

ECONOMIC COMMENTARY

Federal Reserve Bank of Cleveland

Specialization in Risk Management

by Jerry L. Jordan

The financial press is full of stories lately about the risks associated with financial derivatives. The casual reader might think that some new risks have been invented, or that our financial system is riskier now than it was a few years ago.

Neither conjecture is true. Nor is it true that an overriding policy priority today is the need for new legislation or new regulation to deal with derivatives. I realize that some people believe a modern financial system can be stable only when buttressed by wise regulation and other government interventions. Naturally, these people view financial innovations like derivatives as potentially destabilizing challenges to policymakers and regulators.

My own view is that financial innovation tends to be inherently *stabilizing*, not destabilizing. Modern financial systems—and, for that matter, market economies based on private property and price systems—are inherently resilient. Financial innovations reinforce the natural discipline and stabilizing forces at work in a market economy.

Financial derivatives are innovations that allow us to buy and sell risks in new ways. What needs to be understood is that derivatives are innovations in *risk management*, not in risk itself. Innovations in risk management should be welcomed, as when wheat farmers first learned to lock in the price they would get for their current crop by using futures contracts. All businesses and investments

involve risks. Improving the allocation of these risks should make individuals better off and should reduce, not increase, the likelihood that financial shocks will damage the real economy.

In this *Economic Commentary*, I hope to make two points:

1) Risk exists because there is uncertainty in the world. Successful innovations in risk management, such as derivative instruments, do not make financial markets riskier. Rather, they enhance wealth by allowing comparative advantages to evolve in identifying and managing risks.

2) Government supervision of financial activity can strengthen the ultimate discipline coming from the marketplace. However, regulation of, and intervention in, financial markets in today's global environment will have unintended consequences by defeating comparative advantages and by socializing risk.

■ Specialization and Risk

People often say they want to "reduce risk," "minimize risk," "eliminate risk," or "avoid risk." Such language suggests that risk is undesirable, as it generally is for most people. However, individuals shed risk largely by passing it along to others. For the system as a whole, risk remains unchanged—it is simply borne by someone else. This someone may be a specialist who is better equipped to manage it or, in the case of public policy, a citizenry that may or may not be aware that a risk has been socialized.

Over the past year, derivative financial instruments have come under intense scrutiny, prompting some to call for new legislation or regulation to address their perceived risks. At a recent academic conference, Federal Reserve Bank of Cleveland President Jerry L. Jordan gave his perspective on the issues. In this excerpt of his paper, he emphasizes that these contracts represent innovations in risk management, not in risk. As participants develop fuller disclosure and better accounting and legal conventions, derivatives will enhance wealth by allowing risk to be borne more efficiently. Ultimately, regulation comes from the global marketplace and should not be distorted by a central-bank safety net.

Physicists say that matter can be neither created nor destroyed, but its form can be converted from solid to liquid to gas. Something similar can be said of risk. Uncertainty about the future exists in nature and can take a variety of forms—uncertainty about the weather, about income, about tax receipts, about interest rates, or about foreign exchange rates, for example. Such uncertainties can be transformed into risk—that is, into a more or less reliable set of probabilities based on accumulated knowledge. Risk gauges the degree of imperfection in our predictions, sometimes summarized in the standard deviation or variance of a predicted value.

Risk can be converted from one type to another. Interest-rate risk can be transformed into credit risk, for example, by a swap or futures contract. Risk can be transferred from one party to another, as when a homeowner refinances a fixed-rate mortgage at a floating rate. Specific risks can be subdivided into component parts, as when an investor holds a floating-rate, government-guaranteed loan. Here, the risk on the loan has been parceled out into interest-rate risk, assumed by the borrower; credit risk, assumed by the government; and prepayment risk, assumed by the investor. In short, risk can be managed.

