"If you wonder how it could be possible for a subprime mortgage loan to bring the global financial system and the U.S. economy to its knees, you should read this book. No one is better qualified to provide this insight and advice than Mark Zandi."
— **Larry Kudlow,** Host, CNBC's *Kudlow & Company*

FINANCIAL SHOCK

A 360° Look at the Subprime Mortgage Implosion, and How to Avoid the Next Financial Crisis

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Introduction

"If it's growing like a weed, it's probably a weed." So I was once told by the CEO of a major financial institution. He was talking about the credit card business in the mid-1990s, a time when lenders were mailing out new cards with abandon and cardholders were piling up huge debts. He was worried, and correctly so. Debt-swollen households were soon filing for bankruptcy at a record rate, contributing to the financial crisis that ultimately culminated in the collapse of mega-hedge fund Long-Term Capital Management. The CEO's bank didn't survive.

A decade later the world was engulfed by an even more severe financial crisis. This time the weed was the subprime mortgage: a loan to someone with a less-than-perfect credit history.

Financial crises are disconcerting events. At first they seem impenetrable, even as their damage undeniably grows and becomes increasingly widespread. Behind the confusion often lie esoteric and complicated financial institutions and instruments: program-trading during the 1987 stock market crash; junk corporate bonds in the savings & loan debacle in the early 1990s; the Thai baht and Russian bonds in the late 1990s; and the technology-stock bust at the turn of the millennium.

Yet the genesis of the subprime financial shock has been even more baffling than past crises. Lending money to American homebuyers had been one of the least risky and most profitable businesses a bank could engage in for nearly a century. How could so many mortgages have gone bad? And even if they did, how could even a couple of trillion dollars in bad loans come so close to derailing a global financial system that is valued in the hundreds of trillions?

Adding to the puzzlement is the complexity of the financial institutions and securities involved in the subprime financial shock. What are subprime, Alt-A, and jumbo IO mortgages, asset-backed securities, CDOs, CPDOs, CDSs, and SIVs? How did this mélange of acronyms lead to plunging house prices, soaring foreclosures, wobbling stock markets, inflation, and recession? Who or what is to blame?

The reality is that there is plenty of blame to go around. A financial calamity of this magnitude could not have taken root without a great many hands tilling the soil and planting the seeds. Among the elements that fed the crisis were a rapidly evolving financial system, an eroding sense of responsibility in the lending process among both lenders and borrowers, the explosive growth of new, emerging economies amassing cash for their low-cost goods, lax oversight by policymakers skeptical of market regulation, incorrect ratings, and of course, what economists call the "animal spirits" of investors and entrepreneurs.

America's financial system has long been the envy of the world. It is incredibly efficient at investing the nation's savings—so efficient, in fact, that although our savings are meager by world standards, they bring returns greater than those nations that save many times more. So it wasn't surprising when Wall Street engineers devised a new and ingenious way for global money managers to finance ordinary Americans buying homes: Bundle the mortgages and sell them as securities. Henceforth, when the average family in Anytown, U.S.A. wrote a monthly mortgage check, the cash would become part of a money machine as sophisticated as anything ever designed in any of the world's financial capitals.

But the machine didn't work as so carefully planned. First it spun out of control—turning U.S. housing markets white-hot—then it broke, its financial nuts and bolts seizing up while springs and wires flew out, spreading damage in all directions.

What went wrong? First and foremost, the risks inherent in mortgage lending became so widely dispersed that no one was forced to worry about the quality of any single loan. As shaky mortgages were combined, diluting any problems into a larger pool, the incentive for responsibility was undermined. At every point in the financial system, there was a belief that someone—*someone else*—would catch mistakes and preserve the integrity of the process. The mortgage lender counted on the Wall Street investment banker who counted on the regulator or the ratings analyst, who had assumed global investors were doing their own due diligence. As the process went badly awry, everybody assumed someone else was in control. No one was.

Global investors weren't cognizant of the true risks of the securities they had bought from Wall Street. Investors were awash in cash because global central bankers had opened the money spigots wide in the wake of the dotcom bust, 9/11, and the invasion of Iraq. The stunning economic ascent of China, which had forced prices lower for so many manufactured goods, also had central bankers focused on fighting deflation, which meant keeping interest rates low for a long time. A ballooning U.S. trade deficit, driven by a strong dollar and America's appetite for cheap imports, was also sending a flood of dollars overseas.

The recipients of all those dollars needed some place to put them. At first, U.S. Treasury bonds seemed an easy choice; they were safe and liquid, even if they didn't pay much in interest. But after accumulating hundreds of billions of dollars in low-yielding Treasuries, investors began to worry less about safety and more about returns. Wall Street's new designer mortgage securities appeared on the surface to be an attractive alternative. Investors were told they were safe—at most a step or two riskier than a U.S. Treasury bond but offered significantly higher returns—which itself should have served as a warning signal to investors. But with more and more U.S. dollars to invest, the quest for higher returns became more concerted and investors warmed to increasingly sophisticated and complex mortgage and corporate securities, indifferent to the risks that they were taking.

