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A Mad Gardener Tackles the Financial Crisis

Three is, indeed, a magic number ...

He thought he saw a Garden-door
That opened with a key:
He looked again, and found it was
A double Rule of Three:
"And all its mystery," he said,
"Is clear as day to me."

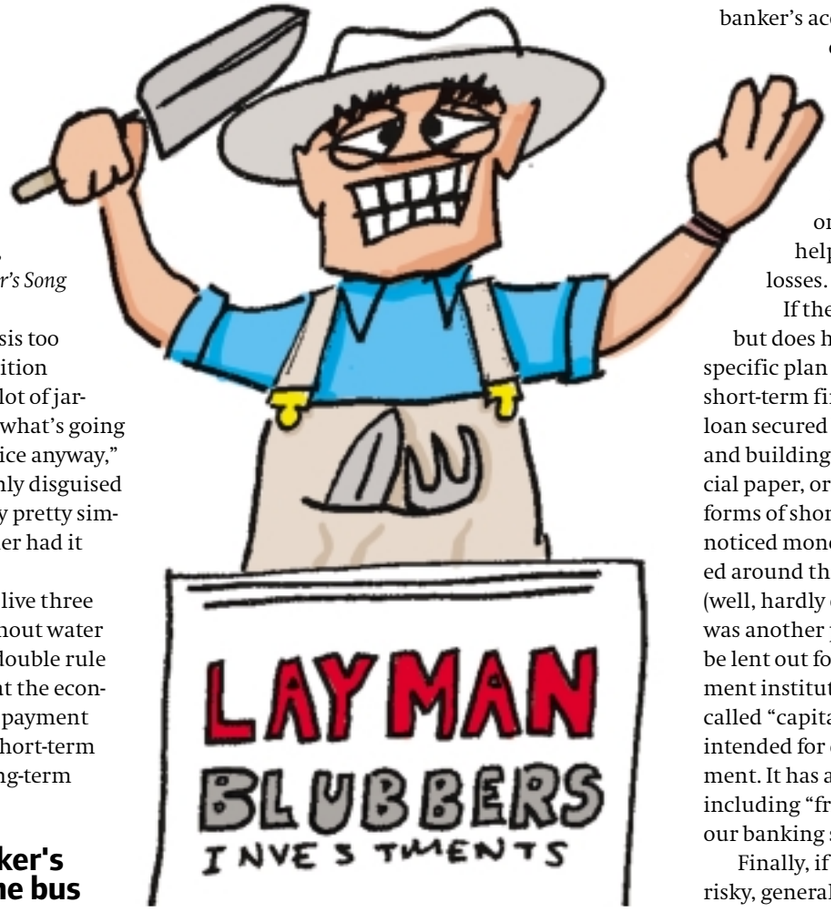
Lewis Carroll,
The Mad Gardener's Song

People are making this financial crisis too complicated. There's a lot of superstition in banking and macroeconomics, a lot of jargon that translates to "I don't know what's going on, pay me lots of money for my advice anyway," and a lot of blatant self-interest, thinly disguised as rational policy. Finance is actually pretty simple, and Lewis Carroll's Mad Gardener had it figured out long ago.

One rule of three is that you can live three minutes without air, three days without water and three weeks without food. The double rule of three, the financial version, is that the economy can survive three days without payment processing, three months without short-term finance, and three years without long-term finance.

He thought he saw a banker's clerk, descending from the bus

The oldest and most basic form of finance is payment processing. This works when someone who wants to buy something has the money. She hands over cash, or says "put it on my tab," or tells her bank to pay using a check, credit card, or other instrument, or accepts a giro, or uses a banker's acceptance or letter of credit, or line of credit, or uses an Internet payment processor, or uses a non-bank financial organization such as a money market fund or brokerage account. Another important payment processing organization is a clearinghouse that helps traders to exchange gains and losses.



"Introducing your new chairman ...."

If the person doesn't have the money, but does have a short-term, high-probability, specific plan to get the money, she uses the short-term finance system. She takes out a bank loan secured by inventory or receivables or land and building materials, or she issues commercial paper, or she uses a line of credit. The early forms of short-term finance arose when people noticed money deposited for payments circulated around the payment system without ever (well, hardly ever) leaving. One person's payment was another person's receipt. That money could be lent out for safe, short-term uses and the payment institution could keep the profit. This is called "capital formation" because money intended for consumption is used for investment. It has also been called many other names, including "fraud" and "the sacred foundation of our banking system."