Financial risk management has been evolving for centuries, but with the dawning of “the information age,” it has undergone a significant change. First, modern telecommunications technology has broken down geographical and political boundaries that once isolated local markets. We now operate in a global marketplace on the basis of global information. Second, modern computing power makes it feasible to identify, simulate, and market various types of risk without transferring ownership of any underlying assets.

Redistributing risk from less to more efficient specialists means, in general, moving toward a more efficient allocation of risk-bearing resources. Wealth is enhanced because despite savers’ trepidation about interest-rate risk, for example, more houses are built as more mortgages are packaged into collateralized

mortgage obligations and sold in the global capital market. As a result, less of something else may be built, but the world is better off because markets have used the new financial technology to offer savers a higher return per unit of risk, and consumers a lower cost of consumption per unit of risk.

■ Derivative Financial Instruments

Financial derivatives were being used long before the 1970s, when organized exchange trading began. Thereafter, most derivative financial contracts were traded on the commodities exchanges, so that holders of contracts were protected by the exchanges themselves, as well as by Securities and Exchange Commission (SEC) rules. The exchanges, as the counterparty to each contract traded, had a clear self-interest in promoting the integrity of trading and delivery, and that remains the approach to supervision of exchange-traded derivative contracts today.¹

The most rapidly growing segment of the derivatives market, and the locus of recent innovation, is in over-the-counter (OTC) contracts. These contracts are outside the purview of any exchange rules. They include ordinary currency and (largely) interest-rate swaps, plus a small portion in more exotic hybrid contracts. Typically, one or more of the counterparties to an OTC contract is a dealer, frequently a money-center bank, with the contract tailored to the unique needs of its counterparty—much like a commercial loan.

Most banks say they enter into derivative contracts simply as end users, to meet their own risk management needs. The dozen or so large dealer banks, however, are counterparties to a large percentage of all OTC contracts. These banks must manage the net risk that results from their dealer position, earning their income from a bid-ask spread.

Even a derivatives dealer will not necessarily try to run a riskless book of offsetting derivatives exposures, but instead may want to use its dealer position to offset a risk exposure elsewhere on its books. For end users as well as dealers,

derivatives must be part of a larger risk-management strategy. Current accounting practices, of course, do not produce an integrated record of risk management. This is why some supposed losses from derivatives are not losses at all, but simply represent the offset to gains elsewhere in the business. Offsetting the gains and losses yields the neutral position the firm was trying to ensure by offloading certain types of risk. Referring to a firm’s derivatives business as an actual or intended profit center, on the other hand, suggests an intention to do more than contribute an ingredient to risk management, perhaps by arbitraging some market niche, or simply by engaging in informed speculation.

■ Supervision and Regulation

The beauty of a market economy is that innovations like derivatives can be expected to have good results, as the invisible hand—market supply and demand—mediates among the self-interests of potential users. Adam Smith’s economic theory, however, seems at variance with the spectacular losses attributed to derivatives activity in recent years. Current proposals to regulate derivatives are, at least in part, a reaction to those losses. Is self-interest really a sufficient basis for further development of derivatives markets?

One reason for huge losses undoubtedly is lack of familiarity with the new technology, but this doesn’t suggest a need for new legislation or regulation. The recent spate of losses has been associated, for the most part, with so-called “exotic” derivatives that make up only a small fraction of the market. Of course, “plain vanilla” OTC currency and interest-rate swaps and futures can have very long maturities, so experience to date is not necessarily the whole story there. Also, most losses on derivatives contracts to date have been absorbed from the capital of the user, its parent, or its sponsor, and *not* from any discount on the value of the contract to the party “in the money.” The counterparties of those who have lost a lot have indeed gained a lot, but they can’t expect to lay off risk on such favorable terms in the future.

