Chapter 4

Things Fall Apart

Walter Bagehot was a giant in the nineteenth-century British financial world. Aside from editing *The Economist* for many years, he wrote extensively about financial crises, most famously in *Lombard Street*, published in 1873. Writing about the great banks of his day, Bagehot complained that they "are imprudent in so carefully concealing the details of their government, and in secluding those details from the risk of discussion." That veil of secrecy was all well and good in prosperous times, he observed, but in a downturn it could become a terrible liability. Suppose, he wrote, that one of the "greater London joint stock banks failed." The result "would be an instant suspicion of the whole system. One *terra incognita* being seen to be faulty, every other *terra incognita* would be suspected." In short, he concluded, "the ruin of one of these great banks would greatly impair the credit of all."

If Bagehot had been alive in 2007, he would have recognized a familiar but deeply unsettling scene: Citigroup, a financial institution with impeccable credentials but an impenetrable balance sheet, was ailing because of mysterious dealings with shadowy SIVs and conduits and a baffling assortment of structured financial products. A big bank was in trouble, and the extent of its problem was not apparent. Other financial institutions came under suspicion; uncertainty and unease roiled the markets.

What happened next was precisely as Bagehot anticipated. The first failures of 2007 set the stage for a collapse of confidence and an evaporation of trust, not merely in the shadow banks but in conventional banks as well. In no time at all, the ordinary bank-to-bank lending that supports global finance collapsed. The reason was simple: the entire financial system was one great *terra incognita*. As one market economist at the doomed firm Lehman Brothers observed late in the summer of 2007, "We are in a minefield. No one knows where the mines are planted." The result was the paralysis of the entire financial system.

That paralysis was a function of not knowing which banks were merely illiquid and which banks were truly insolvent. To have trouble rolling over some debt because of a seizure in the markets was one thing; to be bankrupt was altogether another. In a panic, it's difficult to tell which is which, and absent any clarification, panic can only grow. When that happens, institutions can swiftly slide from illiquid to insolvent, as asset values drop amid countless fire sales.

The only thing that can reliably arrest the descent into fear and terror is a lender of last resort. Bagehot is generally credited with coming up with the idea. He believed that a bank of banks—something like the Bank of England or the Federal Reserve—must step up to the plate and lend to those caught in the crunch. The holders of what he called the "cash reserve" must "advance it most freely for the liabilities of others. They must lend to merchants, to minor bankers, to 'this man and that man,' whenever the security is good." After all, he observed, "in wild periods of alarm, one failure makes many, and the best way to prevent the derivative failures is to arrest the primary failure which causes them." Yet Bagehot was against indiscriminate bailouts: only solvent institutions should be able to gain access to loans, which would be made at penalty rates so as to discourage all but the most desperate. His philosophy has often been distilled to its essence: "Lend freely at a high rate, on good collateral."

Over the course of 2007–8, Bagehot's perceptive diagnosis, along with a deeply flawed version of his prescription, played out dramatically. Panic

struck the markets, uncertainty spread, liquidity evaporated, and central banks around the world threw lifelines to banks large and small and to financial institutions of every stripe. It was a rescue effort on a scale that Bagehot never foresaw. For this crisis, although a textbook case, was bigger, swifter, and more brutal than anything seen before. It was a nineteenth-century panic moving at twenty-first-century speed.

The Minsky Moment

By the spring of 2006, the financial system, with its extraordinary reliance on leverage—and its blind faith that asset prices would only continue to rise—was primed for a breakdown of monumental proportions. Financing increasingly depended on the sort of speculative and Ponzi borrowing that Minsky predicted. Euphoria that began in the housing sector and percolated upward throughout the entire financial system only encouraged further risk taking, and the few skeptics who raised the alarm were not heard. As Minsky himself said of these euphoric moments, "Cassandra-like warnings that nothing basic has changed, that there is a financial breaking point that will lead to a deep depression, are naturally ignored in these circumstances."

And so it was with this boom. Throughout 2006 and into 2007, one of the authors—Nouriel Roubini—warned of the coming collapse, as did a handful of other prescient commentators. In general, their warnings fell on deaf ears, much as Minsky anticipated. Naysayers at the height of a bubble, Minsky observed, "do not have fashionable printouts to prove the validity of their views," and those in the establishment inevitably "ignore arguments drawn from unconventional theory, history, and institutional analysis."

Indeed, by the time a bubble peaks, its participants do more than scorn the skeptics; they proclaim that a new age of prosperity has arrived. The particulars vary from era to era, but the language is the same. On October 15, 1929, the otherwise accomplished economist Irving Fisher announced that having dropped downward from their remarkable highs, "stock prices have reached what looks like a permanently high plateau." Likewise, in December 2005 the somewhat less accomplished (and more subjective) spokesman for the National Association of Realtors, David Lereah, looked at a similar precrash drop and uttered this sage pronouncement: "Home sales are coming down from the mountain peak, but they will level out at a high plateau, a plateau that is higher than previous peaks in the housing cycle."

It seems quaint in retrospect, but what inaugurates a financial crisis is rarely something dramatic or out of the ordinary, merely a leveling off, a movement sideways, and a few unsettling signs. Those arrived in the spring of 2006, as housing starts flattened out, and home prices—which had doubled in real terms over the previous decade—stopped rising. The reason was simple enough: the supply of new homes began to outstrip the demand, and a rise in interest rates made variable-rate mortgages more expensive. Prices leveled off.

At the same time, as in every financial crisis, a "canary in the coal mine" signaled that all was not well: subprime mortgages issued in 2005 and 2006 began to exhibit unusually high rates of delinquent payments. These same mortgages came with features—superlow teaser rates, option ARMs, negative amortization—that depended on refinancing at low rates. But the option of refinancing—particularly for those mortgages that had no down payment and no equity—was available only if home prices kept rising. As a consequence, delinquencies and defaults started to crop up; cracks appeared in the facade.

Still, there was little indication that this was the beginning of a colossal banking crisis. But beginning in late 2006, the shadow banking system became the focus of a slow-motion run that George Bailey himself would have recognized. The hundreds of unregulated nonbank mortgage lenders who had been at the forefront of originating subprime mortgages relied heavily on short-term financing from larger banks. Once subprime mortgages were going into default at accelerating rates, the larger banks refused to renew these lenders' lines of credit. Unable to tap a lender of last resort, the nonbank lenders began to fail, victims of a twenty-first-century bank run.

