Jacobs's lather

By Alyssa A. Lappen

With the U.S. stock market continuing to punch through record levels, pundits occasionally trot out the usual suspects that might end the financial exuberance: resurgent inflation, trouble in the Balkans, 100 new Internet IPOs.

One money manager, however, is warning about a very different and more complicated scenario that could trip up the markets. It takes a little options theory to make sense of the logic. You're not likely to hear about it at cocktail parties. But Bruce Jacobs may have history on his side.

In his new book, *Capital Ideas and Market Realities: Option Replication, Investor Behavior, and Stock Market Crashes*, Jacobs, co-founder and principal of Roseland, New Jersey–based Jacobs Levy Equity Management, argues that recent market breaks have been caused by new forms of derivatives-related forced trading. As investors seek to protect or adjust their portfolios with options strategies, he asserts, they ironically create an environment where a moderate decline in the market could turn into a brutal fall or even a crash.

"That's precisely what happened in 1987," says Jacobs. "October 19 saw trading equivalent to many days' volume, and people reacted as if there were negative fundamental information when there was none." In 1987 a then-popular form of hedging called portfolio insurance was blamed by some regulators and investors for at least exacerbating if not causing the market crash.

Now Jacobs warns darkly that a similar phenomenon has taken hold, through the use of options and dynamic hedging, in the U.S. stock market. The notional value of options on U.S. equity indexes amounts to at least $900 billion, Jacobs estimates, including $600 billion in publicly traded index options and $300 billion in over-the-counter options. Equity index options worldwide run to about $2.4 trillion, Jacobs figures, including $900 billion in exchange-traded options and a further $1.5 trillion in OTC options.

When trading desks sell options, to the extent that they can't buy publicly traded options to offset their exposure, they need to hedge their position dynamically by buying or selling the underlying shares, says Jacobs. Unfortunately, the size and direction of their trading puts severe pressure on the overall market, he believes. "The potential hazard of the options-based market is that the market becomes the derivative, subservient to the options," says Jacobs. "The volume of trading needed by option replication trades can exceed a normal day's trading. The dynamic trading required to replicate both put and call options follows the market trend. Investors sell stock or sell short as stock prices fall and buy or cover short positions as stock prices rise — creating more buying pressure in rising markets and more selling pressure in falling markets."

Jacobs Levy's Jacobs: Fearing the options

The study of dynamic hedging is a long-standing hobby for Jacobs. As an equity manager at Prudential Insurance Co. in 1982, Jacobs first pondered the concept of portfolio insurance. This was hawked widely in the mid-1980s — in the form of "insured" active and equity index accounts — as protection against a market meltdown. He steered the insurance giant away from selling strategies like those sold by Aetna Life & Casualty, Bankers Trust Co., Chase Manhattan Corp., First Chicago Corp., J.P. Morgan, Travelers Corp. and Wells Fargo Bank, among others. By 1987 $100 billion in stock portfolios, or about 3 percent of the total U.S. market capitalization, was "protected." So much for insurance. Not only did the technique prove ineffective against losses, it was blamed by many for forcing sales into a plunging market. The result: a one-day record decline of 23 percent. Jacobs, who became an instant hero for steering Prudential away from the technique, says: "Portfolio insurance, which caused the crash in 1987, was the first strategy to come out of options pricing theory — the idea that you can protect against loss by creating options synthetically."

To be sure, not everyone agrees with Jacobs that portfolio insurance and related program trading deserve all the blame for the crash. Some academics and market researchers maintain that computerized trading was simply a scapegoat. Jacobs's latest argument, about the dangers of dynamic hedging, could prove just as controversial on Wall Street, which earns a tidy sum from its premiums on OTC options and its profitable derivatives business.

"Jacobs's position that dynamic

hedging can be a dangerous thing is correct," says Gary Gastineau, head of new product development at the American Stock Exchange. "But we differ on how much dynamic hedging goes on. It has been my experience that since 1987 there has been somewhat less dynamic hedging than went on before, and I think there is fairly good institutional memory about what happened then."

