How did we get into this mess, and what should we be doing to prevent it from happening again? The past offers some lessons, say two economic historians.
"The one-dollar bill is the most ubiquitous piece of paper in America," writes currency collage artist Mark Wagner, who cuts up thousands of them to create pieces such as I.O.U. (left); his works are collected by dozens of institutions, including the Museum of Modern Art, the Walker Art Center, the Library of Congress, and the Smithsonian Institution. (Mark Wagner, I.O.U., 2008, currency collage on panel; 12 x 16 inches.)

By Philip T. Hoffman and Jean-Laurent Rosenthal

THE PAST AS PROLOGUE

If we are to believe our financial leaders, the current crisis is, as a stunned Alan Greenspan told Congress, a "once in a century credit tsunami"—difficult to anticipate and completely unlike anything in the past. Or as former secretary of the treasury Robert Rubin explained in an interview with the New York Times, "Clearly, there were things wrong. But I don't know of anyone who foresaw a perfect storm, and that's what we've had here."

What strikes economic historians, though, is just how much this crisis resembles past financial collapses. Financial debacles often originate, as this one did, in a combination of an asset boom (in this case, rising housing prices) and a financial innovation (subprime mortgages and mortgage-backed securities such as bonds). Investors add this innovation to their portfolios, thus increasing its price by increasing the demand for it. The rapid price increase then convinces investors to buy more of the high-return and deceptively safe asset, and financial intermediaries strive to boost the supply. With swelling demand and supply, the quality of the asset soon begins to fall as the middlemen (the mortgage originators, asset brokers, and rating agencies) relax their standards for, say, creditworthiness. Meanwhile, investors borrow money to buy up even more of the new asset. At some point so much money is invested in dubious assets that the market inevitably breaks down, and if the collapse is large enough, the bad news cascades through the rest of the credit system and the economy as a whole. The beleaguered actors in the drama then rush for public assistance, saying, in effect, "Who knew?"

In fact, everybody knew—or should have known. Financial crises have repeatedly dotted the history of the United States (and the world), and they show no signs of going away. The U.S. was struck by a crisis originating in the real-estate sector as early as 1837. Real-estate prices had been soaring in the Midwest in the 1830s, and many states began bold plans to improve their road and canal systems. To fund these public works, they borrowed heavily in England in anticipation of higher real-estate taxes. When farm prices fell in 1837, the market for land crashed and 11 states defaulted on their bonds.

And a very close parallel to the current situation can be found in the mortgage crisis that battered the country in the 1890s. The origins of this crisis lay with the opening of the Great Plains to wheat farming. Settlers who wanted to improve or enlarge their farms could try to get credit from their local savings and loan associations, but these entities had limited funds. Furthermore, most households on the frontier were net borrowers, making interest rates relatively high. Western mortgages were thus attractive investments for eastern capitalists, and they created companies that hired loan agents on the Great Plains to find borrowers and make mortgage loans. The capitalists then issued bonds in Europe that were backed by the mortgages. Problems arose when a drought hit, and farmers throughout the Plains defaulted on their loans. The East Coast and European investors suffered the most, because competition among the mortgage companies had led them to drop the requirement that loan agents carefully check on the value of the borrowers’ collateral. Rising real-estate prices, mortgage-backed securities, and competition leading to lax underwriting standards—sound familiar?

Our current predicament began with the spread of the now-infamous adjustable subprime mortgages, more than half of which are now in arrears. These mortgages were repackaged with other, sounder ones and resold at high prices based on a mathematical model whose fundamental flaws we’ll discuss presently. Meanwhile, in the real world, decreasing or even eliminating the required down payment was allowing people with little savings (which frequently correlates with a shaky or nonexistent credit history) into the market. Consequently, more and more homes were being sold to buyers who could only meet their payments if housing values continued to rise while interest rates remained low. With benefit of hindsight it is clear that our real-estate boom depended on both home prices going up at least 10 percent per year for the foreseeable future, and nominal interest rates staying below 5 percent. It does not take a genius to see that these two conditions were unlikely to continue to hold for long. The resulting crash, however, is particularly severe, because the underlying market—for residential housing—involves a very large share of all the wealth in the country, and because the associated credit market dwarfs all the others. At a towering 14 trillion dollars, it is one-third larger than the national debt and accounts for 44 percent of all the outstanding

This poster for an 1885 melodrama depicts a scene familiar to 19th-century Americans—the United States experienced financial panics in 1819, 1837, 1857, 1873, and 1893.
ing private credit in the United States.