The first lender to go under was the hilariously misnamed Merit Financial, which had allegedly spent all of fifteen minutes training its loan officers before setting them loose to originate loans with little documention, liar loans, and no-income, no-job NINJA loans. But Merit Financial was not alone. Other nonbank lenders may have kept up professional appearances,

but their lending practices were no less suspect. By the end of 2006, ten institutions had gone bust, and the flow of mortgages through the securitization pipeline began to slow. By end of March 2007, the number of nonbank lenders that had collapsed soared to fifty or more. On April 2 the nation's second-largest subprime lender—New Century Financial—went bankrupt after its funding dried up. At the same time, others who had battened on the business of originating mortgages—thousands of small-time mortgage brokers—went out of business.

Most market commentators claimed that the problem was restricted to one small sector of the financial system. This too often happens as financial crises gather steam: the problem is widely seen as "contained"—in this case, to a handful of reckless mortgage lenders and the loans they made. Federal Reserve chairman Ben Bernanke fell into this trap when he appeared before Congress in May 2007. While he conceded that the subprime market had plenty of problems, he portrayed these troubles as an isolated disease outbreak rather than the beginnings of a pandemic.

Then a London-based company called Markit Group introduced something called the ABX Index, which measured stress in the market for subprime securities. It did so by measuring the prices of a basket of credit default swaps, used to transfer the risk of default on securities derived from subprime home loans. The goal, a company spokesman said, was "visibility and transparency." Using the ABX, one could measure the cost of buying insurance—in the form of credit default swaps—against defaults of tranches of mortgage-backed securities and CDOs rated from an abysmal BBB to a supposedly high-grade AAA. Over the course of 2007, the ABX Index went into a free fall, as bottom-of-the-barrel tranches lost upwards of 80 percent of their value. Even the safest AAA tranches lost 10 percent by July 2007.

The fall in the ABX Index revealed that something was going horribly awry. Worse, the ABX figures made all the shadow banks look at their assets and recalculate the value of the securities they held. Collateralized debt obligations that had been worth one hundred cents on the dollar sustained enormous losses, leaving financial institutions with fewer assets relative to their outstanding liabilities. Faced with dwindling reserves, both the traditional and the shadow banks began to hoard cash, refusing to lend on the basis of collateral that looked more dubious by the day.

A sudden aversion to risk, a sudden desire to dismantle the pyramids of leverage on which profits have until so recently depended, is the key turning point in a financial crisis. In earlier times, it was called "discredit" or "revulsion"; more recently it has been called a "Minsky moment." By late spring of 2007, that moment had definitely arrived.

The Unraveling

Hedge funds may not look like banks, but they operate much as banks do, getting short-term investments from individual and institutional investors as well as short-term repurchase agreements, or repos, from investment banks. Like conventional banks, hedge funds invest their short-term borrowings for the long term. For example, two hedge funds run by Bear Stearns sank billions of short-term loans into highly illiquid subprime CDO tranches.

The collapse of those two funds in the summer of 2007 portended the fate not only of hundreds of other hedge funds but of the shadow banking system as a whole. Like many players in this system, these two funds were virtually unregulated but highly leveraged; the riskiest had a debt-to-equity ratio of twenty to one. As the ABX Index revealed the market's growing belief that subprime CDOs might lose much if not most of their value, these two hedge funds started to suffer major losses.

At that point the banks that had lent billions to the two funds made margin calls and threatened to sell the collateral—some AAA CDO tranches—that the two funds had pledged to secure financing. This step was fateful: up until now CDOs and other forms of structured finance had rarely been traded. The ABX Index was merely a proxy for prices, not an actual reflection of the going market price. The hedge fund managers knew that these securities would never fetch their original price; trying to sell them into a panicked market would have revealed that the entire CDO enterprise was, like the fabled emperor, without clothes. Instead, Bear Stearns injected money into the funds. But to no avail: by the summer of 2007, one of the funds had seen 90 percent of the capital put up by the investors of wiped out, while the equity of the more leveraged fund disappeared altogether. Both funds filed

for bankruptcy at the end of July. They were not alone: another hedge fund created by UBS perished under similar circumstances.

These early failures showed how hedge funds could fall victim to the equivalent of a bank run on their assets. Institutional creditors could suddenly refuse to roll over the repo loans, leaving them high and dry. Alternatively, those who'd invested equity—wealthy individuals and the like—could demand their money back, just as depositors used to demand money back from old-fashioned banks like Bailey Bros. Building & Loan. Either way, the result was the same: the short-term financing of the hedge funds could readily disappear, forcing them to shut their doors.

The failure of the first three hedge funds conformed to the classic narrative of a financial crisis. Most crises see a few initial high-profile failures, then a period of unsettling uncertainty, as people try to determine whether the troubles that have befallen once-healthy institutions are part of a larger problem. More often than not a larger problem is emerging, and this crisis was no different: in the two years following the failure of the Bear Stearns and UBS funds, some five hundred hedge funds perished, the victims of a slow-motion bank run. The reason was simple: the creditors of the hedge funds couldn't and didn't know how much exposure individual hedge funds had to the toxic assets. Faced with so much uncertainty, they curtailed credit to all of them.

As panic spread in the spring and summer of 2007, the search for toxic assets began apace. Investors desperately tried to figure out who else was exposed to the subprime mess. Suspicion soon fell on the off-balance-sheet vehicles that investment banks and broker dealers had created during the rush to securitization. They came in two varieties: conduits and SIVs. Both had played essential roles in the securitization frenzy: conduits had served as a holding pen at the beginning of the process, and SIVs served as a dumping ground at the end. Together they held upwards of $800 billion in assets.

Here's how they worked. As investment banks assembled mortgages and other assets, they needed a place to park them. Rather than keeping them on their balance sheets—where they would force the banks to maintain higher levels of reserves relative to the value of the assets—the banks parked them in something called a conduit, a kind of shadowy legal entity that had reserve ratios a tenth the size of ordinary banks'. There they would sit until they were turned into mortgage-backed securities, collateralized debt obligations, and other securities. Conduits depended on financing to keep this process humming along, for which they turned to money market funds, pension funds, and corporate treasurers, who gave the conduits short-term loans using asset-backed commercial paper (ABCP).

Crucially, the loans were short-term, but once again the assets—the subprime mortgages and other forms of debt—were illiquid, long-term instruments. The same dynamic was in play at the other end of the securitization assembly line. Once the investment banks had created the securities, they inevitably encountered a bottleneck: they could not possibly shove all the new structured products down the throats of gullible investors right away. Rather than keep the assets on their balance sheets—and incur capital charges—the investment banks came up with the SIV. The purpose of this off-balance-sheet vehicle was to buy up these securities using money siphoned from the ABCP market. This was a bit like an automaker setting up a shell company to buy up unsold vehicles sitting on dealer lots.