Finally, if the person only has a long-term, risky, general plan to get the money, she uses the long-term finance system, issuing stocks or bonds or other securities, or taking out a long-

term loan, or working with venture capital or private equity funds. It might seem as if long-term funds should come from money circulating in the short-term finance system, since one person's inventory financing is used to pay off another person's receivable financing and the money never (well, hardly ever) leaves the short-term system. But this requires financial engineering to strip out the interest rate and credit risk of the long-term investments, or, in the absence of engineering, a government guarantee such as the one that allowed Savings & Loans to use demand deposits to finance 30-year fixed-rate mortgages or the assumed one that allowed FHLMC and FNMA to survive as long as they did.

He looked again, and found it was a hippopotamus

For the past seven years, money has been building up in the short-term finance system, to over $5 trillion. This money comes from fast-developing economies, with China by far the largest, and from oil producers. These governments do not want their people spending the money, nor do they want it locked up in long-term investments overseas. The developing economies plan to use it for domestic long-term investment in the future; the oil producers want it to smooth consumption when oil prices decline.

This happened before, in the 1970s. Oil producers sold oil to developed countries, then sent the "petrodollars" back for investment. Banks took the short-term deposits and made investments in real estate and emerging markets, among other things. When these investments went bad and the oil producers wanted their money back, banks were in trouble. Some failed, many more suffered deep losses. The oil producers took losses as well, in defaulted short-term investments and payback in dollars devalued by inflation.

This was not pleasant for anyone, but it did not cause the level of general distress that we see today. There were bigger economic problems at the time. Petrodollar losses stayed in the short-term finance system and did not threaten payment processing or long-term finance. Those systems were both in trouble – payment processing because currencies could not seem to retain value, and long-term finance because companies couldn't seem to make profits – but petrodollar recycling was not the cause of either of those things.

This time there was a general spillover. Short-term finance problems caused failures in money markets funds, a feared collapse of the OTC derivatives clearing, a threat to a public clearinghouse when the Sentinel fund collapsed, a run on Northern Rock and some other banks, extreme flight to US dollar treasury bills, and general economic gridlock. Traditional central bank tools, reductions in interest rates, and injections of liquidity through secured lending to banks did not help. Instead, regulators had to go directly to nonbank payment-processing institutions, lending to money market funds and guaranteeing deposits, lending to investment banks, instituting a clearinghouse for OTC credit derivatives, and converting all sorts of nonbank financial institutions into banks so that they could be supported.

To make matters worse, the financial instrument short-term finance problems froze the market for physical asset short-term finance. Once again, central banks had to go directly to borrowers, buying three-month commercial paper directly from nonfinancial corporate issuers.

The first long-term casualties of the problems were homeowners, homebuilders, and mortgage lenders, followed by financial institutions, then by virtually all business and commodity producers. The role of short-term finance in long-term problems is more complex than in payment processing and short-term finance. The value of the long-term assets had been inflated by the excess of short-term funds, so part of the crash was correction. Once again, central banks chose to intervene directly rather than through the banking system, nationalizing some institutions and buying equity stakes in others.

"If this should stay to dine," he said, *"There won't be much for us!"*

Without payment processing, the economy grinds to a halt within days. Workers don't work when they don't get paid. People hoard goods, and resort to barter or black market transactions. When this happened in the early 1930s, governments responded by separating payment-processing institutions from risk-taking ones (in the USA, for example, banks had to choose between taking deposits from the public and becoming "commercial banks" or underwriting corporate securities and being "investment banks) and guaranteeing deposits. The separation was repealed in the 1990s. Deposit insurance levels eroded to inflation. Moreover, it did not cover new payment-processing institutions like money market funds, which arose to avoid banking regulations.

One outcome of this crisis will be a return to protections for the expanded payment-processing system. Any institution that accepts demand deposits from the public will have tight restrictions on how it can invest its funds, will be isolated from other risk-taking activities, and will have strong government oversight. OTC financial transactions and structured products will be pushed toward clearinghouses, and those clearinghouses

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will have rules similar to depositary institutions. In return, the government will back these institutions. Of course, this will inspire innovations just outside the government umbrella.

There's little downside to these actions. It was pure sloppiness that let financial risk-taking imperil payment processing. No one thought it was a good idea that consumer bank deposits or money market funds should be hostage to bets on subprime mortgage default rates or anything else. Everyone knew that uncleared trades, fails, and undermanaged counterparty credit risk could cause big problems in a crisis. There were even people working to fix these things before trouble struck – they just seemed like lower priorities back then.