Similarly, in the 1930s, the Great Depres-
sion may have begun with a stock-market
crash, but it wreaked such havoc in the
housing and mortgage markets that the
Federal Savings and Loan Insurance Cor-
poration (FSLIC) and the Federal National
Mortgage Association (Fannie Mae) were
formed to ward off any future housing col-
lapses. Since then, it may seem that we have
very high ratings—which the brokers heartily
encouraged, because it made the prices go
up even further.

The only way to lose would be if every-
thing went south at the same time, a
phenomenon called undiversifiable risk. So
the key issue, then, was how to measure
that undiversifiable risk. To do this, finan-
cial firms relied upon data series that are
merely a couple of decades long, or at best
blind to such a mistake? Once again, a look
back provides an explanation. To begin with,
Americans share a belief that technological
change nullifies the past, and in particular
makes the more distant past devoid of
any useful lessons. Second, all of us who
dabble in finance—even if only to save
for retirement—yearn for investments that
provide high returns without risk. Accept-
ing the lessons of the past (and of modern
financial theory) would force us all to realize
that such portfolios are about as feasible as
perpetual-motion machines. Third, regula-
tors in the past few decades have faced
tremendous political pressure not to inter-
vene in financial markets. The real-estate
boom was extremely popular. Republicans
appreciated the expansion of the mortgage
market as an element in constructing the
“ownership society.” Democrats promoted
Fannie Mae and Freddie Mac’s purchase of
securities based on low-income mortgages
as a way to extend access to credit to less-
advantaged groups. Would-be homeowners
favored relaxed lending standards because
it allowed them to enter the housing market
with less of a down payment. Those who
were already homeowners gleefully reduced
their retirement savings, since their houses
were worth so much more. Not only that,
they even practiced a kind of negative
saving by using home-equity credit lines
for big-ticket purchases, including fancy
vacations—using their homes as ATMs,
especially. The construction industry could
not but enjoy the fruits of high housing de-
mand, as did real-estate agents, mortgage
brokers, and local governments, which rely
on property taxes for much of their budgets.
And of course, the financial industry found
the boom highly profitable. A message like
“the higher the rise, the harder the fall” was
clearly not welcome, but that, unfortunately,
was the only message history offered.

Rising real-estate prices, mortgage-backed securities,
and competition leading to lax underwriting standards—
sound familiar?

escaped crises in mortgage markets, but
that is not the case. The savings-and-loan
crisis of the late 1980s as well as severe
regional housing downturns (including one in
the 1990s in Southern California) serve as
reminders that residential real estate may be
the oldest asset market on the planet, but it
still contains an important element of risk.

When they formulated the complex
mathematical models that allowed them to
price mortgage-backed securities, financial
firms ignored this history. The models are
based upon the fundamental observation
that what really matters is the overall trend
in the value of your portfolio, not how the
price of a given asset changes. In other
words, it doesn’t matter what each of your
individual investments does—pork bellies
may go up while soybean futures crash, but
as long as the winners go up by more than
the losers go down, you’ll be fine. The key
is diversification—don’t put all your eggs
in one basket, or all your money into pork
bellies. In this case, the models presumed
that since the bonds backed by subprime
mortgages were really mostly backed by
ordinary mortgages taken out by people
with solid credit histories, the risk was suf-
ficiently diversified that the bonds deserved
stretching back to World War II. It was as if
the past were irrelevant. In a crisis, though,
that can be a fatal mistake. During a crisis,
as we all know today, virtually all private
assets move in the same direction—down.
There are therefore moments of enormous
undiversifiable risk, but they are rare, at most
occurring once every quarter century.