The financial world was stunned when U.S. homeowners began defaulting on their mortgages in record numbers. Some likened it to the mid-1980s, when a boom in loans to Latin American nations (financed largely with Middle Eastern oil wealth) went bust. That financial crisis had taken more than a decade to sort through. Few thought that subprime mortgages from across the U.S. could have so much in common with those third-world loans of yesteryear.

Still more disconcerting was the notion that the subprime mortgage losses meant investors had badly misjudged the level of risk in all their investments. The mortgage crisis crystallized what had long been troubling many in the financial markets; assets of all types were overvalued, from Chinese stocks to Las Vegas condominiums. The subprime meltdown began a top-to-bottom reevaluation of the risks inherent in financial markets, and thus a repricing of all investments, from stocks to insurance. That process would affect every aspect of economic life, from the cost of starting a business to the value of retirees' pensions, for years to come.

Policymakers and regulators had an unappreciated sense of the flaws in the financial system, and those few who felt something was amiss lacked the authority to do anything about it. A deregulatory zeal had overtaken the federal government, including the Federal Reserve, the nation's key regulator. The legal and regulatory fetters that had been placed on financial institutions since the Great Depression had been broken. There was a new faith that market forces would impose discipline; lenders didn't need regulators telling them what loans to make or not make. Newly designed global capital standards and the credit rating agencies would substitute for the discipline of the regulators.

Even after mortgage loans started going bad en masse, the confusing mix of federal and state agencies that made up the nation's regulatory structure had difficulty responding. After regulators finally began to speak up about subprime and the other types of mortgage loans that had spun out of control, such lending was already on its way to extinction. What regulators had to say was all but irrelevant.

Yet even the combination of a flawed financial system, cash-flush global investors and lax regulators could not, by itself, have created the subprime financial shock. The essential final ingredient was hubris: a belief that the ordinary rules of economics and finance no longer applied. Everyone involved—homebuyers, mortgage lenders, builders, regulators, ratings agencies, investment bankers, central bankers—believed they had a better formula, a more accurate model, or would just be luckier than their predecessors. Even the bursting tech stock bubble just a few years earlier seemed to hold no particular lessons for the soaring housing market; this time, the thinking went, things were truly different. Though house prices shot up far faster than household incomes or rents—just as dotcom-era stock prices had left corporate earnings far behind—markets were convinced that houses, for a variety of reasons, weren't like stocks, and so could skyrocket in price without later falling back to earth, as the Dow and NASDAQ had.

Skyrocketing house prices fed many dreams and papered over many ills. Households long locked out of the American dream finally saw a way in. While most were forthright and prudent, too many weren't. Borrowers and lenders implicitly or explicitly conspired to fudge or lie on loan applications, dismissing any moral qualms with the thought that appreciating property values would make it all right in the end. Rising house prices would allow homeowners to refinance again and again, freeing cash while keeping mortgage payments low. That meant more fees for lenders as well. Investment bankers, empowered by surging home values, invented increasingly sophisticated and complex securities that kept the money flowing into ever hotter and faster growing housing markets.

In the end there was far less difference between houses and stocks than the markets thought. In many communities, houses were being traded like stocks, bought and sold purely on speculation that they would continue to go up. Builders also got the arithmetic wrong as they calculated the number of potential buyers for their new homes. Most of the mistakes made in the tech-stock bubble were repeated in the housing bubble—and became painfully obvious in the subsequent bust and crash. The housing market fell into a self-reinforcing vicious cycle as house price declines begat defaults and foreclosures, which begat more house price declines.

It's probably no coincidence that financial crises occur about every ten years. It takes about that long for the collective memory of the previous crisis to fade and confidence to become all pervasive once-again. It's human nature. Future financial shocks are assured.

There were a few naysayers along the way. I take some pride in being one of those, but I was early in expressing my doubts and had lost some credibility by the time the housing market unraveled and the financial shock hit. I certainly also misjudged the scale of what eventually happened. I expected house prices to decline and for Wall Street and investors to take some losses, but I never expected the subprime financial shock to reach the ultimate frenzy that it did. Some on Wall Street and in banks were also visibly uncomfortable as the fury intensified. But it was hard to stand against the tide; too much money was being made, and if you wanted to keep doing business, there was little choice but to hold your nose. As another Wall Street CEO famously said just before the bust, "As long as the music was playing, you had to get up and dance." A few government officials did some public handwringing, but their complaints lacked much force. Perhaps they were hamstrung by their own self-doubts, or perhaps their timing was off. Perhaps history demanded the dramatic and inevitable arrival of the subprime financial shock to finally make the point that it wasn't different this time.

Any full assessment of the subprime fiasco must also consider the role of the credit rating agencies. Critics argue that the methods and practices of these firms contributed to the crisis, by making exotic mortgage securities seem much safer than they ultimately proved to be. Others see a fatal flaw in the agencies' business model, under which the agencies are paid to rate these securities by the issuers of these securities. The global business of rating credit securities is dominated by three firms: Moody's, Standard & Poor's, and Fitch. In 2005, the company I co-founded was purchased by Moody's, and I have been an employee of that firm since then. To avoid any appearance of a conflict of interest, I have no choice but to leave discussion of this facet of the subprime shock to others. The views expressed in this book are mine alone and do not represent those held or endorsed by Moody's. It is also important for you, the reader, to know that my royalties from the book will be donated to a Philadelphia based nonprofit, The Reinvestment Fund (TRF). TRF invests in inner-city projects in the Northeast United States.