Citigroup, which had some seven separate SIVs holding assets of $100 billion, was one of the first to falter. Just as trouble with one hedge fund sparked a panicky scrutiny of all hedge funds, trouble with one SIV sparked a more general rush for the exits by wary investors. It quickly turned into a rout: in the space of four weeks, investors moved $200 billion out of the ACBP market, and the SIVs and conduits alike had to contend with much higher costs for borrowing money from this market. Even worse, some creditors of the SIVs and conduits refused to lend money at any cost, leaving them unable to continue in their current incarnation.

As things spiraled out of control, the banks that had sponsored the SIVs and conduits found themselves in a delicate position. Originally, in order to entice investors, many of them had promised to use the bank's own liquidity in the event of a crisis, and they had even guaranteed the interest rates and value of the instruments. That put the banks on the hook for any losses. After much kicking and screaming, the banks were forced to bring their SIV exposure back onto their balance sheets, sustaining massive losses in the process.

The worst was yet to come. Beginning in August 2007, a much more severe shock—a full-blown liquidity and credit crunch—seized the financial

markets, culminating in the collapse of Lehman Brothers and bringing the global financial system to the brink of collapse. During that time the remnants of the shadow banking system collapsed, and even the conventional banking system came under assault. The crisis was just beginning.

Fear of the Unknown

Risk, Uncertainty, and Profit, first published in 1921, contains iconoclastic economist Frank H. Knight's now famous distinction between the concepts of *risk* and *uncertainty*. Risk, he argued, can be priced by financial markets because it depends on known distributions of events to which investors assign probabilities—and price things accordingly. Uncertainty, on the other hand, can't be priced: it relates to events, conditions, and possibilities that can't be predicted, measured, or modeled.

To understand this distinction, imagine two men playing a game of Russian roulette. They take a standard revolver with room for six bullets, put a bullet in the chamber, and spin it. Whoever pulls the trigger first has a one-in-six chance of blowing his brains out. That's risk. While the men playing this game may be suicidal idiots, they know the odds. Now imagine that the two men are handed a mystery gun prepared by someone else. The gun could have one bullet; it could have six; or it could have none. It may not even be a real gun; it could fire blanks instead of bullets. The players don't know. That's uncertainty: they have no idea how to assess the risk. The odds of dying are impossible to quantify.

The distinction between risk and uncertainty helps explain the financial markets from late summer 2007 onward. Until the crisis struck, risk could be reduced to the ratings slapped on various securities: some were riskier than others, and the risk could be quantified—or so it seemed. As the housing market crumbled, however, and uncertainty enveloped these securities, the financial system no longer seemed comprehensible, much less predictable. Bad things had already happened, but they paled next to what might happen next. As one journalist with the *Financial Times* put it that August during a radio interview, "It is not the corpses at the surface that are scary; it is the unknown corpses below the surface that may pop up unexpectedly. Nobody knows where the bodies are buried."

By late summer of 2007, the balance sheets of an extraordinary range of financial institutions showed an unpleasant surprise: a diverse handful of hedge funds, banks, conduits, SIVs, and others had been forced to exhume "bodies" by revealing a bewildering array of toxic assets. Where might others lie? And how many were there? No one could know; uncertainty reigned. Estimated losses on subprime mortgages now ranged from $50 billion to $500 billion and beyond.

This development didn't fit the standard expectations or measurements of risk. When two Goldman Sachs hedge funds lost more than a third of their value late that summer, the firm sought to calm investors by claiming that these losses were "twenty-five standard deviation events." This was statistical shorthand for claiming that what had happened should occur only once in a million years. In actuality, the models used to assess risk were flawed; they used preposterous assumptions—home values could only go up!—and relied on data that went back only a few years.

A deeper appreciation of history might have prepared market watchers for what happened next: uncertainty spread, suspicion grew, and longtime bonds of trust frayed. Bagehot captured this dynamic all the way back in 1873, noting that "every day, as a panic grows, this floating suspicion becomes both more intense and more diffused; it attacks more persons; and attacks them all more virulently than at first." When that happens, the money market—the arena where banks borrow and lend surplus cash—seizes up. In Bagehot's day the epicenter of the global money market was Lombard Street, where the most important banks in England had their headquarters.

In 2007 the seizure occurred in a more amorphous international network of financial institutions—not only in London but in New York, Tokyo, and other financial centers. This was the interbank market, where banks and other financial institutions lend their surplus cash to one another. It all takes place in cyberspace, but in a testament to London's enduring place in financial history, the most important rate at which money is lent is known as the London Interbank Offered Rate (LIBOR).

In normal times, the overnight LIBOR—for loans made for the duration of a day—is only a few basis points above the overnight policy rates set

by central banks around the world. The reason for this near convergence is simple: the perceived risk of lending between established banks is only marginally higher than the risk-free lending available from central banks. Similarly, longer-term interbank loans—three-month LIBOR contracts—rarely deviate from rates associated with supersafe investments like three-month Treasury bills.

In August and September 2007 unease was rising. By that time the subprime crisis was in full swing, complete with rising delinquencies and foreclosures. The securitization pipeline clogged as ratings agencies downgraded mortgage lenders and a range of structured products. At the same time, the ABX Index revealed a marked deterioration of confidence in the value of various CDO tranches, while the unraveling of the commercial paper market continued apace. Other ominous portents appeared: stock markets became extraordinarily volatile, and hedge funds that used complicated mathematical strategies to make money off equities suffered enormous losses. Subprime mortgage lenders continued to go under, including giant American Home Mortgage. Credit spreads for corporate firms sharply rose. A run on some money market funds overseen by BNP Paribas only added to the sense that things were going horribly, terribly awry. So did ruptures in the "carry trade," where investors borrowed in low-interest-rate currencies and invested them in high-interest-rate currencies. The crisis was no longer an isolated problem; it was spreading into new and dangerous territory.

As a consequence, the interbank market tightened in August, and the spread between LIBOR and the rates charged by European central banks soared, from 10 basis points to about 70. This was extraordinary, signaling that liquidity in overnight money markets had largely dried up; banks that had previously done business confidently now looked suspiciously at one another's finances, fearful that untold numbers of "bodies" might be lurking on or off the balance sheets. Every bank in Europe and the United States wanted to borrow cash, but no bank would lend it, except at extraordinarily high rates.

Predictably, central banks rode to the rescue—or tried to do so. On August 9 the European Central Bank lent €94.8 billion to some fifty banks; the next day it lent another €61 billion. The Federal Reserve joined the fire brigade as well, lending some $60 billion over the course of two days. Though these infusions helped close the LIBOR spread in the early fall, it widened once more in November and December as bank losses mounted, stock prices plummeted, and panic spread still further. The Federal Reserve cut its rates by 100 basis points that fall, but to no avail. The Fed also made it easier for banks to borrow from its discount window, but there was a stigma associated with doing so. Any bank that needed to go to the Fed for funds might be perceived as weak and on the brink of collapse.