Short-term finance is needed to finance goods in production or held for sale, including construction, inventory build-up in seasonal businesses, and receivable financing. For centuries, regulators tried to distinguish "real bills" or "commercial paper" that arose out of genuine business transactions, from "financial paper" created for speculative liquidity. The motivation was generally to prohibit or restrict financial paper without impairing the commercial paper market (i.e., private financial paper – government financial paper was a patriotic necessity). The result was that we call all paper, financial or commercial, real bill or financial transaction, "commercial paper" today.

There is no immediate consequence when physical short-term finance disappears. Existing projects are completed, goods in production are finished, goods held for sale are sold. But not enough new projects are initiated, which causes the economy to slow down over a period of months. Goods disappear from shelves not because consumers are hoarding, as when there are payment-processing problems, but because not enough new goods are being produced, and there are no funds to stock what *is* produced.

Again, there is a simple solution, with little downside. Revive the distinction between commercial paper and financial paper, not to prohibit the latter but to protect the former. The central bank should lend freely to regulated financial institutions against high-quality commercial paper. There is no reason for it to lend at all against financial paper or long-term assets, at least until the financial institution's equity is wiped out and the government guarantee institution is on the hook for losses. The central bank should also stand ready to buy commercial paper directly from creditworthy issuers if the short-term finance system breaks down.

He thought he saw an argument that proved he was the Pope

Difficulties with payment processing and physical short-term finance are simple to describe and solve. I doubt many financial engineers will disagree about the fixes. The spillover of excess short-term funds to long-term finance is slightly more complicated, and addressing it requires some trade-offs over which reasonable people will differ.

When the $5 trillion came in to the short-term financial markets, it had to go out somewhere. First, of course, you stuff every short-term borrower you can find with every dollar she's willing to take. That doesn't work very well. If you do more inventory financing, producers are willing to pay cash for goods they used to buy on credit, so the suppliers need less receivable financing. In theory, you can encourage businesses to hold more inventory and adopt longer production cycles, but changing technology and business practices were having the opposite effect, so you were rowing upstream.

The next solution was to find people to spend the extra money. Developed market consumers were offered easy, cheap credit, to buy the goods that were kept inexpensive by developing country exports, in the face of an economy that was doing well thanks to developing country and resource producer funds. That's fine for the odd hundred billion dollars, but it couldn't come close to absorbing $5 trillion.

There was only one place left for the funds – long-term investment. This presented two problems. The funds were for low-risk, short-term investment, but long-term projects have appreciable risk and are, well, long term.

He looked again, and found it was a bar of mottled soap

Necessity is the mother of invention, and $5 trillion is one big mother. Cast your mind back to the end of August 2000. The cash flow yield on the average S&P500 stock was 5.68 percent, 100 basis points below three-month LIBOR. Three years later, the cash flow yield was 10.50 percent and three-month LIBOR had dropped to barely over 1 percent. That means you could borrow money to buy a company, and use less than 10 percent of the company cash flow to pay interest at LIBOR on your loan. A bit more of the cash flow can go to paying a premium on the stock, a spread on the loan and a big fat fee to yourself. If the stock market went up or the company improved, you collected the appreciation. If the stock market went down or the company ran into trouble, it was the bondholders' problem. Even better, you don't target the average S&P500 stock, you find ones with bigger cash flow yields. Nice work if you can get it.

How do you turn a CCC-rated loan to a company with no means of repayment except borrowing again or selling itself into an investment suitable for a short-term investor with low risk tolerance? Enter the financial engineers. You eliminate the interest rate risk by making the loan floating rate off a three-month index. Since the company cash flow is fixed, it could not make those payments if LIBOR went up. So, the company does an interest rate swap to pay fixed and receive floating.

The bond is combined with a credit default swap, or more likely packaged into a collateralized loan obligation, to separate out the credit risk. That risk is sold to an investor willing to take it. All the equity and credit risk of the old public firm has been concentrated into an ultra-high-risk, ultra-high-return security. The rest is

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financed at LIBOR plus 100 or 150 basis points, in what appears to be a low-risk security with perhaps a three-year final maturity and three-month floating interest rate.