It may seem foolhardy to estimate the
likelihood of such low-frequency events from
such a short history—it’s as if we only relied
on the earthquake record of the Los Angeles
basin over the last 25 years to calculate the
likelihood of the Big One. But that is precise-
ly what financial firms did. The 1985–2005
time series had another drawback as well:
the housing boom began about when the
dot-com bubble burst. The one acted as a
cushion against the other, so homeowners
who hadn’t seriously overinvested in dot-
coms didn’t suffer too badly. After 2003 the
housing and stock markets rose together,
which was further good news. But the short
span of data did not contain instances when
the two markets dropped in tandem, as they
have done recently, and so the financial firms
overlooked this possibility.

Why were all the bright minds of Wall
Street and all our financial regulators so
surviving large losses

For the past 12 months, our attention has
been focused on attenuating the short-term
impact of the crisis. The U.S. and other
governments have enacted large-scale
stimulus packages, spent billions shoring
up shaky balance sheets, and pledged bil-
lions more to reassure individuals that their
bank deposits are safe. These acts have
transformed the financial landscape. The
few surviving large independent investment
banks have morphed into bank holding
companies in order to enjoy the benefits
of backing by the Federal Reserve. In the
commercial banking world, intervention to
salvage institutions battered by large capital
losses has created four truly national banks,
which hold a shockingly large share of all
deposits. Such concentration would have
been unthinkable a mere decade ago, or
even a few months ago. To be sure, the
creation of large national banks is a good
thing for many reasons, among which are
that they can give consumers access to
ATMs across the country, and that they take
advantage of economies of scale in the
information technologies that underpin the
banking business today. Nonetheless, the
absorption of Washington Mutual by J. P.
Morgan Chase and of Wachovia by Wells
Fargo was driven by expediency, rather than
by careful planning for the long-term health
of the American financial system. And as the
recent near-collapse of Citigroup dem-
strates, even big banks can have huge
problems if they are not properly supervised.

These structural changes will have
consequences long after the flow of
government money comes to a halt. What
more—if anything—should be done? An
understanding of the long-term evolution of
financial markets suggests two fundamental
rules that should guide further change: the
mortgage problem must be addressed at
the level of the homeowner, and partial regu-
lation is bad regulation.

The heart of the current financial crisis is
that some homeowners cannot afford the
payments they have contracted to make,
while others find defaulting attractive be-
cause the value of their homes has dropped
well below what they owe. As mortgage
losses mount, banks have to reduce their
ability to make new loans—most banks have
requirements that limit their lending to some
percentage of the firm’s capital. The decline
in bank stocks has aggravated the problem,
forcing banks to hold on to whatever income
they earn simply to meet prudent balance-
sheet requirements. Given that banks have
lost about 40 percent of their overall value, it
is not surprising that credit has been tight.

One can imagine two solutions to this
problem. First, if banks were forced to
hold higher reserves to cover future losses
on risky loans or on investments in exotic
derivative contracts, future crises would be
less severe, because banks would be bet-
ter prepared for them. Such a requirement
would also make nonstandard investments
more costly, because they would require
idling more capital to cover any potential
losses. Banks would therefore have less
incentive to load up on risky bets. However,
there is a problem—in a world of complica-
ed asset portfolios, government regulators
are at a very serious disadvantage in decid-
ing what a prudent reserve ought to be. If
the regulators are too conservative, they
will stifle innovation; if they are too lax, they
invite crises. And in the absence of long
historical data series for guidance, the task
of creating portfolio rules may well smack of
reading tea leaves. (One could, of course,
hire armies of economic historians to put
together the necessary data series, but that
would take years.)