The market discipline of losses can be a powerful educator. In fact, however, many of the recent highly publicized losses may not have taught us much about derivatives. Instead, they have administered refresher courses with titles like "interest rates are not a one-way bet," and "leveraging assets leverages risk," and "unsupervised employees create problems." The potential for loss has provided an incentive for concerted action by all market participants to change the infrastructure of markets. Law, accounting, and standard market practices devised in isolated markets for a few paper instruments must be updated to cover new derivative instruments in the global market. Recommendations of the Group of Thirty, for example, illustrate the self-interest of the participants in the OTC derivatives market in seeking the basis for more reliable evaluations of risks.

Government can help to strengthen institutional arrangements that promote market discipline. Most observers agree that reliable information is not yet consistently available about positions in derivatives. Supervisory authorities are in a unique position to help market participants develop common forms of disclosure. In the United States, we could release our bank examiners' CAMEL and BOPEC ratings, for example.² We already stimulate the spread of information within banking organizations by using the examination to ask fundamental questions that can otherwise be overlooked. Is a bank's strategy to be only an end user, or also a dealer in derivatives? Do staff, top management, and directors all have the same understanding of the bank's derivatives strategy? How consistently is that strategy being communicated to shareholders and to the public?

Another, more difficult, step will be to incorporate off-balance-sheet risks into firm-specific capital adequacy measures. In the case of exchange-traded contracts, risk is not so contentious an issue. Daily marking-to-market and margin requirements protect the exchange, while the strength of the exchange protects the counterparty in the money. OTC derivatives, in contrast, cannot be marked to market directly, so another method of

monitoring exposures must be developed. The U.S. federal banking supervisors currently have a proposal out for comment based on the work of the Basle Committee of central banks.

Not all proposals for government action in the derivatives market are as benign as generating better information. As a rule, it is wiser to let market forces mete out losses as well as profits, rather than forcing everyone to follow suboptimal rules and socializing losses. Certainly there can be no permanent detailed direction of derivative practices from regulatory personnel whose technical expertise, while substantial, cannot match that of market players. Nonetheless, there is a crucial role for oversight by the chartering authority or, more significantly, by the provider of deposit insurance in protecting the public trust and the public purse. In Ronald Reagan's phrase about arms control, "Trust, but verify."

■ Systemic Risk

Financial innovations in general, and derivative instruments in particular, may represent nothing more than new specializations being developed to manage risk more efficiently. These new risk specializations should increase economic efficiency and human well-being, as their benefits are realized through market trading. This assumes, however, that the social costs of derivatives are no different from their private costs, and that both the issuer and the holder of a derivative instrument recognize—and, in the long run, pay and receive—a price that covers all costs. Some legislators and other observers of the derivatives phenomenon are not convinced that privately perceived costs fully cover social costs. The difference, or the "externality" that is not internal to the operations of buyer and seller, is attributed to potential systemic risk consequences.

Systemic risk refers to the possibility of a domino-like collapse of a number of interrelated borrowers and lenders, triggered by some initial failure in one market. If private calculations of risk encompass only the possibility of the initial failure, but not the potential domino effect, then market participants assume

risk exposures whose perceived private costs understate their true social costs.

Systemic risk is related to the phenomenon of financial bubbles and manias—like the process that drove the Nikkei average close to 40,000 in Japan in late 1989 and that is now driving sales of shares in the MMM enterprise in Russia, despite government warnings that it is nothing more than a Ponzi scheme. In a bubble, market participants become caught up in an enthusiastic belief in the impossible. When the bubble bursts, a domino-like wave of failures envelops the market as the world comes back to reality. In the case of systemic risk, there is no bubble to burst, but only a failure to price the chance of something else triggering a domino-like wave of failures.

The popularity of OTC derivatives contracts might be construed as a temporary bubble, particularly from the perspective of those whose mismanagement has produced spectacular losses. With hindsight, even private cost apparently was seriously underestimated. Continued rapid growth of derivatives contracts at the pace of the past several years certainly would begin to raise the mania flag. Even in a global financial marketplace, there must exist a finite limit to shiftable risk. For now, however, that point does not seem to be in sight.