These events followed a familiar pattern. Hard evidence was growing that things were bad and getting worse by the day; it was not a matter of rumor or conjecture. According to the ABX Index, CDO values continued to erode, and even the AAA-rated supersenior tranches were losing value by the day. The ratings agencies, in a rush to compensate for their negligence during the boom years, downgraded the ratings of a range of securities. As for the securitization market, it was effectively frozen. Mortgages and other forms of debt that had served as ingredients in the sausage making of structured finance now accumulated, unused and unwanted.

By the end of 2007, profound uncertainty prevailed. Which banks had bodies buried off their balance sheets? Which hedge funds had placed foolish bets? Who else had invested in subprime CDOs? Unfortunately, it was next to impossible to tell. The financial system was extraordinarily opaque, and much of its activity—credit default swaps, for example—took place outside the purview of regulated exchanges. Increasingly it resembled a vast minefield. A few of the mines had gone off, but most remained buried, waiting for the unsuspecting.

Illiquid and Insolvent

In the late summer of 2007, when the Bank of England first threw a lifeline to British banks, Mervyn King, the governor of that institution, had tough words for insolvent banks begging for a bailout. "We are certainly not going to protect people from unwise lending decisions," he grandly proclaimed.

The subtext was clear: if central banks were going to play their role as lenders of last resort, they would help only the deserving. He was speaking a language that Walter Bagehot would have appreciated. As Bagehot had

counseled, "Any aid to a present bad Bank is the surest mode of preventing the establishment of a future good Bank."

Now as then, the difficulty lies in distinguishing between banks that are merely illiquid (the "good" ones) versus those that are insolvent (the "bad" ones). Or to put it another way, the challenge is to figure out which banks have more assets than liabilities, even if these assets can't readily be converted to cash; and which banks have more liabilities than assets, effectively wiping out the banks' capital and thereby driving them into insolvency.

The problem with teasing out this distinction in the midst of a panic is that financial institutions can readily move from one state to another, depending on, say, the changing value of the assets they hold. This question of valuation was particularly complicated in the recent crisis. Take, for example, the CDOs held by banks and other financial institutions. In the early months of the crisis, the ABX Index implied that the value of CDOs was declining. But that was not the actual market value: it was merely a reflection of the cost of insuring against future defaults. Early on, banks reasonably argued that these implied losses were theoretical, not real: the actual default rates on the underlying mortgages had not yet approached the levels implied by the index.

The thinking was that irrational panic was driving the markets. The banks blamed the losses on market psychology alone, be they the declines implied by the ABX Index or even the real declines in the prices of assets such as stocks. Once investors regained their sanity, it was thought, prices would return to their normal levels. The markets would become more liquid, and the threat of insolvency would subside. At least, that was the theory.

This thinking was naïve. The crisis was never merely a function of illiquidity alone; plenty of insolvency was involved as well. That became apparent when the unthinkable happened: rates of delinquency and of defaults on mortgages started to soar, and the cash stream from these assets collapsed. Hypothetical losses on the "safe" supersenior AAA tranches became real losses, and the value of those assets fell. The value of mortgage-backed securities, collateralized loan obligations, corporate bonds, and municipal bonds fell too.

Even the banks' plain-vanilla assets hemorrhaged: that is, ordinary residential mortgages, commercial mortgages, credit card portfolios, auto loans,

student loans, and other forms of consumer credit. Banks had also made commercial and industrial loans or helped finance leveraged buyouts of firms. All of these loans deteriorated, especially after the United States entered a recession at the end of 2007.

These developments highlighted that a bank's health is a fleeting, impermanent thing. As long as the prices of underlying assets continued to fall, banks in good standing saw their positions deteriorate, bringing them to the brink of insolvency. Of course, they could also collapse if they suffered a run on their liabilities. The shadow banks were clearly vulnerable on this point, given that they lacked deposit insurance. Conventional banks were not—or so the thinking went.

Nonetheless, once the run on the shadow banking system gathered steam, ordinary banks became targets of bank runs for the first time since the 1930s. One of the first to go was Countrywide Bank, the savings arm of Countrywide Financial, the nation's largest mortgage lender. Founded by Angelo Mozilo, the lender had been at the center of the subprime crisis. As conditions worsened, doubts about the firm rose and eventually spilled over to its banking division. In August 2007 depositors rushed branches of Countrywide Bank, clamoring for their money in a way not seen for decades. One retiree waiting in line outside a branch captured the spirit of the panic when he told a reporter, "I'm at the age where I can't afford to take the risk. I'll gladly put it back as soon as I know the storm is over."

Words like these were uttered during panics in Bagehot's time, but to hear them spoken in the twenty-first century was remarkable. Even more extraordinary, bank runs spread around the world. Northern Rock, a sizable British mortgage lender with a banking arm, suffered Countrywide's fate the following month. Like Countrywide, most of its funding came from sources other than ordinary depositors, but that didn't stop its ordinary depositors from lining up outside its branches in mid-September, under the glaring lights of the global media. The Bank of England intervened, offering emergency lines of liquidity, but still the run did not stop. "I don't think the bank will collapse—but we just don't have the nerves," explained one depositor. "I'm taking the money out to get peace of mind."

As the run continued, fears mounted that other well-regulated banks with deposit insurance might suffer runs as well, then spiral from illiquidity

to insolvency. As irrational as these bank runs may have seemed, depositors actually did have reason to worry. Like Countrywide, Northern Rock offered deposit insurance only up to a certain point: $100,000 in the case of Countrywide, and £30,000 in the case of Northern Rock. Plenty of depositors had sums well in excess of these amounts, and should the bank become insolvent—with or without the support of a lender of last resort—they would lose their savings. In fact, in the United States in 2007, some 40 percent of conventional deposits were uninsured. Bank runs, in other words, were rather rational.

The cases of Countrywide and Northern Rock highlighted the difficulties of channeling aid only to "good" banks as opposed to "bad" ones. Banks were well on the road to insolvency, if not there already; by normal standards, they deserved neither lines of liquidity nor additional insurance for depositors. But what sounds good in theory is hard to put into practice during a crisis, when depositors storm banks and the financial system crumbles. The Bank of England's Mervyn King found himself in precisely this awkward position. A month after lecturing the market about letting bad banks fail, he reversed course, promising to insure all of Northern Rock's deposits and offering additional lines of liquidity to the beleaguered bank. That blanket deposit guarantee was soon extended to all banking institutions throughout the United Kingdom. Most other countries eventually followed suit or, at the very least, raised the deposit insurance ceiling.

