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Risk Reduction in the New Financial Architecture

Martin Mayer

Six times in the 1990s-the American banking disaster of 1990-91, the failure of the European monetary grid in 1992, the unanticipated interest rate hikes by the Federal Reserve in 1994, the Mexican collapse of 1995, the Asian disaster of 1997, and the Russian default of 1998-the world's financial structure shook. The world's political leaders grew tired of the repeated experience, and they went looking for something that could carry a heavier load-a "new financial architecture." Some proposals for this new financial architecture, especially the suggestions for restrictions on interbank lending, do imply a willingness to sacrifice efficiency for congruence with a more complicated reality, but most of the blueprints on the table are intellectually inexpensive and leave things too much the way they are.

Risk Analysis and Control

The purpose of the markets for financial instruments is the efficient allocation of scarce means to alternative uses through the pricing of income streams and risks. But there has historically been an exception to the primacy of prices in decision making. Lending by banks has been at fixed rates for fixed terms, with only moderate discrimination between the best and the clearly less-than-best borrowers. The decision to be made is whether to make the loan or not. The sense of the price of the loan is complicated by the fact that the loan is normally only one of a number of relationships between lender and borrower. Banks are highly leveraged institutions that lend mostly other people's money. Because deposit liabilities must be paid on demand and the assets behind them are longer dated, illiquidity may occur without insolvency. The tighter the articulation between anticipated outflows of funds and anticipated inflows, the greater the danger that a minor interruption in receipts-a mere "displacement," to use Hyman Minsky's analysis-will trigger a need to sell assets. "Market risk" emerges in banks because, when interest rates change, their liabilities reprice before their assets reprice. Among the earliest and most useful of derivative instruments is the "interest rate swap," which permits institutions with floating-rate liabilities to protect themselves by swapping the income stream from their fixed-rate assets for the income stream from floating-rate assets.

As intermediaries-agents for their customers-banks do business with each other in a banking "system." The failure of one bank, by interrupting the anticipated cash flow of other banks, may create a reverberating crisis well before the flight of depositors. If an anticipated payment is not received, a bank is thrown into the credit market at a time when that market may be hostile. Operationally, there can be little question of the validity of Alexander Lamfalussy's definition of systemic risk: "the risk that the illiquidity or failure of one institution, and its resulting inability to meet its obligations when due, will lead to the illiquidity or failure of other institutions."

Market systems work with instruments that are easily bought and easily sold. The definition of a successful market is one that has breadth, depth, and resilience. Breadth means widespread participation, so that prices can reflect the views of a diversified community. Depth means deep

pockets, so that large orders to buy or sell will not jolt markets far from what are presumably equilibrium positions. Resilience means that in the aftermath of a jolt prices will oscillate around an eventual consensus valuation rather than shoot off in one direction.

For a bank, liquidity is simply the assured capacity to meet whatever payments may be required today. For a market, liquidity has a different significance; it is the certainty that the system will generate a bid for an asset a participant wishes to sell. By a common fallacy of composition, the liquidity of a market tends to be measured by the volume of trading. Thus, when value is segmented by breaking an instrument into different tranches that reflect different times of maturity, degrees of optionality, or levels of risk, "liquidity" apparently increases, for the larger number of instruments to trade attracts a greater total volume of trading. In fact, however, segmentation reduces liquidity by narrowing the market that is interested in each instrument.

The danger is not that the debtors will not be able to pay. The danger is that the creditors will not be able to do without the payments. It is the leverage of the creditor, not the leverage of the debtor, that creates the crisis.

In the loan world, there is no market risk; the banking supervisor will let the bank carry an asset at cost so long as the banker intends to hold it to maturity and there is reason to hope the debtor will pay off at par on maturity. In the market world, there is little credit risk; the question is what the future payment is worth, not whether it will be made. In the last few years, numerous derivative instruments have been created to cover market risk and credit risk together, especially "total return swaps," which on a certain date in the future will give one party the interest on a safe instrument plus a fee for making the plane fly, while the other party receives the earnings on something more adventurous. These swaps have become the instrument of choice for "hedge funds" looking to minimize the commitment of their own cash.

Fallacies in the Intellectual Foundations of the Financial System

The dangers to the world economy are more in the unquestioned intellectual foundations of the system than in the superstructure that receives the attention. The most serious is the assumption that efficiency gains from increasing the comparability and thus interchangeability of paper (reducing "substitution costs") are sufficient to justify the distortions and omissions inherent in the activity.

The reduction of economic assets and enterprise to monetary expression and the achievement of comparability through currency exchanges are among the great intellectual feats of the species, with reverberating effects through the cultures of developed societies. The creation of abstracted instruments, moreover, may greatly improve the performance of markets for more specific instruments. The futures contract in Treasury bonds, which can be satisfied by the delivery of any Treasury bond with more than 15 years to maturity, rescued the bond market from its historic pigeonholes.

