Value of derivatives based on other assets

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Derivatives are interesting critters, running the gamut from conservative hedging tools to exotic, complicated formulas.

To help understand derivatives and analyze some of the transactions that led to the recently announced loss in the State Investment Fund, the Wisconsin State Journal enlisted the help of Izzy Nelken, president of Super Computer Consulting Corp. in Illinois.

Basically, derivatives are investments whose value is determined or derived from the value of an underlying asset or security or from a market index or interest rates.

A simple example of a derivative would be an option on a stock. Purchasing a stock option allows an investor to either buy or sell that stock for a certain price within a specified time.

If you buy an option to purchase a share of stock for $5, and the stock has risen to $7 per share on the exercise date, you can acquire the share for $5, sell it for $7 and pocket the difference, minus the cost of the option.

An option also can be used to hedge an investment, allowing you to sell a share for $5, even if its value on that date plunged to $3.

Options can be used to introduce leverage, too, allowing an investor to realize a large gain relative to the investment. However, that same strategy can open the investor up to a large loss.

Think of leverage in terms of buying a $100,000 house. If you pay cash for it and sell it in five years for $150,000, you would realize a $50,000 gain on your $100,000 investment, a 50 percent gain.

If you pay a $10,000 down payment for the same house, and sell it five years later for the $150,000, you would still realize a $50,000 gain but it would be five times your initial investment, less your monthly payments.

But if the house lost half its value in the five years you owned it, the same concept applies. Your loss would still be $50,000, but the severity of the loss relative to your initial investment varies. If you had paid cash, you would have lost half your investment. If you had paid $10,000 down, you would have lost five times your initial investment.

The derivatives that led to the losses to the State Investment Fund are far more complicated than a straight stock option. But they evolve from the same principles.

Some of those derivatives involved floating rate notes, inverse floaters and swaps, according to Nelken.

Swaps are agreements between two parties to exchange interest payments on a notional amount of principal according to different formulas. Notional means that the principal never changes hands.

An example of a basic swap is where one party will receive a fixed rate of interest, say 8 percent. In return, that party has to pay a floating rate to the other party. Many floating rates are based on the Libor (London inter bank overnight rate) or Pibor (Paris inter bank overnight rate).

Swaps are private agreements and can be traded among securities dealers.

Nelken analyzed two of the dozen problem transactions that the investment board acted to neutralize on March 16.

One was a four-year swap agreement initiated in 1993 with Morgan Guaranty Trust Co. of New York. The notional amount was $10 million, meaning the formula used was based on that principal amount, but no principal changed hands.

During 1994, the Libor rates climbed, eroding the investment board's position. The Pibor remained relatively steady through 1994, also working in the investment board's favor. But in February 1995, it jumped dramatically, in turn dramatically reducing Morgan's payment to the investment board.

The rising rates were extremely detrimental to the investment board's position.

The investment board had similar swaps with Bankers Trust Co. These were essentially based on the spread between Mexican bonds and U.S. Treasury rates. A narrow spread worked in the investment board's favor.

But when the Mexican government devalued the peso in late December, Mexican interest rates jumped, converting the investment board's position into a losing one. As the peso continued to decline and interest rates soared, the investment board's situation worsened.

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