These interventions were just the beginning, but for a brief period in the winter of 2007 and 2008, some claimed that the crisis was over: the markets seemed to settle down. As any student of crisis economics should have known, this was an illusion. More often than not, crises wane before waxing anew; a period of calm may precede even worse outbreaks of panic and disorder.

The Eye of the Storm

In May 1930 President Herbert Hoover confidently announced that "we have been passing through one of those great economic storms which periodically bring hardship and suffering upon our people. . . . I am convinced

we have now passed through the worst—and with continued unity of effort we shall rapidly recover. There has been no significant bank or industrial failure. That danger, too, is safely behind us." Another day in May seventy-eight years later, Treasury Secretary Henry Paulson confidently announced, "The worst is likely to be behind us," adding a week later that "we are closer to the end of the market turmoil than the beginning."

Both Hoover and Paulson were making the classic error of those caught in a financial hurricane, mistaking the eye of the storm for the end of the crisis. They were hardly the only wise men to make such pronouncements in the midst of a meltdown; every crisis has its share of optimists who at some point declare the worst is over. Interestingly, this kind of optimism is usually genuine; it's not an attempt to jawbone markets but generally reflects a real belief that the storm has passed.

Unfortunately, financial crises usually ebb and flow in their severity; they rarely hit once and then subside. They resemble hurricanes in that they gather strength, weaken for a while, and then gain even more destructive power than before. This reflects the fact that the vulnerabilities that build up in advance of a major crisis are pervasive and systemic. They cannot be cured by the collapse or bailout of a single bank, or even the implosion of an entire swath of the financial sector.

Many crises follow this pattern. For example, in Britain the crisis of 1847 erupted in two distinct stages in April and October of that year; the crisis of 1873 was even more complicated, surfacing and subsiding in Vienna in April, reappearing with a vengeance in the United States that September, and then flattening much of Europe in November. The Great Depression was the most complicated of all, with a blowup on Wall Street, multiple bank runs interspersed with periods of relative calm, and different financial centers around the world erupting in panic at different times over the course of three years.

In the winter of 2007–8, surprisingly, a semblance of calm settled over the markets. As the fall turned to winter, write-downs and losses were reducing the capital of financial institutions to new and dangerous lows. Many banks circled their wagons, lending less, increasing their lending standards, and limiting their exposure to risky assets. Nonetheless, the value of assets continued to fall, while liabilities rose. Regulators in both the United States

and Europe suggested that banks raise more capital to buttress their balance sheets.

Given that the entire financial system was in the same boat, the banks had few places to turn. Their solution was to go hat in hand to sovereign wealth funds, investment vehicles owned by foreign governments in the Middle East and Asia. The prospect of Saudi Arabian and Chinese investors controlling American and European banks was politically untenable, so the recapitalization of the troubled banks took the form of preferred shares. This meant in practice that sovereign wealth funds received only a minority stake, no board membership, and no voting rights.

Citigroup raised $7.5 billion from a fund in Abu Dhabi; UBS got $11 billion from Singapore's fund and a group of private investors from the Middle East. Singapore's fund sank $5 billion into Merrill Lynch, while China sank another $5 billion into Morgan Stanley. In a smaller-scale effort, American private equity firms pumped $3 billion into Washington Mutual and close to $7 billion into Wachovia.

These infusions helped give the illusion that things might be stabilizing. So did the actions of the Federal Reserve. In December the Fed along with other central banks started to provide long-term loans to banks. The Term Auction Facility (TAF), created in coordination with the European Central Bank and the Bank of England, was designed to unclog the interbank lending market by providing longer-term loans to banks. At the time of its creation, interbank loans lasting one, three, and six months had all but dried up, and the spread between LIBOR rates and central bank rates had risen to unprecedented highs.

At first the TAF was successful in reducing stress in the interbank market. One measure of stress—the LIBOR-OIS spread—fell from 110 basis points to below 50. The measure seemed to give the economy some breathing room, and there was hope that the worst had passed. "I'm optimistic about the economy," said President George W. Bush to the press on January 8, 2008. "I like the fundamentals, they look strong." He acknowledged some clouds on the horizon but remained upbeat: "We'll work through this period of time . . . the entrepreneurial spirit is strong."

In fact, the U.S. economy had formally entered a recession the previous month, and the entire financial edifice was on the verge of crumbling. The crisis was about to enter its most dangerous and dramatic stage. Like Hoover's relief that there had been no "significant" failure in the spring of 1930, Bush's conviction that things had stabilized was extraordinarily complacent. The levees were about to break.

The Reckoning

Like the current crisis, the panic of 1825 was a speculative bubble gone horribly awry. That fall a single bank failure eventually triggered a massive run on all the banks. At first the Bank of England did nothing, refusing to intervene. As the crisis spiraled out of control, pressure built for the government to do something—anything. In December 1825 the Bank of England reversed policy and began lending money in new and unconventional ways. The Bank became the lender of last resort to virtually every participant in the financial system. The results, Bagehot recalled, were dramatic. "After a day or two of this treatment, the entire panic subsided, and the 'City' was quite calm."

This narrative—a central bank compelled to adopt extreme, unprecedented measures to arrest the panic—would play out numerous times in the succeeding decades, and 2008 was no exception. In the recent crisis, however, the Federal Reserve and other central banks could not—and did not—immediately bring the crisis under control. One reason was that central banks were in uncharted territory: the size and scope of the meltdown made many of the usual tools useless. Worse, many of the institutions in the deepest trouble—investment banks and other members of the shadow banking system—lacked ready access to the lifelines that had served central bankers so well in previous crises. The central bankers caught in the midst of the crisis would have to improvise, much as their predecessors had done nearly two centuries ago.

In the spring of 2008 the pressure to do something quickly mounted. By then the securitization pipeline had all but shut down, not only for ordinary mortgages but for credit card loans, auto loans, and other consumer credit products. The securitization of corporate loans and leveraged loans

into collateralized loan obligation froze up, a victim of plummeting demand and growing aversion to risk. When the credit markets shut down, banks and investment banks found themselves stuck with the loans, unable to turn them into securities and sell them off. They also found themselves stuck with $300 billion worth of bridge loans that gave temporary financing to private equity funds putting together leveraged buyouts. Banks and broker dealers trying to sell off these loans quickly realized that assets with a par value only a few months earlier were now selling into extremely illiquid markets at a steep discount.