As objects for trading, however, financial instruments are inherently one-dimensional: they have a price. The theory of easy interchange therefore rests on the assumption that at any given moment all available information about all such instruments, even across national borders, is already present in the price. It becomes possible-in theory-to protect oneself against a continuing decline in the price of one's Korean fixed-income portfolio by selling Brazilian bonds. These dynamic hedging activities are dangerous enough when the instruments involved are publicly traded, publicly priced, and settled through clearing houses. But when the abstractions of the derivative instrument are applied to highly specific private arrangements-customized contracts between two parties, with prices unknown to the outside world and with no registry for "open interest" to indicate the quantities of similar instruments that are out there-then the market becomes subject to shocks that cannot be anticipated.

Perhaps the most damaging aspect of the oversimplification made possible by modern machinery is the belief that finance economics is a "science." In addition to intuition and expertise-sometimes

instead of either-the modern trader uses a mathematical model, which accepts experience in the form of numbers and spits out propositions. But "these seemingly rigorous calculations," New York University's Stephen Figlewski writes, "actually are made by putting inaccurately estimated parameter values into incorrect theoretical models" (1998, 193).

There is a systematic bias built into the mathematical evaluation of options and optionlike instruments. Because positions are supposed to be continuously hedged, the input of data emphasizes the most recent transactions. This is especially damaging because the central assumption of all the models, that price movements are distributed along a normal curve, is simply untrue. In real markets prices ten and twelve standard deviations from the mean are as likely as those three or four standard deviations away.

Running the model, then, the purely mathematical trader usually finds that volatility is overpriced, that is, the market price for the option reveals an "implied volatility" some tens of basis points higher than what the computer calls the "real" volatility. This is because the market, but not the model, retains some memory of a violent change in prices some months or years ago.

The mathematically inclined trader thus wants to "sell volatility"-write options that will pay off if prices do not move much-and may indeed, like Long-Term Capital Management, build an entire trading strategy on the theory that the market stupidly leaves on the street a lot of nickels and dimes for computer-driven traders to sweep up. People who sell volatility magnify their small returns with leverage, which leaves them defenseless against low-probability events. Why Leverage Matters

The derivatives literature is replete with analogies between "risk management" and insurance, but the analogies are false. Insurance is based on the principle of risk sharing; derivatives are a process for risk shifting. And risk-shifting instruments inevitably tend to shift risks onto those less able to bear them.

The mixture of bank lending and markets menaces the process of economic development because it encourages a ratcheting up of uninformed lending. Information plays a relatively minor role in cross-border bank lending. Diversification is assumed to improve the risk-reward ratio, and the lending officers are sent out to diversify the portfolio. Unfortunately, this competition to do the business occurs in the framework of a financial system that has become tightly articulated. All the preconditions for Minskian fragility are entrenched in the behavior of the players. The danger is not that the debtors will not be able to pay. The danger is that the creditors will not be able to do without the payments. It is the leverage of the creditor, not the leverage of the debtor, that creates the crisis.

Leverage rides on two chassis, of which the more important is still the repurchase agreement. A trader buys a bond and sells that bond to a dealer for cash, with a promise to buy it back the next day or week for the same cash plus the overnight interest rate. Meanwhile, the cash can be used to buy other instruments. For the price of a million-dollar bond, a trader may own the income stream and risks of $3 million or $4 million in bonds.

The other chassis for overleveraging is derivatives, which create both predictive and spurious correlations between financial instruments. Historically, the world was protected against global reverberations of economic crisis in one country because, Michael Mussa and Morris Goldstein of the International Monetary Fund suggested, "assets denominated in different currencies are regarded as imperfect substitutes" (1993). But the designers of derivatives are at the drawing boards every day, trying to make assets denominated in different currencies more easily tradable against each other.

Que faire?

Tolstoy's question haunts: What is to be done? The search for an answer is made more difficult by the fact that nobody dares speak a word against "transparency": better information is the first

requirement. Neither bankers nor central bankers believe in transparency; they believe in bank secrecy and will fight pretty close to the death to preserve it. Planners must recognize that if economic development is to be financed to a major extent by banks, and banks are to be major players in OTC derivatives games, there cannot and will not be much transparency. Calling for transparency is calling for a market-dominated system, in which losers must recognize their losses in real time.

In the transition from bank-dominated to market-dominated finance, when the ponderous pace of information change in the banking nexus meets the quicksilver movements in the markets, systems for standstill will have to be developed.

