

# Pensions & Investments

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## Nobel -winning strategy criticized:

### Jacobs: Model adds to volatility

By **Barry B. Burr**

Strategies using option pricing theory, a model heralded with a Nobel prize in October, may have the unintended consequence of causing extreme market volatility.

Bruce I. Jacobs, principal, Jacobs Levy Equity Management Inc., Roseland, N.J., contends that certain strategies amplify market movements, causing price decline trends to cascade.

He asserts these strategies, using the option pricing model, may have caused the wild swings in the markets at the end of October. He blames the Oct. 19, 1987, market crash on portfolio insurance, a hedging strategy derived from option pricing theory. He blames subsequent sharp declines, such as in 1989 and 1991, on strategies engineering by options-pricing theory.

The Black-Scholes-Merton options-pricing model was developed by Fischer Black, who has since died, Myron S. Scholes and Robert C. Merton, the latter two of whom won the Nobel prize in economics last October.

Others interviewed, including Mr.

Scholes and Merton H. Miller, 1990 Nobel laureate in economics, disagree with Mr. Jacobs' general contention that the options pricing model can lead to strategies that cause highly volatile markets. Many of them, however, agree portfolio insurance worsened at least to some degree the 1987 market crash.

No one agreed with his assertions on options hedging amplifying market movements.

Mr. Jacobs notes that the recent highly publicized market losses of Niederhoffer Investments Inc., Weston, Conn., managed by Victor Niederhoffer, may have been a disaster for clients, but his strategy or those like his didn't likely exacerbate the tumultuous markets in October.

Mr. Jacobs contends trend-following option hedging continues to destabilize the market.

#### **One destabilizing strategy**

As Mr. Jacobs describes one market destabilizing strategy, some put and call option writers, or sellers, hedge to protect their positions against adverse market moves.

Their hedging results in market trending trades, or trading that increases market movements and leads many fundamental investors acting in a way suggested by behavioral finance proponents to follow along, trading still more in the trending direction of the market and exacerbating the movements, Mr. Jacobs asserts.

These fundamental traders, misreading the signal from the hedgers as a fundamental change in the economy or a company, are acting on fear and greed, he said.

Before Black-Scholes-Merton, hedging was ad hoc, Mr. Jacobs said. Their model gave rise to precise hedges, leading to more use of the strategy.

Put or call writers hope to profit from the premiums they receive on selling puts or calls. Hedging is implicit in Black-Scholes-Merton, he said.

Call writers risk losing out on potential upside gain as the price of the underlying market index or individual stock of the call they sold rises above the call's exercise price. In this case, they also risk having the underlying equity position called away by the buyer of the call. If

the price keeps rising, an unhedged call writer's risk is unlimited until the call expires.

Put writers risk losses when the price of the underlying market index or individual stock falls before the put's exercise price. In this case, buyers of the put will seek to sell their equity position to the put writer at the exercise price, rather than the lower market price.

To protect their positions, some put and call writers employ hedging strategies, Mr. Jacobs said. These hedging strategies, rooted in the option pricing model, destabilizes the market.

### **Neutralizing the risk**

As the market rises, the call writer could buy a call to hedge, but that would totally offset the short call position and negate the call premium income. So to neutralize the risk, he suggests, a call writer as the market rises buys stocks or stock index positions to hedge against the call being exercised.

Buying equity in a rising market fuels positive momentum. That's trend-following behavior, Mr. Jacobs said.

It's positive feedback trading, meaning an investor buys as the market rises, or sells as the market falls. A negative feedback trade, however, would tend to have a stabilizing effect on the market.

A negative feedback trader would sell equity positions as the market rose and buy as the market fell.

To reduce risk exposure, these call writers buy stocks. The call writer buys stock after the price has risen and tends to cause an exaggerated price risk in the stock, he said.

Notice what happens if the prices begin to recede, however. The call writer bought the stock long it doesn't need it so it begins to sell in a declining market.

A put writer wanting hedge protection begins to worry as prices fall.

That's when the put writer is at risk, he said. So the put writer sells stock short, so the put writer won't be totally exposed.

The put writer makes money from shorting stocks as the market falls and uses the proceeds to offset losses from the puts he sold as they are exercised.

As prices begin rising, the put writer covers the short stock position by buying stock. Again, that's trend-following behavior.

### **Exacerbating volatility**

Put writers and call writers can exacerbate market volatility when they seek to hedge their exposure, Mr. Jacobs said. But only if they seek to hedge their exposure.

Victor Niederhoffer didn't seek to hedge his exposure, Mr. Jacobs said. He ate it all. He was a natural counterparty for the wild trading in October. He attempted to absorb risk. Unfortunately, he was on the wrong side of it.

Mr. Jacobs doesn't know if hedging, relying on Black-Scholes-Merton, destabilized the market toward the end of October, saying it needs researching.

With Black-Scholes-Merton hedging can be more exact, he said. But there is a problem because hedging activity may affect market prices and prices might not be continuous meaning when prices changes gap, instead of declining or rising in steady, small increments.

Black-Scholes-Merton gave rise to dynamic hedging, which is another term for a replicating portfolio or synthetic option and portfolio insurance. It allows an option to be simulated by taking dynamic positions in stocks and cash equivalents.

