



The panel, from left: William J. Brodsky, Blair Hull, Robert Merton, Myron Scholes and Jeffrey Yass. At far right, moderator Ed Finn.

Thirty-five years after the CBOE's birth, options are booming. *Barron's* all-star industry panel sees even better days ahead.

Chicago Hope

by Steven M. Sears Thirty-five years ago, the modern options industry was born, with the opening of the Chicago Board Options Exchange. On April 26, 1973, the first day of trading, a mere 911 contracts changed hands. Last year, the exchange handled almost 945 million contracts, attesting to the enormously important role that options now play in the financial and commodities markets. • To commemorate the industry's birth and huge growth—and thus, the recognition that risk can be quantified and traded—the CBOE last week gathered some of those who had been present at the creation to predict what the future holds for the whirling world of puts and calls. The event, which drew about 250 people to the exchange's auditorium, was moderated by Ed Finn, the editor and president of *Barron's*. • The big attraction, of course, was the all-star roster of panelists, including Chicago Board Options Exchange Chairman and CEO William J. Brodsky, economists Robert Merton and Myron Scholes (fathers, along with Fischer Black, of the

The industry has grown enormously, driven by the urge to hedge against risk. And the potential uses of its products are seemingly limitless.

Options

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Photographs: Roark Johnson for *Barron's*

continued from page 52 Black-Scholes options-pricing formula, for which they won a Nobel prize in 1997), and two veteran traders who have used options to stunningly profitable effect: Jeffrey Yass, the founder of Susquehanna International Group, and Blair Hull, who founded Matlock Capital (and in 2004 ran unsuccessfully in the Illinois Democratic primary for a U.S. Senate seat, losing out to a fellow named Barack Obama.). All the panelists see options continuing to grow in importance, as individuals and institutions increasingly seek to balance return and risk in a volatile investment universe. To learn what they had to say, read on.

Barron's: Bill, how did you get your start in options?

Brodsky: Well, I was at an institutional Wall Street brokerage firm, and a fellow and his assistant came around in 1973 and wanted to sell seats on this exchange in Chicago. Our firm was involved in the old over-the-counter puts and calls business, and figured that, for the small cost of \$10,000, it was worth taking a membership at the CBOE. So I had to fill out the papers and get the check cut. But then I found out that someone had to qualify the firm by taking an exam, and taking the exam fell on me. I became the registered options principal.

But business on Wall Street was very bad in 1973. In March of that year, I looked at my wife, Joan, who's here today, and I said: "It is going to be a very bad year." She said: "Well, then, make something out of it. Write an article or do something, so that by the end of the year at least you have something to show for the year, even if it's not money." That prompted me to write an article about the CBOE for a securities-law publication, and, happily, I was able to call the CBOE and get the name of Mike Meyer, who is still our counsel. I said: "Look, I'm writing an article, I don't want to make a fool of myself. Would you make sure I didn't make any mistakes?" So I wrote this article, and it made me somewhat of an expert—and all of a sudden, my love affair with the option business began.

Blair, how about you?

Hull: In 1971, I read *Beat the Dealer*, a book by [mathematician] Ed Thorp about the game of 21 [and how to win by counting cards]. I obviously had some problems playing. [Card counters] get barred [from casinos]. I later discovered another book by Thorp called *Beat the Market*, about warrants. I knew that stock options were trading actively, but I didn't know how to price them. I came up with a quick and dirty method of figuring the expected value of the payoffs, and discounting them to the present. It seemed to work, but it was very clumsy. Thank God, the two gentlemen to my left came up with a much more elegant solution.

On to Bob, then. How did you become involved with options?

Merton: I traded my first share of stock when I was 10, if you want to call that trading; at least I bought it. I got to options in college. When I was at Cal Tech, I could get up in the morning and get down to a brokerage house by 6:30 Pacific time, when trading in New York opened, and trade all kinds of stuff and then go to classes and do my research at night. This was around 1966-'67, and these were over-the-counter options. I thought I knew a lot about what was going on; later, I found out I didn't know anything. But I got wonderful experience being in the markets. I traded



Brodsky: Democratization has changed the markets dramatically.

everything. I traded convertible bonds. I banked them. I was 20 years old. I was banking bonds at 85 cents on the dollar. You think banks today aren't sensible?