Understanding the roots of the subprime financial shock is necessary to better prepare for the next financial crisis. Policymakers must use its lessons to reevaluate the regulatory framework that oversees the financial system. The Federal Reserve should consider whether its hands-off policy toward asset-price bubbles is appropriate. Bankers must build better systems for assessing and managing risk. Investors must prepare for the wild swings in asset prices that are sure to come, and households must relearn the basic financial principles of thrift and portfolio diversification.

The next financial crisis, however, won't likely involve mortgage loans, credit cards, junk bonds, or even those odd-sounding financial securities. The next crisis will be related to our own federal government's daunting fiscal challenges. The U.S. is headed inexorably toward record budget deficits, either measured in total dollars or in proportion to the economy. Global investors are already growing disaffected with U.S. debt, and even the Treasury will have a difficult time finding buyers for all the bonds it will be trying to sell if nothing changes soon. Hopefully, the lessons learned from the subprime financial shock will be the catalyst for facing the tough choices regarding taxes and government spending that we collectively will have to make in the not-too-distant future.

This book isn't filled with juicy financial secrets; it may not even spin a terribly dramatic yarn. It is rather an attempt to make sense of what has been a complex and confusing period, even for a professional economist with 25 years at his craft. I hope you find it organized well enough to come away with a better understanding of what has happened. While nearly every event feels like the most important ever when you are close to it, I'm confident that the subprime financial shock will be judged one of the most significant financial events in our nation's economic history.

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Subprime Précis

Until recent events, few outside the real estate industry had even heard of a subprime mortgage. But this formerly obscure financial vehicle has grabbed its share of attention because of its ravaging effect on the U.S. economy and global financial markets.

Simply defined, a subprime mortgage is just a loan made to someone with a weak or troubled credit history. Historically, it has been a peripheral financial phenomenon, a marginal market involving few lenders and few borrowers. However, subprime home buyers unable to make good on their mortgage payments set off a financial avalanche in 2007 that pushed the United States into a recession and hit major economies around the globe. Financial markets and the economy will ultimately recover, but the subprime financial shock will go down as an inflection point in economic history.

Genesis

The fuse for the subprime financial shock was set early in this decade, following the tech-stock bust, 9/11, and the invasions of Afghanistan and Iraq. With stock markets plunging and the nation in shock after the attack on the World Trade Center, the Federal Reserve Board (the Fed) slashed interest rates. By summer 2003, the federal funds rate—the one rate the Fed controls directly—was at a record low. Fearing that their own economies would slump under the weight of the faltering U.S. economy, other major central banks around the world soon followed the Fed's lead.

In normal times, central bankers worry that lowering interest rates too much might spark inflation. If they worried less this time, a major factor was China. Joining the World Trade Organization in November 2001 not only ratified China's arrival in the global market, but it lowered trade barriers and accelerated a massive shift of global manufacturing to the formerly closed communist mainland. As low-cost Chinese-made goods flooded markets, prices fell nearly everywhere, and inflation seemed a remote concern. Policymakers even worried publicly about deflation, encouraging central banks to push rates to unprecedented lows.

China's explosive growth, driven by manufacturing and exports, boosted global demand for oil and other commodities. Prices surged higher. This pushed up the U.S. trade deficit, as hundreds of billions of dollars flowed overseas to China, the Middle East, Russia, and other commodity-producing nations. Many of these dollars returned to the United States as investments, as Asian and Middle Eastern producers parked their cash in the world's safest, biggest economy. At first they mainly bought U.S. Treasury bonds, which produced a low but safe return. Later, in the quest for higher returns, they expanded to riskier financial instruments, including bonds backed by subprime mortgages.

Frenzied Innovation

The two factors of extraordinarily low interest rates and surging global investor demand combined with the growth of Internet technology to produce a period of intense financial innovation. Designing new ways to invest had long been a Wall Street specialty: Since the 1970s, bankers and traders had regularly unveiled new futures, options, and derivatives on government and corporate debt—even bonds backed by residential mortgage payments. But now the financial innovation machine went into high gear. Wall Street produced a blizzard of increasingly complex new securities.

These included bonds based on pools of mortgages, auto loans, credit card debt, and commercial bank loans, sliced and sorted according to their presumed levels of risk. Sometimes these securities were resliced and rebundled yet again or packaged into risk-swapping agreements whose terms remained arcane to all but their authors.

Yet the underlying structure had a basic theme. Financial engineers start with a simple credit agreement, such as a home mortgage or a credit card. Not so long ago, such arrangements were indeed simple, involving an individual borrower and a single lender. The bank loaned you money to buy a house or a car, and you paid back the bank over time. This changed when Wall Street bankers realized that many individual mortgages or other loans could be tied together and "securitized"—transformed from a simple debt agreement into a security that could be traded, just as with other bonds and stocks, among investors worldwide.

