end in default, especially since the homeowner may decide that it is just not worth struggling to make further payments on a mortgage when she can just walk away from the whole mess.

Home equity insurance contracts can be written on the market values of homes in a metropolitan area, protecting homeowners against declines in the value of their homes within their local markets. Home equity insurance would eliminate the risky, often highly leveraged, position in which so many homeowners find themselves today. Such contracts would go a long way toward preventing many homeowners from ever falling into negative equity positions, thus allowing them to remain in their homes. This in turn would foster the various social

and psychological benefits of homeownership, encouraging the maintenance of neighborhoods and promoting civic participation.

With fire insurance, there is always the moral hazard that a homeowner will deliberately burn down the home in order to collect on the insurance. If we wrote home equity insurance policies directly on the selling prices of homes, then we would have an analogous moral hazard: the homeowner would lose any incentive to maintain the home properly or to negotiate the best price on its sale. Any loss would be incurred by the insurance company. But if the insurance is written on the aggregate value of the homes in a city, rather than on the value of an individual home, then there is no moral hazard.

Home equity insurance would also eliminate the panic selling that sometimes devastates housing values, when owners see home prices starting to fall and decide to bail out. Had such insurance contracts been available in the past, we might not have seen the collapse of home values in major cities undergoing racial change, and the transitions could have been smoother and gentler than the “white flight” that actually occurred—a sort of negative speculative bubble built, in that case, around a racial story. The economic destruction of neighborhoods in such cities as Detroit, Philadelphia, and Washington might have been minimized or perhaps avoided alto-

gether. Had city centers remained vital, industry might have been more inclined to remain in place, further supporting the vitality of the cities.

Home equity insurance has been tried before. The first attempt took place in Oak Park, Illinois, in 1977. An important recent experiment, in the city of Syracuse, New York, was carried out by some of my colleagues at Yale, with the help of the Neighborhood Reinvestment Corporation. This pilot program was innovative in that it was based on a home-price index for the city of Syracuse rather than on the selling price of the individual homes, thereby controlling moral hazard.

The concept of home equity insurance can also be implemented, essentially, through options. The options for single-family home prices now traded at the CME offer a clear route that homeowners can use today to protect themselves against the risk of falling home prices tomorrow. Anyone can buy a put option on home prices at the CME, which acts like an insurance policy that pays off if home prices fall below the strike price of the option.

These put options are available to the general public today, but few avail themselves of them, let alone have any appreciation of the financial theory of risk sharing that lies behind them. Options are widely thought of by the public as financial gimmicks for reckless investors, when in fact they are effective devices for spreading and

canceling risks. But skepticism has always greeted the introduction of new investment vehicles in the retail marketplace, and properly conducted programs of education will eventually allow the general public to understand and benefit from the concepts of real estate options.

Livelihood Insurance

Today, when a middle-aged person loses a steady job, as when an industry shuts down or the demand for that person's services drops, it may lead to a loss of income that becomes a crushing lifetime disaster. Louis Uchitelle, in his 2007 book *The Disposable American: Layoffs and Their Consequences*, discovered that those on whom this misfortune falls are truly suffering—but suffering mostly in silence, out of a sense of shame and of being at fault.

Livelihood insurance would be a significant step toward addressing the consequences of job loss. It would build on another existing risk-management institution: disability insurance. But it would expand its coverage beyond just *medical* risks to take account of *economic* risks to livelihood as well.* When disability insurance was

*Livelihood insurance was proposed, and the concept developed, in Robert J. Shiller, *The New Financial Order: Risk in the 21st Century* (Princeton, N.J.: Princeton University Press, 2003).

invented, the level of information technology was such that medical risks to ability to earn an income were sufficiently measurable and verifiable to allow insurance policies to be written on those risks. But disability insurers of the time had no reliable way of measuring economic effects on an individual's livelihood. Today we have sophisticated econometric indices of livelihoods based on large databases—and these indices can and no doubt will be improved even further over time.