When I shifted to MIT to do economics, I met [economist] Paul Samuelson. He had written a paper on warrants and was very interested in warrant pricing, and so we did some joint research. The next major point was meeting Myron Scholes; we had a common interest in warrants, options in particular. In 1971, we went to Wall Street. At Donaldson Lufkin & Jenrette, they had heard about the funny mathematical stuff that was being done on options. They came to Myron and me and said: "We are doing a lot of options business—in particular, down-and-out options. Wouldn't it be nice to know how much we ought to be charging and what risk we had?" So Myron and I came back in an appropriately long length of time and said, "We have a solution for you."

Myron, your turn.

Scholes: Options really were in my DNA from birth. But I really didn't start in options until I became an academic at MIT, a couple of years before Bob came to the faculty. I was working with students who had this over-the-counter data and were trying to figure out how to price options. So it is out of an academic puzzle that I became interested in options per se. I had the fortunate experience to be working with [economist] Fischer Black on other matters. We started talking about the pricing of options. Unfortunately, he passed away in 1995, so he wasn't there to receive his

share of the 1997 Nobel prize. But we developed the method of valuing options that Bob Merton christened the Black-Scholes model.

It took us five years to get our paper published. From then on, it was amazing. After the birth of the Chicago Board Options Exchange, the Black-Scholes model went into the public domain. That was the most fascinating thing. Usually, you publish an academic paper and maybe 20 people read it. But, suddenly, people were asking us questions about it. Traders on the exchange used it, and academics decided that this was a wonderful research area to work in. So, academic science and practical science merged. I think both were richer from that joint experience.

Jeff, tell us when you first got involved with options.

Yass: I actually discovered the Black-Scholes model way before these guys; I guess it was in the late 1950s.

No wonder you've made so much money.

Yass: I was always fascinated as a kid by the stock market. But it didn't move around enough that you could really get a bang for your buck. When I was about 13, my father told me about warrants; this was before the CBOE existed. With warrants, you could buy something at a dollar and have it go to 10, if you got it right. That really excited me. From warrants, I learned about the theory of options pricing.

In college, I studied math and economics, and came across the Black-Scholes model and thought I might be able to make a living out of this. My college senior paper was "The CBOE: Should It Exist?" The point was: Did it add social value? Was it a casino or was it a place where investors could insure themselves and add social utility. I concluded that it should exist. I got a B.

After college, my father lent me \$30,000—I never paid him back. I was a New Yorker and I was walking around the floor of the American Stock Exchange. But an Amex seat cost \$200,000 then, so I couldn't afford one; I didn't realize I could just have leased one. A Philadelphia seat cost \$50,000, so I rented one there, and that's why I moved to Philadelphia. I called my friends, who were scattered around the country in graduate schools and law schools, and said: "I have a good idea that's probably more lucrative than what you are doing." That's how we formed Susquehanna.

Bill, what's been the most important factor in the growth of the options business over the past 35 years?

Brodsky: It's what I call the democratization of the markets. In the past decade or so, individual customers' access to the markets has increased tremendously. Individuals now have as much access, in terms of information, low commission costs and speed of execution, as the largest institutions. That has changed the markets dramatically. Along with investor education, this has made such a difference.

Blair, same question for you.

Hull: I agree with Bill, but I would say it in a different way. The Options Industry Council has educated the public on what options are and what to do with them. I think the market's fungibility and the creation of the Options Clearing Corp. has added to the ability of many exchanges to compete, especially with the advent of multiple listing.

When you only had one options market, the markets were less of a democracy. But the single thing [that changed the market the most] was the elimination of open outcry, which gave customers a better chance of succeeding, and attempted to level the playing field. It is still not completely level—we can talk more about that later—but it is a fairer game for everybody.

Bob, what's your view?

Merton: There is a long list. One factor, if very self-serving, is the technology, the analytics that were developed.