Now a monthly mortgage payment no longer made a simple trip from a homeowner's checking account to the bank. Instead, it was pooled with hundreds of other individual mortgage payments, forming a cash stream that flowed to the investors who owned the new mortgage-backed bonds. The originator of the loan—a bank, a mortgage broker, or whoever—might still collect the cash and handle the paperwork, but it was otherwise out of the picture.

With mortgages or consumer loans now bundled as tradable securities, Wall Street's second idea was to slice them up so they carried different levels of risk. Instead of pooling all the returns from a given bundle of mortgages, for example, securities were tailored so that investors could receive payments based on how much risk they were willing to take. Those seeking a safe investment were paid first, but at a lower rate of return. Those willing to gamble most were paid last but earned a substantially higher return. At least, that was how it worked in theory.

By mid-decade, such financial innovation was in full frenzy. Any asset with a cash flow seemed to qualify for such slice-and-dice treatment. Residential mortgage loans, merger-and-acquisition financing, and even tolls generated by public bridges and highways were securitized in this way. As designing, packaging, and reselling such newfangled investments became a major source of profit for Wall Street, bankers and salesmen successfully marketed them to investors from Perth to Peoria.

The benefits of securitization were substantial. In the old days, credit could be limited by local lenders' size or willingness to take risks. A homeowner or business might have trouble getting a loan simply because the local bank's balance sheet was fully subscribed. But with securitization, lenders could originate loans, resell them to investors, and use the proceeds to make more loans. As long as there were willing investors anywhere in the world, the credit tap could never run dry.

On the other side, securitization gave global investors a much broader array of potential assets and let them precisely calibrate the amount of risk in their portfolios. Government regulators and policymakers also liked securitization because it appeared to spread risk broadly, which made a financial crisis less likely. Or so they thought.

Awash in funds from growing world trade, global investors gobbled up the new securities. Reassured by Wall Street, many believed they could successfully manage their risks while collecting healthy returns. Yet as investors flocked to this market, their returns grew smaller relative to the risks they took. Just as at any bazaar or auction, the more buyers crowd in, the less likely they are to find a bargain. The more investors there were seeking high yields, the more those yields fell. Eventually, a high-risk security—say, a bond issued by the government of Venezuela, or a subprime mortgage loan—brought barely more than a U.S. Treasury bond or a mortgage insured by Fannie Mae.

Starved for greater returns, investors began using an old financial trick for turning small profits into large ones: leverage—that is, investing with borrowed money. With interest rates low all around the world, they could borrow cheaply and thus magnify returns many times over. Investors could also sell insurance to each other, collecting premiums in exchange for a promise to cover the losses on any securities that went bad. Because that seemed a remote possibility, such insurance seemed like an easy way to make extra money.

As time went on, the market for these new securities became increasingly esoteric. Derivatives such as collateralized debt obligations, or CDOs, were particularly attractive. A CDO is a bondlike security whose cash flow is derived from other bonds, which, in turn, might be backed by mortgages or other loans. Evaluating the risk of such instruments was difficult, if not impossible; yet investors took comfort in the high ratings given by analysts at the ratings agencies, who presumably were in the know. To further allay any worries, investors could even buy insurance on the securities.

Housing Boom

Global investors were particularly enamored of securities backed by U.S. residential mortgage loans. American homeowners were historically reliable, paying on their mortgages even in tough economic times. Certainly, some cities or regions had seen falling house prices and rising mortgage defaults, but these were rare. Indeed, since the Great Depression, house prices nationwide had not declined in a single year. And U.S. housing produced trillions of dollars in mortgage loans, a huge source of assets to securitize.

With funds pouring into mortgage-related securities, mortgage lenders avidly courted home buyers. Borrowing costs plunged and mortgage credit was increasingly ample. Housing was as affordable as it had been since just after World War II, particularly in areas such as

California and the Northeast, where home ownership had long been a stretch for most renters. First-time home buyers also benefited as the Internet transformed the mortgage industry, cutting transaction costs and boosting competition. New loan products were invented for households that had historically had little access to standard forms of credit, such as mortgages. Borrowers with less than perfect credit history—or no credit history—could now get a loan. Of course, a subprime borrower needed a sizable down payment and a sturdy income—but even that changed quickly.

Home buying took on an added sheen after 9/11, as Americans grew wary of travel, with the hassles of air passenger screening and code-orange alerts. Tourist destinations struggled. Americans were staying home more, and they wanted those homes to be bigger and nicer. Many traded up.

As home sales took off, prices began to rise more quickly, particularly in highly regulated areas of the country. Builders couldn't put up houses quickly enough in California, Florida, and other coastal areas, which had tough zoning restrictions, environmental requirements, and a long and costly permitting process.

The house price gains were modest at first, but they appeared very attractive compared with a still-lagging stock market and the rock-bottom interest rates banks were offering on savings accounts. Home buyers saw a chance to make outsized returns on homes by taking on big mortgages. Besides, interest payments on mortgage loans were tax deductible, and since the mid-1990s, even capital gains on most home sales aren't taxed.