Outside the United States the banks still matter enormously. In the United States only about 20 percent of commercial lending is funded on a banking chassis; in "emerging markets" the proportion is likely to be 80 percent. It is not only in Asia that families of enterprises cluster around a papa bank. But the markets, because they are more efficient in their pricing, more inclusive and less credit-dependent in their funding, will take over many of the functions previously exercised by banks. In the transition from bank-dominated to market- dominated finance, when the ponderous pace of information change in the banking nexus meets the quicksilver movements in the markets, systems for standstill will have to be developed.

Some palliatives commend themselves.

- The terms for cross-border lending to borrowers in currencies other than the domestic currency of the borrower could be written to require the lender to accept a 60-day or 90-day rollover of the loan under specified conditions.
- H. Johannes Witteveen, who was managing director of the International Monetary Fund from 1973 to 1978, when the fund was in the Valley of Death, has suggested that central banks join together to establish reserve requirements to limit the creation of off-shore deposits, which have become "an uncontrolled source of international liquidity" (Teunisen 1998, 14).
- Laws could be written to require minimum haircuts on repos, with exemptions for repo-financed government bond dealers. The Working Group of the Basle Committee on Banking Supervision has recommended that the Basle Accord on risk weightings be reexamined to do something about "the absence of capital charges for possible unsecured exposures resulting from repo transactions" (Bank for International Settlements 1999).
- Alfred Steinherr has suggested that regulators set capital requirements for derivatives trades at a number that at least matches the margin requirements of the exchanges on which similar derivatives are traded.
- A requirement of continuously maintained margins on every contract (collateral for OTC instruments) would give early warning of the malfunctioning of a hedge.
- The central bank of Portugal now publishes the total borrowings from Portuguese banks by large borrowers, specifying the borrowers but not the banks. In general, the bias should be toward the revelation of all large positions in all markets. The borrowings of very large borrowers and the holdings of very large traders should certainly be a matter of regulatory knowledge, and perhaps of public knowledge.
- A potentially significant brake on the accelerating damage now done to countries suffering a currency crisis would be the creation of an international trade-finance institution to maintain the pace of export credits for countries that have lost access to such credits because the top management of banks far away has demanded a reduction in their "exposure" to a country in trouble.

Several principles must be accepted from the start. First, markets do not create the legal order; the legal order enables the markets. Freedom of contract may be a God-given right, but the enforcement of the contract is a matter of state. Thus there need be no serious worry about losing business to the Cayman Islands or Guernsey or Andorra. If the rules are written so that the courts of the great nations will not enforce certain contracts entered into in jurisdictions with inadequate regulations, the

participants in the markets will live by the laws of the great nations. The felt need of the participants is for "legal certainty." A price can be charged for that.

Second, the authorities will always have much less secure a grip on borrowers than they have on lenders. Borrowers who need money are not picky about price or conditions. The grip on lenders is capital requirements, imposed risk weightings, and margin or collateral requirements. And there will have to be international standards of accounting and banking supervision. This is no reason for despair: both these ventures are well off the starting marks and advancing.

Third, apart from the assertion of the principles of fair dealing (including generalized access to information), the purpose of rules should be to enforce the recognition of realities. Value-at-risk having failed as a measurement, the fashion in bank supervision now is the stress test. Banks run these tests themselves through their own models. The function of banking supervision should be to supply plausible parameters for testing, to retain records of the results, and to insist that these results be communicated directly and fully-probably in the presence of the senior examiner-to the board of directors of the institution.

Fourth, governments cannot design and impose a new architecture, but given the certainty that the private sector's risk-control models will fail at some point, they can demand earthquake bracing.

Market activity, like other forms of economic activity, is a form of human behavior, which can be assumed away in financial engineering but not in real life. Regulation is a political activity that should be informed but not commanded by the abstractions of economic theory.

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About the Author

Martin Mayer, currently a guest scholar at The Brookings Institution, has been writing about financial subjects for four decades. His books on banking and business include *Wall Street: Men and Money* (1955), *Madison Avenue, USA* (1958), *The Bankers* (1975), *The Fate of the Dollar* (1980), *The Money Bazaars* (1984), *The Greatest Ever Bank Robbery* (1990), *Stealing the Market* (1992), *Nightmare on Wall Street* (1993), *The Bankers: The Next Generation* (1997), and *The Fed and the Markets* (forthcoming). He has also written books on such subjects as the legal profession, diplomacy, education, and news gathering organizations. From 1987 to 1989 he wrote a twice-monthly front-page column in *American Banker* and is also a music critic. Mayer served on the President's Panel on Educational Research and Development in the Kennedy and Johnson administrations and was a member of the National Commission on Housing for Ronald Reagan. He received a B.A. from Harvard College.

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