All this was playing out against the backdrop of deterioration in a range of asset classes. The stock market continued to stumble downward, and banks continued to announce write-downs and losses as diverse structured financial products saw their ratings downgraded and their values plummet. Even AAA tranches of CDOs saw their ratings cut, and their prices fell by 10 percent or more. While banks and broker dealers could use accounting tricks to conceal some of the growing losses, structured financial products like CDOs had to be valued at the prevailing market price.

The net result of these declines—in assets both esoteric and conventional—was that banks had to announce write-downs on their asset portfolios. By March 2008 banks around the world announced write-downs of over $260 billion. Citigroup alone took a $40 billion write-down, and other big banks would post comparable figures. Many of those that went public with their losses at this time may not have been insolvent yet, but their days were numbered. Two institutions whose troubles would dominate the headlines in the coming months, AIG and Wachovia, posted write-downs of $30 billion and $47 billion, respectively.

Ordinary commercial banks were suffering, but the investment banks suffered first. Some of them, such as those attached to commercial banks—the units embedded in Citigroup, JPMorgan Chase, and Bank of America—could rely on the support of their parent companies. But the independents—Lehman Brothers, Merrill Lynch, Morgan Stanley, Goldman Sachs, and Bear Stearns—were on their own. Like ordinary banks, they borrowed short and lent long, but they did not have access to a lender of last resort, and their creditors could not rely on deposit insurance if things went awry. Worse,

being less regulated, they tended to be much more leveraged. They were also highly dependent on short-term financing in the repo market.

None of the independent broker dealers would remain by the end of the year. The first to go was Bear Stearns in March 2008. Like its counterparts, it had been a big player in running CDO assembly lines, and it had kept plenty of now-toxic securities on its books. Losses mounted in the fall and winter of 2007 as the value of CDOs—particularly AAA tranches—eroded. There was a growing sense of clarity in the market: Bear Stearns was in trouble, and like the depositors who withdrew their money from Countrywide, Northern Rock, and other banks, the hedge funds borrowing from Bear Stearns and other firms lending funds to the ailing investment bank pulled their money. On March 13 the besieged bank reported that 88 percent of its liquid assets were gone, the result of creditors' refusing to roll over short-term financing. Bear Stearns was moribund, and over a frantic weekend the legendary firm was summarily sold off to JPMorgan Chase. The Federal Reserve intervened heavily, facilitating the sale and agreeing to assume most of the future losses tied to the former firm's toxic assets.

The Federal Reserve's move was not a full bailout; Bear Stearns's shareholders were effectively wiped out. But its creditors and counterparties were fully bailed out. Instead, the Fed made a classic central bank move, as if following Bagehot's admonition to rescue the bank whose failure threatents otherwise solvent banks. In Bear Stearns's case, it deemed such intervention necessary: the firm had been a big player in selling credit default swaps against a variety of risky assets held by other banks and investors. Its collapse would have nullified those insurance contracts, potentially triggering "derivative failures" throughout the global financial system.

But the Federal Reserve was not finished intervening. Much as the Bank of England had used swaps in 1825, the Federal Reserve began exchanging liquid, safe short-term Treasury bills for the more illiquid assets that were weighing down the balance sheets of the investment banks. This lending facility (which we will discuss in chapter 6) helped the banks contain the illiquidity trap that the panic created. So did the Federal Reserve's subsequent creation of another lending facility that gave investment banks like Goldman Sachs and Morgan Stanley access to lender-of-last-resort support.

This was a radical break with past precedent: for the first time in decades, the government had opted to provide such support to key members of the shadow banking system.

The creation of the two new lending facilities reduced but did not eliminate the risk that the broker dealers would suffer a run. For starters, the broker dealers did not have access to deposit insurance, arguably the strongest shelter against a bank run. Moreover, their access to the lender-of-last-resort support of the Federal Reserve was conditional and limited. If a broker dealer was truly insolvent, the Federal Reserve would refuse to ride to the rescue. Or so prudent central banking practice would dictate. That almost guaranteed there would be some more high-profile failures.

At the same time, the bailout of Bear Stearns seemed to indicate that the Federal Reserve was unwilling to stand on the sidelines if the failure of a financial institution would sow panic on a global scale. Bear Stearns was but the smallest of the independent broker dealers; surely, the reasoning went, the Federal Reserve would step in to save a bigger victim if doing so would stop the crisis from spreading further. Allowing such a failure would risk a meltdown of the entire global financial system.

Both views had merit. Unfortunately, both turned out to be correct. What happened in the succeeding months sent contradictory messages about whether the Federal Reserve would hold the line on moral hazard.

The Center Cannot Hold

Whenever the narrative of a financial crisis is dominated by a high-profile failure, there's a temptation to see the entire crisis through the prism of that one event, as if all that came before and after can be reduced to a specific inflection point. In the recent crisis, the failure of Lehman Brothers played this role: many market watchers are convinced that it, more than anything else, was responsible for turning the American crisis into a worldwide conflagration.

This interpretation is understandable: reducing a crisis to one spectacular failure simplifies an extraordinarily complex chain of events. Unfortunately, it's misleading. The failure of Lehman Brothers was less a cause

of the crisis than a symptom of its severity. After all, by the time Lehman announced it would file for bankruptcy on September 15, 2008, the United States had been in a severe recession for ten months, and other industrial economies were on the verge of entering one. The housing bust was entering its second year, and high oil prices were sending shock waves through the global economy. Some two hundred nonbank mortgage lenders had collapsed, and as securitization ground to a halt, SIVs and conduits had unraveled. Conventional banks were in trouble too: their balance sheets continued to deteriorate in 2008, and new write-downs inevitably followed. After showing some signs of improvement over the winter, interbank lending had seized up yet again in the spring and summer.

The institutions charged with backing up the system—smaller insurers like Ambac and ACA, which specialized in guaranteeing bond payments (also known as monoline insurers), as well as sprawling insurance companies like AIG—were also deep in trouble long before Lehman collapsed. Using credit default swaps, they had insured several trillion dollars' worth of CDO tranches, effectively transferring their own AAA ratings onto a range of structured financial products. As the tide of losses rose, it looked increasingly likely that the insurers would be forced to pay out. Unfortunately, they didn't have the capital, thanks to being wildly overleveraged. The ratings agencies knew this and started to downgrade the monolines in the fall of 2007.

These real and looming downgrades threatened to rob companies like Ambac and AIG of their ability to confer AAA ratings on a range of securities. In the case of the smaller companies like Ambac, that meant not only CDOs but the municipal bonds that had been their original bread and butter. In the spring of 2008 the deepening troubles of the monoline insurers plunged the usually boring (but reassuringly stable) municipal bond markets into turmoil. Many of the investment banks that had previously played a pivotal role in these markets abandoned the field, fearful of potential losses. Auctions of municipal bonds started to fail, and panic spread throughout the market. Much of the more complex short-term financing used by these municipalities—auction-rate securities and tender option bonds—also collapsed. In a matter of months, state and local governments that were otherwise solvent saw the costs of borrowing soar.

