

Keeping Risk on Track

By Leo Melamed

- × *Procter & Gamble posts losses of \$157 million by virtue of derivatives positions.*
- × *Atlantic Richfield, the American energy giant, loses some \$72 million in financial derivatives in an employee investment fund it manages.*
- × *Piper Jaffray loses \$700 million in a U.S. Government-bond fund.*
- × *Metallgesellschaft, the German industrial giant, comes close to receivership after losing nearly \$2 billion in derivatives.*

Headlines on losses related to derivatives trading have recently shaken the financial community—the reported losses are nearly \$7 billion since early 1993. Their cumulative effect has resulted in increased media discourse on the dangers of derivatives and signaled an alarm in the corporate sector. These headlines have also acted as an impetus for federal authorities to examine the need for regulations over this huge, complex, and relatively new market arena.

Clearly, such headlines are proof that derivatives represent a complex financial

instrument that can result in serious financial losses. But that should not be startling—the marketplace is by definition filled with inherent risk. The critical questions posed by these headlines is whether risk disclosure is necessary and whether derivatives pose an increased systemic threat to the financial fabric of the world sufficient to require stringent federal regulation.

Historical Perspective

For this discussion it is imperative to understand the history of derivatives, what they are, their risk and purpose. Economist Henry Kaufman points out that the current trend toward using derivatives was the result of a dramatic rise in “floating rate financing opportunities; massive securitization of mortgages and other financial products; sweeping internationalization of trading of currencies, bonds and equities; a striking shift toward portfolio investment; and a worldwide explosion of budgetary deficits.”

Kaufman’s historical overview is quite correct as far as it goes. But the driving force behind the growth of derivatives was not changes in the financial environment, but rather radical technological advancement—particularly in computer science. This technological revolution affected the entire world. The forces it unleashed produced profound transformations in every component of civilization—from science to finance. To be more specific, computer technology has moved the world from the big to the little, from the vast to the influential.

In physics, we moved from General Relativity to quantum physics, and in biology from individual cells to gene engineering. The world’s first understanding of the atom was simply as a solid central nucleus surrounded by tiny orbiting electrons. However, new computer technology brought a much clearer comprehension of the complexity of the atom, its subatomic particles of electrons, protons and neutrons, and its nucleus containing intricate combinations of quarks. Similarly, in biology, technological advancements taught us that cells, originally thought to be simple repositories of chemicals, are more like high-tech factories in which complex chemical reactions produce substances that travel via networks of fibers.

In markets, the evolution was strikingly similar. When advancements in computer technology were applied to established investment strategies, the result was remarkable. Just as it did in the sciences, market applications went from macro to micro. Intricate calculations and state-of-the-art analytical systems ensued, offering financial engineers the ability to divide financial risk into its separate components. Derivatives—the financial equivalents to particle physics and molecular biology—was born. The primary purpose of these instruments is not to borrow or lend funds but to transfer price risks associated with fluctuations

in asset values.

This process was initiated by the financial futures revolution in 1972. This revolutionary innovation created the first broad-based risk management products. Modern academic theory then acted as a catalyst in the process by fostering the principle of risk management as a necessary business regime. Thereafter, evolution in world economies, as Mr. Kaufman noted, transformed these relatively simple tools into the present genre of complex derivatives.

Financial Engineering

Using their computers, financial engineers began to comb world markets searching for inefficiencies, financial exposure, and investor’s dilemmas, to create synthetic financial instruments to solve the perceived risks. Consequently, an infinite number of derivative products were created whose values depend on the value of one or more underlying assets or indices of asset values. Simple futures contracts in foreign exchange, Eurodollars, and bonds evolved into complex swaps and swaptions, strips and straps, caps and floors. Investment methodologies were transformed from all-encompassing traditional strategies to finely-tuned modern portfolio theories; long-term hedging evolved into on-line risk management.

Investment evolution is the offspring of

necessity—derivatives have grown because they are essential. Today’s world offers a highly complex and hazardous economic environment where competition is global, financial volatility is continual, and opportunities rapidly appear and disappear on a constantly changing financial horizon. Today’s world demands cost-efficient instruments that can protect from inherent financial risks, adjust portfolio exposure between securities and cash, hedge against interest rate and exchange rate exposure, manage assets and liabilities, enhance equity and fixed income portfolio performance, and protect against commodity price rises or mortgage interest expense.

As a result of derivatives application, risks are reduced, losses are minimized, and profit is increased over a wide sphere of financial enterprise—these positive results go mainly unreported in the media, and the constructive effects go far beyond direct benefits to the private sector. Both exchange-traded and OTC derivatives foster rapid growth in international trade and encourage capital flows. These instruments serve to funnel excess savings from mature industrialized countries into higher yielding opportunities in developing nations. By providing the means to manage risk, financial derivatives reduce the cost of capital, thereby facilitating investment, economic growth, and raising the standard of living.