To avoid moral hazard, livelihood insurance cannot of course simply guarantee a specified level of income to the insured, lest that individual stop working and begin living off the insurance settlement. But—in parallel with continuous-workout mortgages and home equity insurance—it ought to be possible to write livelihood insurance policies whose payouts are connected only partly, if at all, to the insured's own income, while still insuring against specific risks to that income. Occupational income indices appropriate to an individual's line of work could be used to define an insured loss without inducing moral hazard. If there were markets for occupational income risk, then a private insurer could hedge the risk it was incurring by writing such policies.

The existing disability insurance industry provides a natural infrastructure upon which to build livelihood insurance.

Livelihood insurance might be viewed as a more modern and effective embodiment of the concept of unemployment insurance, a century-old concept. When unemployment insurance was invented in the United Kingdom in 1911, and implemented under the leadership of David Lloyd George, *The Times* of London wrote, “But for the unemployment scheme there is no precedent. It is really a ‘leap in the dark,’ and an uncommonly bold one.” The gamble on the new scheme paid off. Over time unemployment insurance has been copied all over the world, and the entities that provide it have largely been able to keep moral hazard under control. Yet unemployment insurance in its present form never really managed to insure long-term livelihoods effectively.

Given our much-improved information technology and more sophisticated financial theories, we should be able to advance the mission first taken up by the framers of unemployment insurance. Because of the complexity of its implementation, livelihood insurance should probably be offered by private insurance companies, facilitated by the government through regulation, infrastructure, and support of associated public goods, such as education.

“Unemployment Insurance,” *The Times*, May 13, 1911, p. 11.

The subprime crisis coincides with a time of transition for many people into, if not permanent unemployment, then permanent loss of the ability to earn substantial income for the rest of their lives. Livelihood insurance would go a long way toward mitigating the effects of such a trend. This time of crisis—when millions stand to undergo transitions to significantly reduced circumstances over their lifetimes—is the ideal time to consider it.

Risk Management versus Risk Avoidance

The adoption of risk-management devices like those discussed above would have fundamental effects. When we lack such devices, we tend to avoid risks in less optimal ways. Risk-avoidance behavior can, for example, have undesirable consequences for our decisions about where we work and live. Unable to insure against the risks inherent in our choice of geographic area, we may tend to choose safe jobs that we think we can never lose. We may elect to work in large metropolitan areas, where a wide variety of job opportunities are available, rather than in small rural communities or towns far from city centers, where the job markets are likely to be more specialized. Thus we tend to be more conventional in our choice of occupations and more dependent on big cities and their suburbs than we may want to be.

Risk-avoidance behavior also has an impact on the behavior of city, regional, and even national governments. Fearing the uncertainties associated with new economic development initiatives, these governments typically choose to play it safe and model themselves along conventional lines. They slavishly imitate other successful entities when they ought to be cultivating their locales as vital centers for specific emerging technologies or industries.

The result of all this avoidance behavior is a depressing uniformity and lack of adventure in our society. People should certainly avoid essential risks—risks to society at large—but not necessarily *insurable* risks, which can be spread out across large segments of the population and thereby blunted. But people tend to avoid both kinds of risks, draining society of much of its creativity and vitality.

**What If? The Combined Effect
of the Elements of a Long-Term Solution**

Imagine our society equipped with a well-established information infrastructure that reached out to all its members; derivative markets for both owner-occupied and commercial real estate; well-developed retail products, like continuous-workout mortgages, home equity

insurance, and livelihood insurance, that facilitate risk management for individuals; and default options that naturally lead people to use risk-management devices intelligently.

The crazily inefficient pricing in the market for owner-occupied homes would come to an end. The exaggerated swings of home prices, reflecting speculative thinking, would be tempered by the market actions of international investors and thus would be far less likely to cause the kind of disruptions we have been seeing in the current subprime crisis. A major source of business instability, fluctuations in real estate investment, would be rationalized.

Our society could look forward to nothing less than more stable markets and, in turn, a more rational economy. We would eventually find ourselves forgetting that the kind of massive financial instability infecting our everyday lives is even a potential problem. Modern finance, applied democratically, can relegate these problems to history just as modern medicine, applied widely, has left us forgetting that epidemics of yellow fever and diphtheria ever raged among us.