Modern discussions of systemic risk do not emphasize the mass delusion of a bubble in setting up the dominoes for a financial collapse. The systemic risk concept seems to postulate some new and different externality that makes private calculations of risk understate the true susceptibility of financial contracts to loss. The absence of incentives to internalize all costs associated with certain instruments creates a problem in the aggregate that is not apparent at the microeconomic level. The presence of this presumed externality invites government intervention to restore the equality of private and social marginal cost.

Identifying the source of the externality is a major difficulty with the systemic risk concept. Some have argued that borrowing is like an internal combustion

engine, polluting the financial market atmosphere. When I lend to you by reducing my liquidity or otherwise accept greater risk, I increase the probability that I will be unable to meet my obligations to others. However, this would represent a negative externality from the point of view of my creditors only if they were *unaware* of my lending to you. The pollution argument breaks down to the extent that my creditors, acting out of self-interest, are able to internalize the supposed externality. Loan covenants, for example, protect a creditor from a debtor's entry into unforeseen debt or credit relationships. More generally, the expectation of internalizing this potential externality is recognized in the eternal watchphrase, "Know thy counterparty!"

In the case of derivatives, a variant of the pollution argument has emphasized the concentrated dealer market. Each of the dozen or so major dealers is the source of an interdependence among the exposures of its worldwide circle of end users. Evaluations of the counterparty risk exposures of these end users should include a dealer risk, analogous to country risk, that would be too trivial to notice in a less-concentrated market. Similar allowances might be made for interdependence arising from the use of common operations centers, payment networks, legal advisors, or credit rating services, to the extent those were acquired in concentrated markets. Evaluating risk is not a simple matter; it involves compound probabilities and *cross-correlations*.

In general, the interdependence envisioned in the systemic risk model seems to involve the sensitivities of many large counterparties to one another. Derivatives and globalization of markets may indeed be producing more complex compound probabilities of trouble. However, so too is the information age vastly expanding the ability to monitor counterparties and markets. If sophisticated financial engineering can produce complex derivative products, cannot that same sophistication also estimate the increasingly complex compound probabilities of trouble?

There seems to be no reason to believe that the potential externality of such complex financial relationships has outdistanced an increasingly powerful ability to internalize that possibility. The commercial overhead of modern financial centers—including satellite-fed, on-line, worldwide information and monitoring systems, armies of legal talent, and even on-site monitors from the rating agencies—all reflect the substantial expenditures of firms trying to internalize their risk exposures.

As long as economic agents are able to estimate complex probabilities of failures, systemic risk is indistinguishable from normal credit risk. Knowing your counterparty, your counterparty's counterparties, and so on, should lead to quality spreads in market prices, to prudent loss reserves and capital from which to absorb losses, and to equality of the private and social cost of risk.

■ Moral Hazard

Apprehension about the systemic risk consequences of derivatives seems to be associated with a widespread conviction that it is the job of government—meaning central banks and deposit insurance providers—to prevent a systemic collapse. Even if government had no such intention, a market conviction that it would come to the rescue would lead to an externality and to excessive risk-taking. Systemic risk would become real only because of the erroneous belief in a bailout.

Here is where central banks must tread very carefully. There is a moral hazard in reassuring markets, or in allowing markets to believe incorrectly, that a lender of last resort will provide a low-cost way to prevent a contagious spread of broken promises. If systemic risk is becoming as worrisome as we are led to believe by some commentators, the reason may not be innovations in financial technology such as derivatives, but the moral hazard of central banks' implicit willingness to underwrite that risk.

Moral hazard is a real danger in central banking. This was demonstrated during the last great spurt of financial innovation, the cash management revolution of the 1970s. Prophets had foretold the coming of cashless transactions. In the United States, however, both cash transactions and cash *balances* were eliminated. What happened was that the Federal Reserve, first implicitly and then, after 1976, explicitly, guaranteed that a bank receiving a Fedwire payment would have good funds whether or not the paying bank had sufficient funds in its account at the time the payment was made. The moral hazard of this guarantee was that paying banks would not maintain sufficient funds to cover their payments, thereby producing precisely the condition against which the guarantee was designed to guard. By the beginning of the 1980s, well over \$100 billion of Federal Reserve daylight credit was being created each day, on demand, to accommodate transactions and thereby temporarily converting private risk exposures into Federal Reserve risk exposures.