This facet of the crisis began as a matter of illiquidity, but here too the

specter of insolvency loomed: many municipalities that had profited from rising property values in the good times saw tax revenues fall off a cliff in the face of escalating delinquencies and foreclosures. The growing troubles of California, already evident in the summer of 2008, offered a glimpse of what lay in wait for other states and municipalities. The problem was real; it wasn't merely a matter of investor psychology.

Fannie Mae and Freddie Mac started to falter too. These enterprises, sponsored by the federal government, had leveraged themselves at ratios of forty to one by issuing debt that enjoyed the implicit backing of the U.S. Treasury. They had used part of that supposedly risk-free debt to purchase risky mortgages and asset-backed securities. By 2008 both institutions were sustaining massive losses that rapidly eroded their capital. Those losses came from two sources. For starters, the fee they received for guaranteeing the mortgages that they manufactured into mortgage-backed securities proved insufficient to cover their losses. In the worst housing crisis since the Great Depression, even safe "prime" borrowers started to default, at rates far in excess of what Fannie Mae and Freddie Mac had anticipated. The insurance premiums no longer covered the losses, which now surfaced on the two institutions' balance sheets.

Far more significant was the fact that their investment portfolios were bursting with subprime mortgages and subprime securities. That summer the losses on these investments had become so large—and the two institutions' capital had so dwindled—that investors panicked. Fears grew that the duo might no longer be able to cover the securities they had guaranteed. Even worse, investors who had purchased debt issued by the two giants now openly talked about the possibility of a default. The assumption that the U.S. government stood behind that debt had never been tested.

Here again the question of moral hazard came to the fore. Without a government takeover, the failure of Fannie Mae and Freddie Mac would clearly send financial markets and mortgage markets into a panic of unprecedented proportions, never mind spook the various foreign creditors that had purchased their debt. Here much more was at risk than the market for a bunch of subprime mortgages: the creditworthiness of the United States was at stake. Letting the two institutions fail in the name of sending a message to the markets was not an option.

The result was another government takeover, formalized in September. Its terms protected those who had purchased the debt of Fannie Mae and Freddie Mac, but the common and preferred shareholders alike saw their investments wiped out. Unfortunately, many of the preferred shareholders included scores of regional banks, who overnight saw their "risk-free" investments wiped out. These losses sent further shock waves reverberating through the collapsing financial system.

On the eve of Lehman's failure, much of the damage had already been done. Lehman and the other investment banks, most obviously Merrill Lynch, were floundering, awash in losses due to exposure to a range of toxic assets; their ability to remain liquid, much less solvent, was in serious doubt. All the financial system needed to plunge into a state of utter panic was a little push.

Mere Anarchy Is Loosed upon the World

The panic of 1907 has a special place in the history of financial disasters. More than most, it has a hero, the banker J. P. Morgan, who occupied a singular place in the financial firmament as the biggest and most powerful banker of the day. In fact, in the days before the Federal Reserve, Morgan was the closest thing the United States had to a lender of last resort. The panic had begun in a series of lightly regulated, overleveraged financial institutions that were the forerunners of today's shadow banking system. Like twenty-first-century investment banks, the "investment trusts" of Morgan's day operated with little transparency.

The panic felled some secondary players, then detonated under the mighty Knickerbocker Trust Company. From there it spread swiftly, threatening to consume the other banks and trusts caught in the tangled web that bound together the financial community. Morgan was unable to save the Knickerbocker, but he decided to draw the line at another ailing institution, the Trust Company of America. The crisis seesawed for days and eventually culminated in a private meeting at Morgan's enormous private library,

where he gathered together the city's financial movers and shakers on a Saturday.

Morgan asked them to pool their resources and rally behind the Trust Company of America. The bankers initially refused, and deliberations dragged into Saturday night. At some point in the wee hours of the morning, the bankers realized that Morgan had locked them in the library and pocketed the key. He then issued an ultimatum: support the ailing Trust Company, or face the likelihood of complete annihilation in the ensuing panic. As he almost always did, Morgan got his way: the meeting broke up at 4:45 that morning after the bankers signed a mutual aid agreement. The panic was soon over.

On a very similar weekend 101 years later, Treasury Secretary Henry Paulson tried to pull off an equally audacious bit of brinksmanship. As Lehman Brothers and Merrill Lynch slid inexorably toward insolvency, he called the city's financial elite into the office of the Federal Reserve in Lower Manhattan on Saturday, September 13, 2008. Summoning the spirit of Morgan, he told the assembled bankers that the duty of dealing with the panic would rest with all of them. "Everybody is exposed," he reportedly told the assembled bankers, hoping this would prod them to come up with some way of either buying Lehman or organizing its orderly liquidation.

The bankers came back the following morning but left later that day without a deal; Lehman would be allowed to go under. Paulson's attempt to channel J. P. Morgan had failed. By this time Merrill Lynch was rushing into the arms of Bank of America, fearful of sharing Lehman's apparent fate. "We've reestablished moral hazard," claimed one person present at the meetings. "Is that a good thing or a bad thing? We're about to find out."

Much of what happened in the succeeding days and weeks was probably inevitable, even without the dramatic collapse of Lehman. But the speed with which it happened, and the drama that accompanied it, was a function of the shock waves that Lehman's failure sent through the financial markets.

Those shock waves hit AIG first. On September 15, Lehman declared bankruptcy, and all the major ratings agencies downgraded AIG's credit rating. Its losses had been mounting for months, but the downgrade was the coup de grâce: it effectively called into question the guarantees that the insurance giant had bestowed on a half trillion dollars' worth of AAA-rated CDO tranches. The day of the downgrade, the U.S. government threw the firm an $85 billion lifeline; additional funds would flow in the coming months. In exchange, AIG became a ward of the state: most of the firm's common stock now belonged to the government.

It was a bailout not so much of AIG as of all the banks that had purchased insurance from AIG. In the wake of the takeover, the U.S. government went to those banks and bought back the CDO tranches that AIG had insured. It could have demanded that the banks take a "haircut"—a loss—on those tranches as a penalty for their foolishness in trusting AIG to make them whole. But it did not. Instead, the government paid one hundred cents on the dollar—the full value—even though the market value of the tranches had fallen far below that. By this time, any talk of holding the line against moral hazard had gone out the window.