Rather than dynamically hedge, Amex options specialists hedge their positions to create relatively neutral portfolios, Gastineau says. Similarly, index options specialists neutralize those positions with portfolios of individual stock options. "There are probably some desks at some investment banks that use extensive dynamic hedging," he says. "But at most banks people know their exposure to volatility, and if that gets too high, they buy instruments that will increase in value with a rise in volatility."

Jacobs's math is complex, but the logic behind his argument is fascinating and counterintuitive. After all, options are typically supposed to reduce, not increase, risk. "You buy a put to protect you on the downside and a call to provide opportunity on the upside," says Jacobs. "And all it costs is the premium. But when investors buy options, often there is not a natural player to take counterparty risk. So the over-the-counter houses often end up being short options, and they have to dynamically hedge — create synthetic long options to offset the risk they take on."

In a relatively calm market, options-related trading may not be a problem. But options-related selling in a plunging market can be like all of Wall Street trying to squeeze through a single door.

"The whole notion of two parallel securities creates an illusion that options provide a riskless proposition," says Jacobs. In fact, he argues, this notion presents only half of the options equation, conveniently omitting the fact that on the opposite side of any trade, someone carries the risk of having sold the option in the first place. And that counterparty risk makes today's markets unstable.

The U.S. markets' stupendous performance in the 1990s largely erased the memory of the violent 1987 correction. But Jacobs worries that that event foreshadows what may yet come. "It was forced selling akin to that which occurred in 1929 over several days," says Jacobs. "You need to sell stock, and as the markets fall, you need to sell more. What sets it in motion is the beginning of a decline. But that kind of decline is not transparent. Trades are triggered by an unseen force, creating an informational cascade."

In other words, investors fear that the sellers have fundamental information. In fact, they don't. But the perception is enough to set off a panic. A few smart investors may realize that portfolio insurers are going to sell, and they try to front-run the herd by dumping securities, Jacobs says. "So you get gap-down pricing."

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Such panic selling occurred in the bond market in 1998, Jacobs believes, when another "something-for-nothing strategy" backfired at Long-Term Capital Management. "In an expectation that volatility would decline, LTCM sold equity options short," says Jacobs. "They also expected bond volatility to decline and yield spreads between government bonds and riskier high-yielding securities to narrow, but they widened, and LCTM got killed." A flight to quality triggered by the Russian currency crisis caused spreads between the LTCM trades to balloon, with potentially dire consequences.

"In the absence of more capital or borrowing, LTCM would have had to unwind its entire position," says Jacobs. The big problem was that others, including several major investment banks, had mimicked LTCM's trades, making it impossible for the market to offload all that leverage unless major firms took major hits, says Jacobs. "So the Fed orchestrated the bailout of LTCM."

The options pricing model developed by Fischer Black, Robert Merton and Myron Scholes set the stage for robust options and derivatives markets that enabled investors to artificially replicate stocks and markets. Then in the 1980s professors Hayne Leland and Mark Rubinstein at the University of California at Berkeley and California consultant John O'Brien promoted portfolio insurance, fostering the notion that one could synthetically — and without risk — duplicate options securities.

"That theory was also behind some of the arbitrage at Long-Term Capital," says Jacobs, "and that, too, is behind the sons of portfolio insurance, the dynamic hedging trades that investors put on to replicate options."

Jacobs's thesis is the latest piece of a long-running debate about the systemic risk posed by the rise of a derivatives culture and computerized trading. "These are trend-following trades, positive-feedback systems that make the market more volatile. As the market rises, the option seller has to buy more stock to cover the short sales. Unlike a household thermostat, or negative-feedback system, which regulates temperature when a room gets too hot or too cool, a positive-feedback system moves in the same direction as the market, accelerating gains and declines," Jacobs explains.

Far from creating a more efficient market, Jacobs says, options trading merely shifts risk, creating a universe driven by mechanized trading as opposed to fundamental values.

And today's lofty market could be ripe for some extreme examples of this phenomenon. At these price levels, Jacobs concludes, more investors seek options to protect themselves, so the market follows the options trading. In that memorable phrase of the 1980s, the tail is wagging the dog. It's enough to make even a happy-go-lucky day trader shiver. ii