

**Economist.com****FINANCE & ECONOMICS****Volatility****An eerie calm**

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**The fact that implied—ie, expected—volatility in financial markets is so low should give investors everywhere pause for thought**

THERE are few beasts in the financial jungle more curious than the market in uncertainty. Traders buy and sell uncertainty as readily as if it were something tangible, like pork bellies or Treasury bonds. Strange though it may seem, it is no exaggeration to say that the price of just about every risky asset in the world depends in part on investors' perceptions about the price of uncertainty. It is precisely because investors appear so certain about the future that the prices of so many assets are now so high. The opposite holds too, of course. If investors became less certain, those prices would fall.

In financial markets, uncertainty goes under the name of volatility—how much asset prices are moving around. One popular measure of stockmarket volatility, the Chicago Board Options Exchange's VIX index, has fallen to its lowest since 1996 (see chart). In August 2002, it soared to 45; this year it has mostly traded between 14 and 16. Interest-rate volatility has also fallen sharply, though not as far.

What most concerns traders and investors is not how much assets have moved in the past, but how much they are expected to do so. In the jargon, this is called implied volatility. It is the number that traders plug into the models they use to price options: the VIX, for example, is an index of implied volatility of options on America's S&P 500 stockmarket index.

Lately, investors in risky assets of all sorts have been selling options. Whether they think of it this way or not, they have been selling volatility too. "The whole world is short volatility," says David Goldman, the head of fixed-income research at Banc of America Securities, with a flourish. As volatility has fallen, so investors have raked in profits on those risky assets.

The price of uncertainty

The market for traded uncertainty really came into being in 1973, with the publication of a now-famous paper by Myron Scholes and Fischer Black. Before then, pricing options had been something of a guess. The problem was putting a price on a contingent liability—something that would be exercised only if it was in the buyer's interest to do so. The paper produced a neat solution, which has been developed over the years. All the seller needed to do was to put in a few variables, and the Black-Scholes model, via some ferocious maths, churned out an answer. Implied volatility is the most important of these inputs.

According to the latest survey by the Bank for International Settlements, at the end of last year there were roughly \$50 trillion-worth of options outstanding in the world. Vast though this figure is, the true total is many times greater, because many assets have options embedded in them, even if their presence is not always plain. For this reason, understanding volatility is crucial to understanding movements in the prices of many securities.

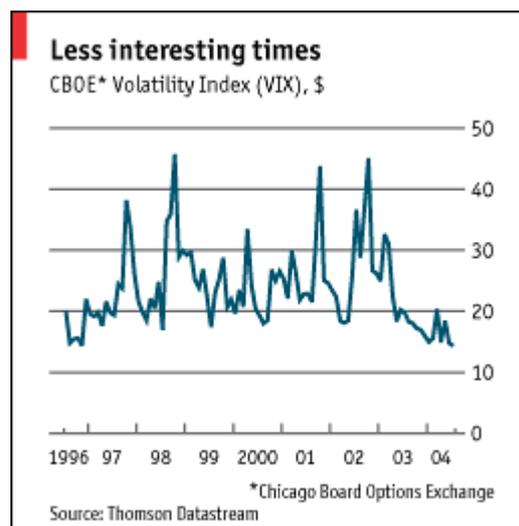
Some of these options that are embedded in securities are more obvious than others. Take the market for mortgage-backed securities (MBSs), or bundles of mortgages, which in America is now bigger than the Treasury market. Sellers of American fixed-rate mortgages, which the buyer can repay at any time, have, in effect, sold the holder an option to redeem. The price of that embedded option is thus vital for putting a price on an MBS.

Similarly, anyone buying a firm's debt takes the risk that they will not be repaid—and is thus, in essence, selling the firm an option to default. The extra yield above that on government bonds is the premium that investors demand for that risk: the greater the risk of default, the higher the spread. The same applies to government bonds, which is why emerging-market debt has historically traded at a discount to rich-country debt. Current tight spreads imply that investors think that companies and emerging-market governments are less likely than usual to default.

Investment banks have spent many millions of dollars trying to tie theory to practice. They started in the 1980s with MBSs and in recent years have tried to do the same with corporate bonds. Many investment banks and even the big rating agencies now use signals from the stockmarket as a guide to the riskiness of a company's debt. The implied volatility of options on a company's shares, for instance, can be viewed as the cost of insurance against the worsening of a firm's prospects, as measured by its share price.

When equity prices are falling and the cost of that insurance is high, spreads widen. But as equities have climbed since the dog days of autumn 2002, and implied volatility has fallen to a third of its level then, prices of corporate bonds and other risky assets have risen dramatically.

The question, of course, is whether the price of uncertainty, particularly in equity markets, will remain as low as it is now. Markets have become less volatile than they were between the spring of 2000 and the autumn of 2002. Moreover, firms in many countries, particularly America, are swimming in record profits, and the longer the global recovery continues, the more convinced investors become that the good times will continue. Both make for more



certain share prices.

But the steep fall in implied volatility is nonetheless a bit odd. There are, after all, many things that could go wrong for financial markets: tensions are still bad in the Middle East; the oil price is again over \$40; and the Federal Reserve is raising interest rates when American households are more indebted than they have ever been.

One reason why volatility is so low is that there are so many sellers of equity options—sellers, as it were, of insurance against falls in share prices. Their sales have driven down the price of implied volatility. In the absence of nasty surprises, selling options is a splendid way of making money, and buying them a wonderful way of losing it. This is why, in the absence of decent returns elsewhere, investment banks and fund managers of every hue, hedge funds not least, have been selling them with a will. It is, if you like, another consequence of the world's still-low interest rates.

It is also risky; sometimes, very risky. Many financial catastrophes have been caused by selling options. The most famous came in 1995, when a rising star at a British bank sold 34,000 options on Japan's Nikkei 225, driving implied volatility on the world's second-biggest stockmarket from 22% to 11%. But share prices plummeted after the Kobe earthquake, volatility soared, and the bank went bust. The man's name was Nick Leeson and the bank was called Barings.

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