

Sustainable Developments

Blackouts and Cascading Failures

Feedbacks in the economic network can turn local crises into global ones

BY JEFFREY D. SACHS



The global economic crisis is akin to a power blackout. A single downed power line or transient overload causes power to be shunted to another part of the grid, which in turn leads to new overloads, more shunting and ultimately to a cascade of failures that pushes a region into darkness. Similarly, a U.S. banking emergency caused by worsening national market conditions has sent shock waves through the world's financial system, causing a global banking crisis that now threatens to become a severe global economic downturn.

Cascading failures are emergent phenomena of a network, rather than independent and coincidental failures of its individual components. Although many banks in the U.S. and Europe simultaneously overinvested in mortgage-backed securities (MBSs) to their peril, positive feedbacks in the global economic system amplified those errors. Bank regulators and macroeconomic policymakers have not yet given those feedbacks proper regard.

The first key feedback is the “debt-deflation spiral.” When default rates on mortgages started to rise in 2007, the banks suffered capital losses on their holdings of MBSs. To repay their creditors (such as the money-market funds that had lent them short-term money), the banks sold their MBSs en masse, driving the market prices of those securities even lower and amplifying the banking sector's losses.

Second, when banks suffer capital losses on bad assets, they cut back on lending by a multiple of their capital losses. That cutback further depresses housing and other prices, reducing the value of the banks' assets and amplifying the downturn.

Third, as one or more banks fail, panic ensues. Banks borrow short term to invest in longer-term assets, which they can liquidate quickly only at large losses. When a bank's short-term creditors suddenly believe that *other* short-term creditors are withdrawing their loans, each creditor rationally tries to withdraw its own loan ahead of the others. The result is a self-fulfilling stampede to the exits, as was triggered worldwide last September by the failure of Lehman Brothers. Such “rational panics” can finish off otherwise solvent banks.

Fourth, as banks cut back on lending, consumer spending and business investment plummet, unemployment soars and banks suffer further capital losses as more of their loans go sour. The

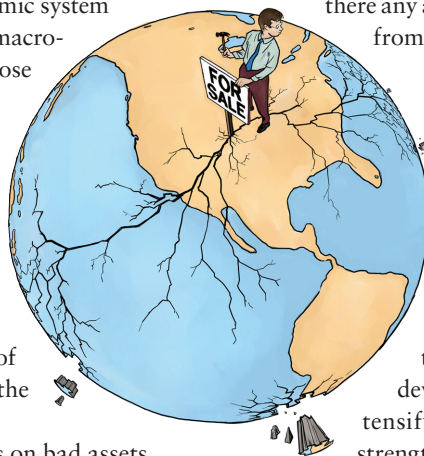
economy goes into a tailspin. Only aggressively expansionary fiscal and monetary policies in China, Japan, Germany and other nations with international surpluses can avert that outcome in the current situation. The U.S. recession can no longer be avoided, but its effects can still be moderated in the U.S. and largely averted in east Asia, assuming corrective actions are taken.

The possibility of such amplifying feedbacks has been understood since the Great Depression, and some partial protections were put in place. The main ones include capital adequacy standards that cushion individual banks against capital losses, emergency loans from the central bank, deposit insurance and countercyclical macroeconomic policies. In practice, these policies have been applied haphazardly, without regard for cross-border spillovers, and have generally been too little, too late. Nor was there any attention to building “firewalls” to stop shocks from percolating quickly among countries.

As policymakers now begin to revamp global financial and economic systems, they would be wise to consult the classic analysis of the Great Depression in *A Monetary History of the United States, 1867–1960*, by Milton Friedman and Anna Jacobson Schwartz. “Economic collapse,” they wrote, “often has the character of a cumulative process. Let it go beyond a certain point, and it will tend for a time to gain strength from its own development as its effects spread and return to intensify the process of collapse. Because no great strength would be required to hold back the rock that starts a landslide, it does not follow that the landslide will not be of major proportions.”

Our risks go far beyond finance. Our reckless gambles on the recent financial bubble are dwarfed by the long-term gambles we have taken through failure to address the interconnected crises of water, energy, poverty, food and climate change. The financial crisis should open our eyes to these much more grave systemic threats and the global cooperation needed to redress them. ■

Jeffrey D. Sachs is director of the Earth Institute at Columbia University (www.earth.columbia.edu).



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