Efforts to reduce and manage Federal Reserve payments system risk in the past decade have required the painstaking construction of institutional mechanisms to make the cost of daylight credit explicit to the banks that use it. This in turn can be expected to make obsolete those market institutions that evolved on a foundation of free daylight credit.

A risk management revolution is now in full swing. The specter of growing systemic risk is used to rationalize nonbank access to the Federal Reserve's discount window, to seek direct nonbank access to Fedwire payment finality, and to call for regulatory controls on derivatives. The danger—the moral hazard—involved in a ready assurance of central bank assistance lies in the potential conversion of private risk exposures into Federal Reserve risk exposures. The twofold challenge is to stop falling dominoes, if necessary, and to avoid subsidizing risk taking. A first step in meeting that challenge might be to make the discount rate a penalty rate, not a below-market rate.

■ Concluding Remarks

Rapidly spreading use of derivatives suggests that they are expected to add value for those on both sides of contracts. Derivatives don't add to the risks inherent in a modern financial system. They do, however, allow risk to be borne more efficiently.

Financial innovations are to be welcomed as basically wealth enhancing. As John LaWare, one of my Federal Reserve colleagues, has said, "Derivatives ... have been used primarily to contain risk.... A ... useful definition of banking is that the banker essentially manages financial risks for his depositors. His job is to manage risk, not avoid it."³

The information age is changing the way risk is managed. This is simply a part of the broader scientific revolution we call the information age, described by economist and former U.S. Secretary of State George Schultz as "... the computer and the technology of instant communication...transforming the worlds of finance, manufacturing, politics, scientific research, diplomacy, indeed, everything."⁴

Some of the pressure for new legislation and regulation is based on the view that the entire financial system could be jeopardized by the fallout from losses sustained by a single large participant in derivatives markets. My view is that such vulnerability has not been established. In fact, I believe that certain proposals might actually encourage systemic risk by penalizing standard risk-hedging methods and by changing behavior to get around the regulations. Those who argue that financial innovation calls for new regulations should remember that new regulations often stimulate new innovation.

To the extent that derivatives are not well understood, surprises should be expected and should be no cause for concern as long as information about the use of derivatives is not hidden, and is matched by attention to the adequacy of liquidity and capital. A more significant danger is that we may smother market incentives for counterparty scrutiny with overly generous assurances of central bank assistance.

The ultimate regulator of any economic activity is the market. In the case of finance, the global marketplace is a powerful source of discipline. As we consider proposals for government action, I suggest that we establish a litmus test. Namely, in the words of Federal Reserve Chairman Alan Greenspan, "The relevant question ... is whether private market regulation is enhanced or weakened by the addition of government regulation."⁵

■ Footnotes

1. The nature of contracts, however, has expanded to include a wide variety of options indexed to financial-market measures like stock market price indicators and even the monthly average overnight federal funds rate.
2. CAMEL and BOPEC are acronyms for the factors underlying regulatory risk ratings used for banks (Capital, Asset quality, Management, Earnings, and Liquidity) and bank holding companies (Bank, Other subsidiaries, Parent company, Earnings, and Capital).
3. John P. LaWare, remarks presented at the American Bankers Association's 1994 National Regulatory Compliance Conference, Washington, D.C., June 13, 1994.
4. George P. Schultz, *Turmoil and Triumph: My Years as Secretary of State*. New York: Charles Scribner's Sons, 1993, p. 586.
5. Alan Greenspan, testimony before the Subcommittee on Telecommunications and Finance of the Committee on Energy and Commerce, U.S. House of Representatives, May 25, 1994.

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