The parts of the financial system that had so far escaped the crisis now descended into the abyss. Money market funds were one of the first to fall. The funds were supposed to operate reliably: they took cash from investors and sank it into safe, liquid short-term securities. Though a handful had stumbled the previous summer, in the wake of Lehman's bankruptcy things went completely awry. One of the most prominent funds, the Reserve Primary Fund, "broke the buck," meaning that a dollar invested with it was no longer worth a dollar. This was almost unprecedented, and it sparked a run on the fund.

Was the run even remotely rational? Yes. It turned out that the Reserve Primary Fund had surreptitiously sunk some of its investors' money into toxic securities such as Lehman's debt. When this fact came out, suspicion fell on the entire $4 trillion money market industry, which became one big *terra incognita*, and the kind of dangerous uncertainty that Frank Knight had first described swept the field. In no time the federal government was forced to provide a blanket guarantee—the equivalent of deposit insurance—to all existing money market funds.

The panic in the money market funds quickly spilled over into other arenas, beginning with the market for commercial paper, the debt that ordinary corporations used as their main source of working capital. Money market funds had been primary purchasers of this kind of debt, and when their fortunes turned, the commercial paper market seized up too. Perfectly solvent

corporations found themselves shut out of the market as borrowing rates went through the roof. For a few weeks during this liquidity crisis, corporate borrowing effectively collapsed, and blue-chip firms found themselves short of cash.

Emergency times call for emergency actions. The collapse of the commercial paper market, which handled some $1.2 trillion in loans, posed the risk that otherwise solid corporations would go insolvent because of a run on their short-term liabilities. In order to avoid any further runs, the Federal Reserve opted to extend lender-of-last-resort support to nonfinancial corporations. On October 7 it set up yet another lending facility that made loans to corporations issuing commercial paper, though only firms with an A rating or better could borrow from the Fed. This was a belated gesture at holding the line against moral hazard.

Otherwise the federal government drew no such distinctions. In the wake of the collapse of IndyMac that summer, the threat of further bank runs loomed. Washington Mutual and Wachovia, two of the nation's largest banks, started to bleed deposits. Both were effectively insolvent, yet government officials were eager to prevent their collapse. The Office of Thrift Supervision first took over Washington Mutual before brokering its sale to JPMorgan Chase. Four days after the seizure and sale of Washington Mutual, the FDIC invoked emergency powers to facilitate the sale of Wachovia, initially to Citigroup and ultimately to Wells Fargo.

The two remaining independent investment banks—Goldman Sachs and Morgan Stanley—had opted not to wait for lifelines; both saw their positions erode precipitously in the wake of Lehman's failure, and by the end of September both applied to become bank holding companies. Doing so gave them access to lender-of-last-resort support and, no less important, enabled them to look to more traditional means of underwriting their activities, namely old-fashioned bank deposits. This move came with a steep price tag: much more stringent regulation of their activities. Their conversion marked a pivotal moment in the nation's financial history: in the space of seven months Wall Street had been utterly transformed, with all five independent investment banks destroyed, absorbed, or temporarily muzzled.

Yet the transformation of banking was still not complete. Despite the fact that the Federal Reserve raised the limits on deposit insurance, banks

still faced the threat of runs, though from a new quarter. Many banks had other liabilities besides their deposits, most notably the bonds they issued to finance their assets. These bonds came with different maturities and with different levels of seniority. As bank bonds came due in the final months of the financial crisis, banks could not roll over this debt at the same rate. Borrowing money became extraordinarily expensive, and banks faced the prospect of yet another run on their liabilities.

The solution was to have the government guarantee all of the principal and interest on this kind of debt. On October 14 the FDIC announced that it was insuring all new senior debt (the debt that must be repaid ahead of junior "subordinated debt") of regulated financial institutions, including both ordinary banks and bank holding companies. This guarantee was an unprecedented intervention in the banking system. It meant that banks could now issue debt at the sort of low, "no-risk" rates enjoyed by the U.S. Treasury when the government issued debt. Within six months, banks and other financial institutions that qualified managed to roll over a massive $360 billion worth of debt at extremely low rates. Similar guarantees soon fell into place throughout Europe. Early in the fall a number of enormous European banks—Hypo Real Estate, Dexia, Fortis, and Bradford & Bingley—teetered on the brink of collapse. Ireland was the first to guarantee the debt of its banks, followed by the United Kingdom, which announced something called the Credit Guarantee Scheme. In October other European countries along with Canada followed suit, announcing that they too would guarantee the debt of their banks. These blanket guarantees had the desired effect: the risk of a bank run subsided.

By late fall the most dramatic phase of the crisis was subsiding, though all manner of other bailouts and interventions took place; lines of credit were given to everything from car companies like General Motors to finance companies like GE Capital. Most of this was done with little attention paid to whether the recipients were solvent or even worth saving; the only goal was to stop the panic.

This willingness to lend arrested the panic, though the aftershocks would continue for months, if not years. But the uneasy calm came at a great cost. Walter Bagehot and many theorists of central banking had warned against lending indiscriminately in times of panic; lenders should distinguish

between the illiquid and the insolvent and lend only at what Bagehot called "penalty" rates. This time around central bankers saved both bank and many nonbank firms, giving access to lines of credit at rates that were far from punitive. Indeed, the mother of all banklike runs had swept nonbank mortgage lenders, SIVs and conduits, hedge funds, interbank markets, broker dealers, money market funds, finance companies, and even traditional banks and nonfinancial corporate firms. Since banks were not lending to each other or to nonbank financial firms or even to nonfinancial corporate firms, central banks were forced to become lenders of first, last, and only resort. The storm engendered little in the way of the "creative destruction" that Joseph Schumpeter would have celebrated. Instead, strong and weak alike remained in a state of suspended animation, awaiting the final reckoning.

Chapter 5

Global Pandemics

An old saying in financial markets has it that "when the United States sneezes, the rest of the world catches a cold." However clichéd, that observation contains plenty of truth: the United States is the biggest, most powerful economy in the world, and when it gets sick, countries that depend on its insatiable demand for everything from raw commodities to finished consumer goods find themselves in trouble too.

This dynamic takes on dangerous potency in times of financial crisis. An outbreak of some financial disease in the world's economic powerhouse can swiftly become a devastating global pandemic. A crash in the stock market, the failure of a big bank, or some other unexpected collapse at the epicenter of global finance can become a countrywide panic and then a worldwide disaster. It's a scenario that has played out many times, whether in Britain in the nineteenth century or in the United States since that time.

Nevertheless, as the United States succumbed to the subprime disease late in 2006 and 2007, conventional wisdom held that the rest of the world would "decouple" from the financially ailing superpower. This idea, first promoted by analysts at Goldman Sachs and then taken up as the consensus,