A replicating portfolio can fail when there are gaps in prices, he said. There is no ability to get out at prices indicated when prices gap, falling suddenly, say, from 35 to 25.

To the extent trading is trend fol-

lowing, it can exacerbate volatility and give rise to gap.

In contrast, he said, portfolio rebalancing or contratrend trading is stabilizing and lessens volatility, because investors sell equities as the market rises, or buy equities as it falls.

### **Trading in the same direction**

But when you are trading in the same direction of the market, you are likely to be a destabilizer, he added.

There is a tendency for other investors those not in the destabilizing strategy to trade in the same direction as these call and put writers, because they misread that trading as representing some fundamental information, Mr. Jacobs said.

When the market rises they misread it as good fundamental news. They will trade in the same direction of dynamic hedging, because they believe the trading represents a positive sign on the economy or profitability. The fundamental traders believe they must act on the signals quickly, before they have time to research to confirm or disprove the signal of the trend.

Because investors are more averse to losses than desirous of gain, there is more likely to be panic selling than manic buying, he said. Pointing to recent market volatility, he notes the Oct. 28 gain was not as much as the Oct. 27 loss.

Mr. Jacobs isn't calling for regulation of this type of trading. But he does call for more disclosure so that investors will know which trades are informationless, that is, without any fundamental signals on the economy or corporation, to deter fundamental investors from manic buying or panic selling.

One can say there is even less disclosure today than in the 1980s, he said. Today much of it (options strategies) is done with broker/dealers. So there is less disclosure.

### **Myron Scholes disagrees**

Mr. Scholes disagrees with Mr. Jacobs contention.

If options selling and associated hedging fuel a rise in the market by sweeping along other investors in a sort of buying mania, Mr. Scholes asked, Why don't prices correct sooner? Why would it take so long for prices to correct?

Even if one accepts that investors immediately misread the rise in the market as a sign of an improving economy or an improvement in corporate earnings, Mr. Scholes said, investors likely would discover their misinterpretation and correct their positions, rather than blindly continue to buy for weeks and weeks.

I don't think the market has been rising because of options and other derivatives, Mr. Scholes said. That would mean the fundamental investors must have fallen asleep and stopped analyzing signals for fundamental clues and instead buying because of the trend of a rising market.

In addition, Mr. Scholes asked: If Mr. Jacobs's assertions are true, why doesn't the volatility happen every day, not just occasionally such as in the last part of October.

Volatility has been lower over the last 15 years when options started trading, than it was in the years previous, Mr. Scholes said.

Volatility has almost fallen in half. Anyway, who knows what the right amount of volatility should be?

In 1987, portfolio insurance might have had an effect on the market crash. But the (unprecedented huge) trading volume of the New York Stock Exchange swamped the computer systems. That caused

chaos. Liquidity became a concern.

There has to be something fundamental going on causing the market to move.

There are two schools of thought, the technical school and the fundamental school, on what is causing the crashes, he said.

In October, was it the Asia crisis or mindless trading that caused the crash? You have only one day of trading to examine. It's hard to prove what is the cause.

If the widening use of options-theory is occurring, Mr. Scholes asked, Why doesn't the volatility happen more frequently?

### **Merton Miller's opinion**

Mr. Miller, professor emeritus at the University of Chicago, also disagreed with Mr. Jacobs arguments.

The options hedging isn't new, he said. There have always been devices like that, he said, mentioning, among others, stop-loss orders and margin pyramiding.

Sure it was a factor, he said of portfolio insurance's role in contributing to the 1987 market crash. But there were a lot of factors.

There is no reason to believe option-oriented strategies affected recent market volatility, he said.

He said Mr. Jacobs contentions have been the subject of academic papers, discussed and dismissed.

He ignores the data, he said of Mr. Jacobs. Does he pay any attention to the enormous amount of stuff on the crash?

Portfolio insurance made things a little worse on Black Monday, Oct. 19, 1987, Mr. Miller said. But (it was responsible for) not a lot of the 20% drop in the stock market.

In terms of today's market, Mr. Miller said, disclosure is not a problem. If you are bearish and expose your bearishness by buying options, the market knows it. The bearish get noticed immediately.

Christopher Luck, director, First Quadrant Corp., Pasadena, Calif., also disagreed with Mr. Jacobs assertion. Mr. Luck said options strategies don't have as much influence on the market as portfolio insurance.

I would agree with Bruce that portfolio insurance exacerbated the market up and down, because you sell when the market falls and buy when the market rises. But his ideas don't seem as compelling with options.

But our option strategy is selling options when you think volatility is high and buying options when volatility is too low, Mr. Luck said.

Steve Hardy, president, Zephyr Associates Inc., Zephyr Cove, Nev., who was a principal in Balch Hardy Scheinman Inc., which was a major options overwriting firm before it closed, disagrees generally with Mr. Jacobs on option hedging's destabilizing effect.

I would agree and said for a long time that portfolio insurance was the catalyst in (the market crash of) 1987, Mr. Hardy said. That got the market going.

When you sell call options, it is the opposite of portfolio insurance. Selling has the opposite effect. Selling calls is like selling stocks and holding cash in a rising market. It has a dampening effect on market moves.