It didn't take long for speculation to infect housing markets. Flippers—housing speculators looking to buy and sell quickly at a large profit—grew active. Churning was especially rampant in condominium, second-home, and vacation-home markets, where a flipper could always rent a unit if it didn't sell quickly. Some of these investors were disingenuous or even fraudulent when applying for loans, telling lenders they planned to live in the units so they could obtain better mortgage terms. Flippers were often facilitated by home builders who turned a blind eye in the rush to meet ever-rising home sales projections.

Speculation extended beyond flippers, however. Nearly all homeowners were caught up in the idea that housing was a great investment, possibly the best they could make. The logic was simple: House prices had risen strongly in the recent past, so they would continue to rise strongly in the future.

Remodeling and renovations surged. By mid-decade, housing markets across much of the country were in a frenzied boom. House sales, construction, and prices were all shattering records. Prices more than doubled in such far-flung places as Providence, Rhode Island; Naples, Florida; Minneapolis, Minnesota; Tucson, Arizona; Salt Lake City, Utah; and Sacramento, California.

The housing boom did bring an important benefit: It jump-started the broader economy out of its early-decade malaise. Not only were millions of jobs created—to build, sell, and finance homes—but homeowners were also measurably wealthier. Indeed, the seeming financial windfall for lower- and middle- American homeowners was arguably unprecedented. The home was by far the largest asset on most households' balance sheet.

Moreover, all this newfound wealth could be readily and cheaply converted into cash. Homeowners became adept at borrowing against the increased equity in their homes, refinancing into larger mortgages, and taking on big home equity lines. This gave the housing boom even more economic importance as the extra cash financed a spending splurge.

Extra spending was precisely what the central bankers at the Federal Reserve had in mind when they were slashing interest rates. After all, the point of adjusting monetary policy is to raise or lower the economy's speed by regulating the flow of credit through the financial system and economy. Nevertheless, by mid-2004, the booming housing market and strong economy convinced policymakers it was time to throttle back by raising rates.

Housing Bust

Signs that the boom was ending appeared in spring 2005, in places such as Boston and San Diego. After several years of surging house prices and nearly a year of rising interest rates, many home buyers simply could no longer afford the outsized mortgages needed to buy. Homes that had been so affordable just a few years earlier were again out of reach.

The frenzy began to cool. Not only did bidding wars among home buyers vanish, but many sellers couldn't get their list prices as the number of properties for sale began to mount. Moreover, many sellers found it extraordinarily painful to cut prices. Flippers feared the loss of their capital, and other homeowners with big mortgages couldn't take less than they needed to pay off their existing mortgage loans. Realtors were loath to advise clients to lower prices, lest they destroy belief in the boom that had powered enormous realty fees and bonuses.

Underwriting Collapses

As they anxiously watched loan-origination volumes top out, mortgage lenders searched for ways to keep the boom going. Adjustable-rate mortgage loans (ARMs) were a particularly attractive way to expand the number of potential home buyers. ARMs allowed for low monthly payments, at least for awhile.

Although borrowers have had access to such loans since the early 1980s, new versions of the ARM came with extraordinarily low initial rates, known as teasers. In most cases, the teaser rate was fixed for two years, after which it quickly adjusted higher, usually every six months, until it matched higher prevailing interest rates. Homeowners who took on these exploding ARM loans are the ones who are now losing their homes the most quickly.

Lenders also began to require smaller down payments. To allow home buyers to avoid paying mortgage insurance (generally required for large loans with low down payments), lenders counseled borrowers to take out second mortgages. For many such borrowers, the amount of the first and second mortgage together equaled the market value of the home, meaning there was no cushion in case that value declined. Moreover, although payments on the second mortgage may have been initially lower than the cost of the insurance, most loans also had adjustable rates, which moved higher as interest rates rose.

Such creative lending worked to support home sales for awhile, but it also further raised house prices. Rising prices together with higher interest rates (thanks to continued Fed tightening) undermined house affordability even more. Growing still more creative—or more desperate—lenders offered loans without requiring borrowers to prove they had sufficient income or savings to meet the payments. Such "stated income" loans had been available in the past, but only to a very few self-employed professionals. Now they went mainstream, picking up a new nickname among mortgage-industry insiders: liars' loans.

By 2006, most subprime borrowers were taking out adjustable-rate loans carrying teaser rates that would reset in two years, potentially setting up the borrowers for a major payment shock. Most of those borrowers had put down little or no money of their own on their homes, meaning they had little to lose. Many had overstated their incomes on the loan documents, often with their lenders' tacit approval. By any traditional standard, such lending would have been viewed as a prescription for financial disaster. But lenders argued that as long as house prices rose, homeowners could build enough home equity to refinance before disaster struck.

For their part, home appraisers were working to ensure that this came true. Typically, their appraisals were based on cursory drive-by inspections and comparisons with nearby homes that had recently been sold or refinanced—in some cases, homes they themselves had appraised. Lenders, meanwhile, were happy to see their subprime borrowers refinance; most subprime loans carried hefty penalties for paying off the mortgage early, and that meant more fee income for lenders.

