



## LEARNING CURVE® VaR DERIVATIVES

Imagine the following scenario: A U.S. dollar-based corporate treasurer finds out that his company's Australian dollar currency forward exposure could be easily offset through the negative correlation between his Aussie dollar exposure and the outstanding Deutsche mark exposure from the mark-denominated 10-year bond his company issued a year ago.

Because the diversified value-at-risk that his company is exposed to is brought lower by the negative correlation, it does not make sense for him to do an Aussie dollar option or forward trade to hedge the risk individually. In other words, the Aussie dollar currency exposure may represent a negative incremental VaR to his company and by doing an Aussie dollar option trade to hedge away the Aussie-dollar exposure, he could be increasing firm-wide VaR inadvertently.

For derivatives bankers to survive, they need to find new ways to offer corporate customers the right risk management solutions instead of pushing the conventional derivatives products that their bank has to offer. VaR derivatives could be the light at the end of the tunnel for many of today's conventional derivatives operations.

VaR represents a set of methodologies to measure market risks. The systemic approach of the VaR concept was first brought to the financial world's attention by the Group of Thirty in its *Derivatives: Practices and Principles* published in July 1993. As it stands right now, VaR is only used to measure market risk, although proposals have been raised to implement the same concept to measure credit (DW, 6/17) and even operational risks.

VaR is basically a statistical estimate that measures, at a certain confidence interval (say, 95%), the amount of value in a certain currency that a portfolio or an organization may stand to lose within a certain time horizon period (say, 10 days) due to the potential changes in the market prices of the underlying assets. The possible time horizons for analysis could be only one day for most trading positions or a month or longer for an investment portfolio.

Although at the moment only banks must disclose market risk exposure and provide capital to back up such

exposure, brokerage houses soon may be required to do so as well. It would be more than just speculation to foresee corporate treasurers following suit and begin managing their corporate treasury risks in a similar fashion a couple more years down the road.

And when VaR gains a foothold in the board room of many of the world's corporations and financial institutions, treasurers will become less inclined to manage their treasury risks on an isolated basis. The demand for traditional currency options or interest rate swaps, for example, will be growing at a much slower rate, if not declining. In its place will be the growing demand for integrated risk management tools such as VaR derivatives.

We have already seen the development of increasing applications of multi-asset or correlation derivatives developed for corporate users such as currency basket options, quanto swaps, and commodity-linked interest rate caps in the past few years before the big bang of the market risk management for the banks themselves started.

What are VaR derivatives? Could they take the form of VaR calls, VaR puts or VaR swaps? Few can give a precise answer now.

Irrespective of its future forms, the basic definition of VaR derivatives should be no different from the definition of derivatives elsewhere. They are financial contracts where the profit and loss are determined by the cash flows of the underlying instrument, in this case, the VaR. For example, a VaR floor might be purchased where the strike price would be at the 95% confidence interval and its in-the-moneyness would be determined by the extent to which realized losses exceed the VaR amount. Floorlet dates might be set to correspond with the time horizon of the customer's VaR calculation—daily, monthly, et cetera.

Consider the following scenario: A sterling-based customer holding a portfolio composed primarily of European currency-denominated securities is interested in buying some sort of insurance on his portfolio as he does not have (or is unwilling to put up) enough capital (GBP 2.4 million, using a multiplier of 3) to support

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his investment portfolio exposure. Let's assume his daily VaR is GBP0.8 million (e.g., 95% confidence interval) based on a portfolio size of GBP600 million. If he can buy insurance for the next year for a GBP0.3 million portion of his daily VaR, he will be left with only GBP0.5 million for which he can come up with the required capital charge (GBP 1.5 million now).

Assume there are three global banks interested in offering VaR derivatives to assume the potential daily loss of GBP 0.3 million (the same 95% confidence interval), and they all have different accounting currencies—i.e., one is a Japanese bank; one is a German bank and the last one is a U.S. bank. The pricing from all three banks would be quite different due to the different accounting currencies and the banks' own portfolios.

Theoretically, there could be a situation where adding the customer's portfolio to the bank's own portfolio would create a negative incremental VaR for one of the banks and a positive incremental VaR for the other two. If this happens, does this mean the bank with negative incremental VaR addition should actually pay the customer for assuming his downside risk while the other two banks are charging him?