The alternative, which we favor, is to focus
directly on mortgages, and require that
buyers make a minimum down payment and
demonstrate that they have enough income
to service their loan. Such requirements are
not new, but they have never had the force
of law. In the 19th century, it was standard
to limit mortgages to half the value of the
property. With such a high down payment,
an income requirement was unimportant.
When the last real-estate bubble burst in
Los Angeles in the 1990s, it was difficult
to get a loan with less than a 20 percent
down payment. Whether the minimum
down payment now should be 20, 15, or 10
percent is something that can be debated.
If we choose to impose low down pay-
ments, we should tack on income verifica-
tion standards, as is done with conventional
mortgages. We should also make sure
that homeowners cannot take out home
equity loans that would push them beyond
a prudent loan-to-value ratio. A higher down
payment requirement will, of course, freeze
some people out of the market and thus
reduce the demand for owner-occupied
housing, particularly expensive housing.
But it will also cut the likelihood of crises,
by insulating the financial system from
defaults triggered by small price declines.
In any case, it is clear that loans with no
down payment are recipes for disaster. With
down-payment and income-verification rules
in place, homeowners might be putting in
fewer granite countertops, but they wouldn’t
be fretting about their pensions.

Rules about income and down payments
are easy to write, and easy to enforce. Our
long-standing, county-level mortgage-regis-
tration system already keeps track of
all loans backed by a particular piece of
real estate, and we have adequate, if not
perfect, means of assessing both housing
values and income. Of course, the real-
estate and banking sectors may not like
having such rules imposed by legislation.
They may argue that they are moving in this
direction on their own. But one should bear in mind that industry standards of this sort tend to disappear in boom times, leading inexorably to the next crisis. Now is the time to implement such safeguards legislatively, while the chastened banking and real-estate industries’ traditional opposition to public regulation is stilled by their desperate need for government largesse.

**PARTIAL REGULATION IS BAD REGULA-TION**

More broadly, the Federal Reserve should be given authority over all financial actors—not just commercial banks, and not just big entities, but all financial firms. Currently the Fed has a very specific set of mandates that give it clear authority over commercial banks, but little formal power over investment banks or insurance companies, and no hold at all over hedge funds. While its powers over investment banks and insurance companies have expanded in the current crisis, the financial sector has balked at giving it authority over hedge funds.

The Fed’s shackles have historical roots. The Federal Reserve system was created in response to the Panic of 1907, when the discovery of stock-market shenanigans led to runs on many commercial banks. The United States had no central bank, so a group of private financiers led by J. P. Morgan wound up pledging tens of millions of dollars of their own money to stabilize the system. Yet even after this crisis the idea of a central bank was regarded with deep suspicion in many quarters, so in a compromise the Federal Reserve was created to monitor and provide liquidity to commercial banks across the U.S., while ignoring investment banks and allowing states to maintain their authority over other businesses, such as savings and loans and insurance companies.

Although the Federal Reserve’s role has grown in recent decades, as banks have become truly national for the first time in our history, its purview is still limited by other federal agencies such as the Federal Deposit Insurance Corporation and the Securities and Exchange Commission, and its ability to regulate many financial actors remains at best indirect. Since it has no authority over hedge funds or insurance companies, in theory it has no obligation to help them out when they get into trouble. The founding philosophy was that if such a firm should fail, tough luck—that’s the investors’ problem. However, the current crisis has taught us that we don’t believe in tough luck. The argument will no doubt be made that giving the Fed such oversight will stifle innovation, and it may well be true that innovation in financial markets might be slowed by more stringent regulation. On the other hand, for political and practical reasons the Fed cannot let big firms that are independent of its authority fail. Implicitly, these firms are getting the benefits of possible Fed assistance in the future. That can make them take undue risks, leaving taxpayers with the bill. They therefore have to submit to regulation by the Fed.

Leaving aside the political pressures that can be exerted to have the Fed save a huge hedge fund such as Long Term Capital Management, or an insurance company such as AIG, there are also practical reasons for allowing the Fed to take on such rescue operations. The first is that these institutions are enmeshed in a web of contracts with the firms that the Fed regulates. As the failure of Lehman Brothers shows, the collapse of one of these firms can have dramatic effects on the rest of the financial system; letting AIG fail would have led to even worse consequences. The problem is not simply that some firms are too big to fail. Rather, it is that if any segment of the financial market gets out of control, it can send shock waves throughout the system, even when the firms in crisis are small. The subprime mortgage market, after all, was only about 10 percent of the value of all mortgages and only 20 percent of the new mortgages in 2006, but its demise has triggered real estate’s worse crisis in 80 years. Thus no big firm can stand outside the Fed’s purview, and no large segment of the financial market can escape its authority.