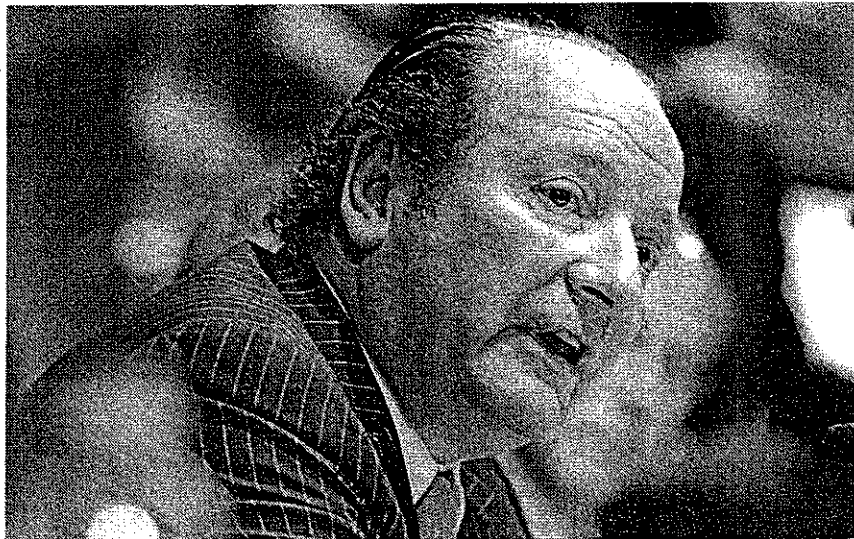
The Black-Scholes model wasn't just a formula. It was a process for figuring out the risk of, as well as the pricing of, derivatives, and that had never existed before.

Another factor I would call attention to—and I do it with some trepidation here at the CBOE—is what I'd call the innovation spiral, the interplay between markets and institutions. At any time, there's a fair amount of tough product competition, to put it delicately, between the investment-banking houses and the exchanges...and not always just in the exchanges, sometimes in legislation. That said, [both sides] are actually highly complementary. Good ideas get translated into more efficiently delivered instruments, and form the foundation for the next innovation.

Hull: We couldn't create the numerous products we have created without working with the dealers and the member community. You need the combination of what I'd call the think-tank people—the people in our research departments—and the people who are the practitioners. That's how we have been able to bring out these new products over the years. So the tension is good, but the collaboration is also good. One of the exciting things is that, 35 years later, innovation is alive and well.

Myron, what do you think has been the most important factor in the growth of options?

Scholes: One thing, obviously, as Bob said, is the technology that allowed the exchanges to attract talent. Here, for the first time, you had theory that could be tested in the real world and augmented and built upon. We now some-



Merton: We now can transfer enormous amounts of risk very efficiently.



Hull: "The playing field is still not completely level, but it's fairer for everybody."

times hear the criticism that mathematical models shouldn't be used because sometimes they've failed etc., etc. But Leonardo da Vinci is my hero. He studied birds. Birds can fly; they don't need to have any model of flying. But by studying birds, he could try to figure out how man potentially could fly. It's a wonderful thing to take intuition, try to learn from it and build a business.

A lot of the options market's success has come from making it more efficient. When I first observed the trading on the Chicago Board Options Exchange, there were two groups—the grizzled old over-the-counter traders, who said: "No models. Experience is everything"; and the young turks, who were carrying sheets of paper on which they had written the prices that the models said were right, along with hedging strategies. The young Turks wiped out the experienced traders, who didn't have the full story on options pricing.

Jeff, in your view, what's been the most important factor in the options market's growth?

Yass: Well, besides the obvious creation of Susquehanna...

Hull: He's commercializing this a little too much.

Yass: Option theory is the key. All decisions in business or life have some element of optionality. If you aren't an expert on option theory, it's very difficult to be an expert in decision-making. So it's very difficult to be competitive in anything where you have to make decisions. Option theory revolutionized the way people think. I don't want to suck up to the panel here, but it was the most revolutionary idea in a long, long time. If it took 35 years for it to be fully disseminated and to have the market grow, well, it just takes a long time to go from great idea to practicality. That basically is what happened in the options world.

OK, good history. Jeff, what do you see coming in the future?

Yass: I'm hopeful that we've just

scratched the surface of what the CBOE could trade. Its fundamental business is transferring risk from someone who doesn't want it to someone who can bear it at a better price. The risks in stocks and indexes are well known, but there are many, many risks that don't get transferred now. Among them are risks related to the growth of the economy, expected tax rates, real estate, the consumer-price index, political risk. Insurance companies have no real easy way to hedge their annuity risk; at some point, the Chicago Board Options Exchange could become involved in that.

Myron, what will be the most important factors, trends or products in the future?