Types of Risk

However, the foregoing does not imply that derivatives are a panacea for the world and without risk to the user. The recent report of the U.S. General Accounting Office correctly enumerates four sets of risks posed by derivatives:

Credit risk. The exposure to the possibility of loss resulting from a counterparty's failure to meet its financial obligation;

Market risk. Adverse movements in the price of a financial asset or commodity;

Legal risk. An action by a court or by a regulatory body that could invalidate a financial contract; and

Operations risk. Inadequate controls, deficient procedures, human error, system failure, or fraud.

While these general types of risk exist for many financial activities, the GAO emphasizes that "the specific risks in derivatives are relatively difficult to manage because of the complexity of some of these products and the difficulties in measuring these risks." On the basis of this difference, the GAO concludes that there is a need for new federal regulations. Many experts argue this conclusion. In their opinion, the only compelling rationale for new federal regulations is if derivatives substantially increased systemic risk. That has not been the finding by most studies.

The most widely recognized report on derivatives—The Group of Thirty (G-30) chaired by former Federal Reserve Board chairman Paul Volcker—concluded that: "Derivatives by their nature do not introduce risks of a fundamentally

different kind or of a greater scale than those already present in the financial markets. Hence, systemic risks are not appreciably aggravated." In other words, dividing risk into its basic components does not create a greater quotient of risk than what was already present. The present Chairman of the Fed, Alan Greenspan, and the CFTC reached a similar conclusion and rejected the notion that derivatives require fundamental changes in regulatory structure. In testimony before Congress earlier this year, Alan Greenspan generally praised derivatives, stating "The Board believes that the array of derivative products that has been developed in recent years has enhanced economic efficiency. The economic function of these contracts is to allow risks that formerly had been combined to be unbundled and transferred to those most willing to assume and manage each risk component..."

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It would, however, be foolish to conclude that derivatives pose no dangers and that the market system cannot be improved. As Greenspan also pointed out, "Even if derivatives activities are not themselves a source of systemic risk, they may help to speed the transmission of a shock from some other source to other markets and institutions. Or as Henry Kaufman succinctly stated in recent Congressional testimony, "writ-

ing over-the-counter options, particularly the more complicated ones, is a very different business from the traditional activities of a bank or a securities firm."

There are yet unknown dangers created by a wide assortment of OTC financial options, and to an extent even exchange-traded options. These range from simple standard options to a complex species of hybrid instruments that combine futures, swaps, and options. There is also an emerging genre of contingent options where payment is a function of multiple possibilities. Since these contingent options create risks that cannot be perfectly hedged, the resulting risks normally need to be managed through a process of dynamic hedging—an inexact science that can heighten price movements and produce unknown consequences.

Thus, private sector implementation—by dealers as well as end-users—of sound risk management practices as recommended by the G-30 Report and the Federal Reserve is absolutely imperative. Specifically:

- The use of derivatives in a manner consistent with the overall risk management and capital policies approved by boards of directors.
- The adoption of consistent counterparty credit limits.
- The adoption of a procedure of marking positions to the market.
- The use of a consistent measure to calculate daily the market risk.
- The conducting of regular simulations of stress-tests.

Full disclosure and comprehension of the risks inherent in OTC derivatives when offered for investment or speculative purposes to the general public must be carefully considered—just as they are required in regulated futures. Exotic derivatives do not represent a traditional investment class with which the public is generally familiar. Rather they embody complex and sophisticated instruments of modern finance—best employed in risk management techniques.

The notoriety received as a result of recent headlines has served the important purpose of energizing industry leaders to act responsibly or face the onslaught of burdensome federal regulation. Unfortunately, these headlines may also serve to unduly frighten boards of corporate end-users. This could prove disastrous. Indeed, if corporate boards refrain from prudent use of derivatives because of fears of consequential losses to their corporate bottom line, wait until those boards see the reduction in their corporate bottom line as a consequence of abstention from derivatives application.

Make no mistake about it: the value of derivatives is not an imaginary notion. These instruments are not a selective luxury that can be done without. If the use of financial derivatives as a hedge mechanism is unduly restricted, the consequences to the world's financial fabric will be much harsher than anyone realizes. In our global market environment—driven by constant and changing market risks, instantaneous information flows, and sophisticated technology—derivatives are an essential instrument of finance. They are indispensable in the management of risk and of immense benefit to a nation's economy.

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