If we do let one part of the market escape the Fed’s regulation, all sorts of problems can arise. Consider how banks reacted to competition from unregulated hedge funds. As the hedge funds raked up large returns with their new financial techniques, traditional banks faced a drain of clients and talent that migrated to the innovators. The banks lobbied for some mechanism that would stanch the flow, and a solution was found by allowing them to hold much of their high-risk activities in Special Investment Vehicles, essentially dummy corporations, so as to keep them off their books—and thus outside the scope of regulators, and beyond the ken of most investors. When the subprime problem surfaced, some of the banks had to bring this activity back onto their balance sheets, shocking investors with huge losses. Had the playing field been level, no such sleight of hand would have occurred.

**IT’S HARD TO MAKE PREDICTIONS, ESPECIALLY ABOUT THE FUTURE**

Requiring down payments on mortgages and giving the Federal Reserve authority over the entire financial system will reduce the damage crises do, but these two measures will not eliminate crises altogether.
Financial markets have the very difficult task of directing resources towards high-return investments while diversifying risk. Without a crystal ball, investors have to guess about the future, and sometimes they will be wrong.

Nevertheless, our two rules should be adopted now, for we know that this will not be the last crisis to hit, and for the moment we have a coalition that is eager for reform. Now is the time to design financial markets to be robust—not just in regard to the history of the last couple of decades, but to a very broad set of events. We should assess risks not just with short sets of recent data but with evidence from the past.

These difficult times are also ushering in complex transformations in our households and in our international relationships. The days when Americans could believe that long-run prosperity was compatible with a personal savings rate near zero are now over. From the mid-1980s to the present, we enjoyed unprecedented run-ups in stock prices, and then in housing values, that created personal wealth with little or no effort on our part. We should not expect such good luck in the future. Given the increasingly large fraction of the population that is elderly, an increase in Social Security benefits is unlikely. If Americans want to retire comfortably, they will have to save.

In part because this is an election year, the crisis has been managed largely as a domestic problem. However, it is international, and will continue to affect the whole world. A latent fuel to the credit boom that moved us to this crisis was the world’s willingness to lend us money, including the billions of dollars that China had amassed in foreign-exchange reserves and the large stakes that many foreign banks had taken in our mortgage market. While increasing our savings rates may wean us from a habit of foreign borrowing that is even more dangerous than our dependence on foreign oil, it will not change the fact that the financial market is global. Venice, Paris, and London have all been the centers of the financial world, only to be supplanted after various crises rocked them. If we want New York to remain the world’s preeminent financial center, we must insure that our financial house is in order.

Philip T. Hoffman, an Axline Professor of Business Economics and professor of history, earned his PhD from Yale in 1979, and arrived at Caltech as a lecturer in 1980. His highly collaborative research applies the tools of the social sciences to track long-term historical changes in politics, societies, and their economies to try to understand why some countries grow rich, while others remain mired in abject poverty. This includes studying the evolution of financial institutions such as stock exchanges and their effect on economic growth, and also such broader questions as why the West managed to conquer the rest of the world. (His December 2006 Watson lecture on this subject is available on the Caltech Streaming Theater website.)

Jean-Laurent Rosenthal is the other Axline Professor of Business Economics and the Executive Officer for the Social Sciences. He earned his PhD with Hoffman in 1988, and his research also focuses on the interaction between institutions and economic growth. He, Hoffman, and Gilles Postel-Vinay of the Laboratory of Applied Economics at the Institut National de la Recherche Agronomique (the National Institute for Agricultural Research) in Paris, France, have studied the growth of mortgage markets from the 17th to the end of the 19th century in France. Rosenthal, Thomas Piketty of the Paris School of Economics, and Postel-Vinay are working on a large-scale data-collection project to document the evolution of the distribution of wealth in France from 1800 to the present.


This article was edited by Douglas L. Smith.

Hoffman (left) and Rosenthal (right).