Regulators and Rating Agencies

Federal and state regulators may have been nervous about runaway mortgage lending, but they failed to do much about it. They certainly had reason to worry; their own surveys showed that most mortgage borrowers understood little about the financial obligations they were taking on. Many ARM borrowers did not know their mortgage payments were likely to increase, much less when they would adjust higher or by how much.

Meanwhile, hamstrung government regulators couldn't keep up with lenders who were constantly devising ways to elude oversight. Some of the most egregious lending was done not by traditional mortgage lenders, such as commercial banks and savings and loans, but by real estate investment trusts (REITs). The Securities and Exchange Commission (SEC), the agency that regulates stock and bond sales, also regulates REITs. Yet the SEC was focused on insider trading at the time, not predatory mortgage lending. An even more important factor was a philosophical distaste for regulation that seemed to pervade the Federal Reserve, the nation's most important banking regulator. Without Fed leadership, the agencies that monitor smaller corners of the banking system, such as the Office of the Comptroller of the Currency, the Federal Deposit Insurance Corporation, and Office of Thrift Supervision, were deterred from taking action. State regulators also had a say, but they were no match for a globally wired financial industry.

Regulators' reluctance to intervene in the mortgage market may have also been based on their trust in the acumen of the rating agencies. These companies provide opinions about the creditworthiness of securities and are paid by the issuers of these securities. Global banking regulators had only recently given the agencies' opinions a quasi-official status, by making their opinions count toward determining whether banks had an appropriate amount of capital to safeguard depositors. The rating agencies were also the only institutions outside of the mortgage or banking business with enough data and information to make an informed judgment about the securities' safety. If the agencies gave them an A-rating (meaning that they saw very little chance of default), regulators weren't going to argue.

Yet the rating agencies badly misjudged the risks. Poor-quality data and information led to serious miscalculations. The agencies were not required to check what the originators or servicers of the mortgage loans told them, and this information was increasingly misleading. The agencies also had the difficult task of developing models to evaluate the risk of newfangled loan schemes that had never been through a housing slump or economic recession. Without that experience, the models were not up to the task they were asked to perform. The ratings were supposed to account for the range of things that could go wrong, from rising unemployment to falling house prices, but what went wrong was much worse than they had anticipated.

Delusional Home Builders

Despite the developing stress lines, home builders retained their congenital optimism about the housing market. Most could afford it; they still had plenty of cash and bank lines built up during the boom. So they kept on building, putting up a record number of homes through summer 2006. The home-building industry had been transformed during the previous decade, as large, publicly traded firms took market share away from smaller, privately held builders. The big builders now did most of the construction in the largest markets. Observers thought this would mean more disciplined building; the large builders would have better market information, and shareholders would demand that builders pull back at the first sign of weakness. That, too, turned out to be a delusion.

The big publicly held builders and their stockholders showed no such discipline. They ignored the weakening market, putting more shovels into the ground and projecting future sales growth to keep their stock prices up. When challenged by investment analysts or reporters, construction executives proffered theories about why the housing market would remain strong. Some said lots of immigrants were coming to the U.S. and would keep buying no matter what; unfortunately, after 9/11, there were fewer immigrants. There were also variations on the old saw about land—that they're not making more of it. True, in some places developable land was in increasingly short supply; many beachside resorts are short on spare lots. But, of course, developers don't need much vacant land to put up a condo tower, which were sprouting skyward along much of the nation's coasts.

Undaunted, some builders even established their own mortgage lending affiliates to ensure that credit kept flowing even if traditional lenders became skittish. These affiliates were particularly aggressive, even offering down payments to buyers as gifts. (They recouped the cost in a higher house price.) And if that still failed to entice purchasers, the builders could offer a marble counter top, a bigger deck, or a built-out basement to close a deal. Yet despite all their efforts, as spring 2006 turned to summer, fewer deals closed and cancellations ballooned.

Lenders Cave

Eventually, the mortgage lenders caved. With housing affordability collapsing, there was no longer a way to squeeze marginal home buyers into mortgages—at least, not without some disingenuous slight of hand. Not only was it tough to make a new loan, but a growing number of recent borrowers, mostly flippers, weren't even making their first few mortgage payments. Even though the lenders didn't own the loans (they had already been sold for securitization), the terms of those deals left lenders on the hook for any losses that occurred soon after the sale. This was a modest attempt to dissuade fraud. Now these early-payment defaults became a call to arms for nervous regulators, who finally took action and issued new rules to limit some of the more aggressive types of lending.

As their losses began to mount, some mortgage lenders sold out and found buyers for their businesses in still-confident investment banks. The Wall Street firms calculated that the loan originators' losses would be short term and that they themselves would be well compensated in the long run through the extra securitization business their ownership would bring in. But by the end of 2006, even the investment banks began to lose heart, and loss-plagued loan companies found nobody wanted to buy them. The only recourse for many lenders was bankruptcy and, ultimately, liquidation.

Subprime Shock

Global investors were very slow to notice the mounting troubles in the U.S. housing and mortgage markets. After some volatility early in 2007, when the Chinese stock market briefly stumbled, global stock and bond prices rocketed to new highs. But fissures were developing in some esoteric corners of the financial markets, such as the credit default swap market (a market for insurance contracts on bonds—mostly corporate bonds, but also mortgage-backed bonds), but this meant little to all but the handful of investors who traded in them.