What does this all mean for the future bank risk management business? Would there be more cross-border transactions with companies searching around the world (maybe through an Internet search engine) to find banks with the most negatively correlated portfolios? Would it be the banks with the largest and most diversified portfolios that would become the eventual winners in this new game of risk management? Or would it be the ones that are currently most isolated and undiversified that would benefit most from involving themselves in this new business due to the additional negative incremental VaR (or small positive incremental VaR) as they expand their portfolios?

The concept of VaR derivatives sounds novel to many financial market participants of today. It would not be totally without possibility that the first-ever VaR derivatives trade will be done within the next two to three years. After all, for many of the early birds among today's financial institutions, once they have gotten beyond the hurdle of understanding, calculating and implementing VaR in their respective institution, what they should be doing with this newfound information is the next big question. If these people are thinking of how they should try to reduce VaR, try to alter it or to use some way to temporarily offset it without totally eliminating it, then without knowing it, they have already been preparing themselves to become

tomorrow's vast group of the VaR derivatives consumers.

*This week's Learning Curve was written by Ralph Yiebin Liu, managing director at Advanced Risk Management Solutions (ARMS) Pte Ltd (Singapore) and co-chair for the Singapore dinner committee of the International Association of Financial Engineers.*

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# Insurance Finance & Investment

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AUGUST 26, 1996

### Introducing Fund Marketing Alert

Today marks the debut of *Fund Marketing Alert*, a new I/I sister publication formerly known as *Fund Decoder*. We've revitalized our coverage of new fund products, marketing and distributions to make *Fund Marketing Alert* the most compelling industry intelligence source anywhere. For subscription information, call (212) 224-3800.

### FINAL BIDS DUE

SWISS RE, ERC SAID TO BE DUKING IT OUT FOR M&G RE.

Final bids are due this week for Mercantile & General Reinsurance (M&G Re), the U.K.'s largest reinsurance company, in a deal that could top 1.5 billion pounds (US\$2.32 billion), say officials familiar with the situation. Zurich-based Swiss Reinsurance and Overland Park, Kan.-based Employers Reinsurance Corporation (ERC), a unit of General Electric Capital

(continued on page 2)

BIG CALIFORNIA INSURER SHIFTS CONSULTANTS; WILL MANAGER SEARCH FOLLOW?

Marsh Networks in Woodland Hills, Calif., has dropped incumbent consultant Board Asset Strategy Consulting, reportedly because Wellpoint. Now we, is preparing

did not rule out

### NOTES

notes in New York, of the new financiers. According to Working Group, the instructions as well as meeting guidance and

(continued on page 14)

### URE

ness, Louisville, Ky., that is proving to be While there is plenty of tricky regulatory envi-

(continued on page 15)

### IN THE NEWS

TENERE GROUP LAUNCHES SEARCH

DEALS & FINANCE

GUARANTEE RESERVE ON THE BLOCK?

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LINCOLN ISSUES TOPRS

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## THE WALL STREET JOURNAL

AUGUST 28, 1996

### Swiss Re Plans \$2.65 Billion Purchase In Drive to Expand Business in U.S.

Swiss Reinsurance Co. agreed to acquire Mercantile & General Re of British for £1.7 billion (\$2.65 billion) cash, making Swiss Re the

By Wall Street Journal staff reporters Margaret Stuber in Zurich and Matthew Stone in London.

world's leading provider of life and health reinsurance. Reinsurers are insurance companies' insurers, helping them to

In the U.S., the world's largest life and health insurance market, the new combination will have life and health and property and casualty premiums of \$2.3 billion, making it the third-largest provider of such services.

The acquisition concludes a consolidation in the reinsurance sector as the players share. It also sets the stage for

Swiss Re said it "expects the transaction to contribute substantially to the group's earnings." In 1995, M&G reported pre-tax profit of \$200 million. Swiss Re's 1995 pre-tax profit was \$1.1 billion. Swiss Re's 1995 pre-tax profit was \$1.1 billion.

The proposed takeover follows an announcement this month that Munich Re of Germany intends to buy American General Re for \$2.3 billion. In July, it is a \$400 million deal; and French insurer AXA acquired Allstate Re of the U.S. for \$200 million.

Munich Re is the world's largest reinsurance company, followed by Swiss Re. Together, they are said to control around 40% of the \$200 billion global market.

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