Private equity funds were not the only ones to play this game. Corporations did the same thing by issuing short-term debt and buying back stock. State and local governments, and some private issuers, financed long-term projects with auction rate securities and variable-rate demand notes, sometimes with derivatives to recast the risk. These are nominally long-term securities, but can be converted into cash at par on a weekly or other short-term basis. Banks packaged up their loans and other receivables and sold them off through off-balance sheet conduits and structured investment vehicles, with capital notes to absorb the risk. FHLMC and FNMA bought long-term assets and financed them with short-term debt that carried what at the time was thought to be an implicit government guarantee, then used derivatives to isolate the interest rate, prepayment, and credit risk.

"A fact so dread," he faintly said, "*extinguishes all hope!*"

But the biggest, the most audacious, the cleverest, and ultimately the most destructive idea was to use the short-term funds for subprime mortgages. Subprime had been around since the mid-1980s, generating fat profits for a few years before inflicting periodic disasters. But the scale was tiny compared to the new millennium version.

The originator issued a long-term mortgage at a low initial coupon rate, at least low compared to the credit risk of the borrower. The terms were set to force repayment after a few years, either directly by a balloon payment, or indirectly through a sharp increase in coupon rate. Prepayment penalties assured the lender of a tidy profit if either the borrower's financial condition improved or the property appreciated in value. That profit was enough to compensate for the times when neither of those happy events occurred.

Subprime was particularly effective at sopping up the $5 trillion because it encouraged expenditures that would not otherwise have been made. Not only did people increase their consumption of housing, either actively by buying or passively by continuing to own an appreciated home, but people increased other consumption in furnishings, home improvements, and general consumption, funded by home equity. This is caused in part by the persistent myth that expenditures to buy a house are mostly investment, when in fact they are virtually all consumption. This spending supported an increase in business spending, which also required financing. By contrast, the other ideas for using short-term finance to buy long-term assets were mostly for projects that would have been done anyway, and often involved cutting spending (e.g., private equity firms typically cut costs after an acquisition).

Like private equity and the other schemes, subprime debt was packaged into structured products and derivatives to concentrate the risk and create lots of low-risk, short-term paper to meet market demand.

At some point, of course, there had to be some pain. Things would continue, inflating the price of long-term assets and the amount of short-term funds financing them, until it didn't. Once it stopped, it couldn't pay off smoothly, with moderate losses spread out over many investors. The concentrated risk pieces became worthless quickly, which meant that the supposedly safe short-term investments became risky. That killed their liquidity; there is never much demand for high-risk, short-term assets – it's not worth the cost to analyze risk over that horizon. Moreover, many risk-takers hit their loss maximums in the concentrated risk pieces and did not want to bet again.

Once these assets became illiquid, they also became long term. So, a lot of people were holding illiquid, long-term, risky assets with short-term liabilities. In theory, we could have had a firebreak at this point. Short-term liabilities supporting payment processing or real economic activity could have been paid off via some sort of government loan or guarantee. Long-term assets could have been gathered together and auctioned, like the Resolution Trust Corporation did to Savings & Loan assets in the late 1980s. Losses would have been apportioned and accepted, and life would have continued. There would have been some economic effect, maybe a severe one, but it would not have been as bad as what actually happened.

In practice, no one had the power to do this, and creating an institution with that kind of power is undoubtedly a bad idea. The other extreme, if nothing had been done at all, would have been an economic disruption of unknowable duration and depth, and an explosion of financial innovation. There's no point in discussing this, however – it is politically impossible. What actually happened is that regulators started slowly and gradually built up aggressive policy responses to levels unthinkable two years ago. The range of responses increased, along with their scale, until people were found to take the government's money and do something other than hoard it.

The effective result is that developed country governments have guaranteed most of the short-term assets either directly or by buying them, accepting them as collateral for loans, or propping up institutions that guarantee them. This has removed a good deal of the risk from them, and seems at this writing to be helping liquidity a little. This should be enough to restart the economy, although I don't predict at what level. Once the economy is going smoothly, if not quickly, these guarantees will have to be unraveled to reduce governmental leverage and improve investor yield. This is the major financial challenge of the next few years.

With apologies to Lewis Carroll

He thought he saw a bank account,
That he could call his own,
He looked again and saw it was
A no-lien liar loan.
"Alas," he said, "retirement,
I now have to postpone."

He thought he saw a stable firm,
With a solid credit line,
He looked again and saw it was
A giant "For Sale" sign,
"My only choice is to," he said,
be fired or resign."

He thought he saw the S&P,
With a handle of fifteen,
He looked again and saw it was
Dressed up for Halloween.
"To find my stocks," he sadly said,
I'd need a submarine."