But by late spring, the cracks could no longer be ignored. A string of venerable investment banks, including the now-defunct Bear

Stearns, announced that some of their hedge funds, which had invested aggressively in mortgage-related securities, were hemorrhaging cash and facing failure. Investors weren't prepared for the news. Most global stock, bond, and real estate markets were trading near record highs, reflecting investors' complacent view of the risks involved. As the extent of the financial system's exposure to subprime mortgages came into relief in the following weeks, these same investors began running for the door. By summer 2007, the subprime financial shock was reverberating across the globe.

Some parts of the market for mortgage-backed securities effectively shut down. Bonds backed by the Federal Housing Administration, which is part of the federal government, and Fannie Mae and Freddie Mac, two publicly traded companies created by Congress, continued to be issued. But banks abruptly stopped issuing other mortgage-backed bonds, especially those backed by subprime loans. At the peak of the boom, such bonds had accounted for half of all mortgage originations.

Money Stops Flowing

The mortgage securities market wasn't the only casualty of the subprime shock. Very quickly, global money markets began to suffer as well, thanks to a complex chain of financial links that few outside these markets had noticed or understood previously. Over the course of several years, major U.S. and European money center banks had established so-called structured investment vehicles, or SIVs. These are entities set up to invest in a wide range of assets, including subprime mortgage securities, with money they raise by selling short-term commercial paper. Commercial paper (historically used by businesses to purchase inventory that will soon be sold, or other short-term financing needs) is a mainstay of the money markets because it is regarded as both safe and liquid. Millions of savers who use money markets as an alternative to passbook bank accounts or certificates of deposit are investing in commercial paper, whether they know it or not.

In a time of low interest rates and easy credit, SIVs could easily and cheaply issue short-term commercial paper and use the proceeds to buy longer-term mortgage-backed securities. Now, however, money market funds and other investors began to lose faith in the commercial paper SIVs issued. The SIVs were effectively out of business.

It is a truism to say that financial markets work on trust. Each party to a deal must trust that the other side will honor its commitments. Lenders must trust that their loans will be paid back; investors must trust that they will see a return on their investment. But no market depends more on trust than a money market, in which the transactions are large and are held for short periods of time. Without trust, money markets quickly break down. By late summer 2007, trust in the SIVs had evaporated. Investors shunned their commercial paper, forcing the SIVs to sell their assets at increasingly distressed prices, thus accelerating the downdraft in financial markets generally.

Short-term lending within the global banking system was also disrupted, as a string of banks began to report losses on their mortgage-related holdings. The distress appeared particularly acute in Europe, as several prominent German and British institutions stumbled. But these high-profile affairs were assumed to be just the tip of the iceberg. With U.S. mortgage security holdings so widely dispersed, and with little information about who was suffering losses and to what extent, banks shrank from doing business with each other. Fewer thought it prudent to borrow or lend, and those that would demanded substantially higher interest rates to compensate for the greater risk they now believed existed.

Banking Buckles

Pressure now mounted on the banks. Not only were they struggling to raise funds in money markets and to straighten out their troubled SIVs, but their mortgage holdings also suddenly turned toxic. They couldn't even count their losses because trading had collapsed in the mortgage securities market; thus, pricing their mortgage assets was all but impossible. Banks began feverishly writing down the value of these assets, although it was unclear how large those write-downs should be.

The banks were further hurt as investor angst over mortgage credit quality spilled over into corporate credit, particularly for lower-rated loans and bonds. These "junk" loans and bonds had financed a wave of leveraged corporate buyouts and had been very lucrative for the banks, but they were supposed to be temporary; banks expected to quickly resell them to investors. Now investors stopped buying, so the loans were stuck on the banks' balance sheets. That puts the banks at significant risk if the businesses involved in these leveraged buyouts begin to falter, a growing likelihood in a weakening economy. At the very least, these loans tie up scarce capital—the dollars regulators require banks to set aside in case of credit problems. This impairs the bank's capability to extend credit to other borrowers. A bank's capability to lend depends on how much capital it has; less capital means less lending.

Other parts of the credit market were now feeling the stress, as investors grew wary of all risk. Prices for lower-quality bonds backed by auto and credit card loans fell sharply, as did prices for the commercial mortgage securities used to finance the purchase and construction of office towers, shopping malls, and hotels. Bond issuance declined substantially, with junk corporate bond issuance stalling and even well-performing emerging economies pulling back on the debt they were willing and able to sell.

Bond Insurers at the Brink

Financial guarantors faced especially sharp problems. These institutions sell insurance on bonds, guaranteeing to make investors whole if the bonds ever default. Providing insurance on municipal bonds has long been their principal business; because state and local governments almost never default, it has been very profitable, if a bit dull.

The government agencies that issue municipal bonds, from the Port Authority of New York to the state of California, are willing to insure their bonds only if such insurance costs less than the added interest they would pay with no insurance. The formula normally works because the guarantors have their own top-grade seal of approval, which the pension funds and endowments that invest in risk-free assets such as insured municipal bonds demand.

Now, however, it appeared that the guarantors had undermined their own financial viability by expanding beyond their core municipal insurance sphere of business. In search of bigger profits, the guarantors wrote hundreds of billions of dollars in insurance contracts in the credit default swap market, a market in which investors buy and sell insurance on a wide array of bonds and CDOs. They promised to compensate buyers if their mortgage-related bonds ever defaulted. As the calamity in the housing and mortgage markets unfolded, these payouts began to look as if they would cut deeply into the insurers' capital base.

The rating agencies that rate the bond insurers' debt warned the guarantors to shore up their capital or see their ratings downgraded. Downgrades would almost certainly put the insurers out of business, rendering their insurance worthless. Investors with a mandate to purchase only risk-free assets would have no choice but to sell their insured municipal holdings, at whatever price they could get.

The formerly staid muni market launched into turmoil as the odds of this scenario rose. Rock-solid municipalities found themselves in the unlikely position of having to pay interest rates reserved for only high-risk borrowers. Waves from the subprime financial shock had now engulfed state and local governments.

Liquidity-Squeezed Broker-Dealers

The financial shock hit its apex in spring 2008 when rumors swirled over potential liquidity problems among Wall Street's so-called broker dealers. These are investment firms that buy and sell securities both for customers, and for themselves. They often are highly leveraged, borrowing to make big bets on securities ranging from U.S. Treasury bonds to exotic and risky securities backed by mortgages. When they bet right their profits can be huge—but when they bet wrong, they can end up like Bear Stearns.

Bear Stearns bet big on the residential mortgage market. It not only issued mortgage securities, it had acquired mortgage lending firms that originated the loans that went into those securities. Bear "made a market" in mortgage securities, meaning it would either buy or sell, whichever a customer wanted. It prospered during the housing bubble, but as the housing and mortgage markets collapsed, each of Bear's various business segments soured in turn, and confidence in the firm's viability weakened. Unlike commercial banks that collect funds from depositors, a broker dealer relies on other financial institutions to lend it the money it invests. If those other institutions lose faith and begin withdrawing their money, the broker dealer's only options are bankruptcy, or—as in Bear Stearns' case—selling out.

Over a tumultuous weekend in mid-March, the Federal Reserve engineered the sale of Bear Stearns to J.P. Morgan Chase. The Fed acted out of fear of what a bankruptcy could have meant for the financial system, given Bear's extensive relationships with banks, hedge funds, and other institutions around the world. Policymakers were legitimately worried that the financial system would freeze. To make the deal work, the Fed had agreed to absorb any losses on tens of billions of dollars in risky Bear Stearns securities that J.P. Morgan acquired in its takeover of the failed firm. The Fed also established new sources of cash for these hard-pressed institutions to forestall a similar fate befalling another one.

Recession

The Fed's actions signaled that policymakers, including Congress and Bush Administration were working hard to stem the financial crisis. It was too late for the rattled economy. With the entire financial system hemorrhaging losses, and with every corner of the credit markets in disarray, loans to consumers, businesses, and even state and local governments became scarcer and more costly. Banks aggressively ratcheted up their lending standards; borrowers who normally were considered good credits and could readily get a loan, now could not. Not only was a subprime loan out of the question, but even prime borrowers were struggling to get credit.

Without credit, home sales buckled, and subprime borrowers who had hoped to refinance before their mortgage payments exploded higher could not do so. Foreclosure seemed the only option. Inventories of unsold homes surged and house prices collapsed.

Commercial property markets froze as tighter bank underwriting and problems in the commercial mortgage securities market undermined deals. Just a year earlier, transaction volumes and real estate prices had been at record highs. Now property deals could not be consummated, weighing on commercial real estate prices and impairing developers' ability to finance new projects.

Even small and midsize companies in far-flung businesses completely unrelated to housing or mortgage finance found themselves in tough negotiations, with lenders demanding more stringent and costly terms. Financing investment and hiring was suddenly more difficult.

Previously stalwart stock investors, who had held on admirably through the turmoil in the credit markets, finally capitulated. They began to discount a recession. Financial shares of commercial and investment banks, mortgage insurers, and financial guarantors were crushed. The financial system's problems were daunting when the economy was still growing; with the economy in recession, they were overwhelming. The massive losses investors and insurers had already recognized on their mortgage holdings now seemed inadequate.

Credit is the mother's milk of a well-functioning economy, and with credit no longer flowing freely, the economy stalled. The nation's GDP barely grew at the end of 2007, and unemployment began to rise. A weakening job market mixed with the financial turmoil was too much for households to bear; consumer confidence plunged to lows last seen in the early 1980s when both unemployment and inflation were well into the double-digits. Vehicle sales plunged, and scared consumers reined in their buying. All this made businesses even more nervous, prompting less hiring and more unemployment. The self-reinforcing negative cycle that characterizes recession was now in full swing. The presidential candidates who just a few months earlier were distinguishing themselves by their positions on the Iraq war began debating the merits of fiscal stimulus and a housing bailout.

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