Scholes: Basically, with the markets becoming more electronic, you have the ability to put on many more forms of options, including some that would cover things that Jeff mentioned, at very low costs. There will be a need to keep innovating, and to come up with new methods of hedging.

It is really hedging that creates the opportunity for options or options-type products to grow. We'll see more strategic use of options by businesses to provide them with more flexibility. Flexibility is really an amazing growth area, in my view. If you know something for certain, you can build it into hardware, but if you're less certain, you try to have more software solutions. Firms and investors are thinking more about flexibility; it can even [play a role in] providing liquidity.

Another area that I consider very important is how options and other derivatives are treated on the balance sheets of corporations. We, as a society, must decide on a completely new accounting system. The one that we have now is hampering growth, because its rules are so old-fashioned. Derivatives aren't on corporate balance sheets. Risk isn't incorporated correctly on balance sheets.

We will also see a huge growth in options to price liquidity. Let's say you own a stock and you buy a put against that stock. If the value of the stock falls, the value of the put increases. So, basically, you have reliquefied the stock. That is an example of providing liquidity to the markets. But that is a standard form, and not all needs are of that particular form. Many new forms of contracts will be born that satisfy different needs for liquidity.

Bob, your view, please.

Merton: There are many, many more exciting and big new things to do in our field than have been done. Market-proven derivative technology allows us to transfer enormous amounts of risk very efficiently. But much of the rest of the world doesn't distinguish between investing and risk transfer. Those two decisions can now really be separated, and that creates extraordinary opportunities.

Country risk could be managed on a massive scale with no capital flows, no trade flows involved. Look at sovereign wealth funds. A lot of people say that they provide a great way for a small country, say Singapore, to diversify its investments. But you don't need a sovereign wealth fund to transfer risk. For example, Taiwan, which is very, very heavily concentrated in chips, presumably has a comparative advantage in that sector, but has no control over the world chip market. So it bears a lot of concentrated risk.

What could it do to get out of part of the risk? Well, it

could sell shares of chip companies. But that is a very inefficient way to transfer risk. Instead, they could sell calls on an index of world chip stocks and buy puts. This would synthetically sell off the risk. There would have been no capital flow, but they could transfer a huge amount of risk. How much? Let's say \$10 billion—a big number, but one I think could be accommodated in that index, and if not in that, in swap form.

A lot of developing countries fear a mismatch between capital flows into their economies and out of them, which aren't coordinated and can cause economic disruptions. But you could coordinate these flows with a derivative such as a swap that marries the two flows. I think this is an exciting possibility for them and the exchanges.

That is a very powerful idea. You wouldn't get all this capital, say petrodollars, sloshing around the world, which seems to inevitably create dislocations. OK, Blair, what do you see in the future for the options industry?

Hull: What Myron and Bob have been talking about is innovation, and that is what drives this industry. I love this idea of country risk and diversifying; it's mind-blowing. But we are still faced with some other issues.

I'll go back to my theory as to why we've had so much growth—the leveling of the playing field. And that is getting rid of the difference between a customer and a market maker. We must continue leveling the playing field, so that customers and dealers are dealt with on the same basis, much as they are in the securities market. International access to our markets is a key area, too, and I think that [Treasury Secretary] Henry Paulson has been very brave in pushing his initiatives for the financial system, including the merger of the SEC and Commodity Futures Trading Commission, which would lead to a greater efficiency in clearing and lower costs.

Bill, your vision of the future, please?

Brodsky: First, I want to comment on Blair's point. The



Scholes: "We, as a society, need a new accounting system."

distinction between a customer and professional has blurred dramatically. In fact, we now have, in some respects professionals who would rather be customers for a variety of reasons. There are lower fees if you are a customer, and you have the benefits of portfolio margining previously offered only to pros. Any distinction that exists is really because the technology hasn't kept up with the demands of the marketplace. A year or two from now, there may be no distinctions at all. Things are changing, but they're certainly not changing against the customer.

As for the future, first consider that a whole string of products have come down over the years: from individual stock options, to cash-settlement products and index options, to exchange-traded-fund options and now volatility products.

There's enormous potential to have these products used by people who've never used them before. For example, we now have an exchange-traded fund based on the BuyWrite Index [which measures the return on a covered-call strategy on the Standard & Poor's 500 Index]. So customers who don't want to go through the effort of buying the index and selling the calls once a month can use this product, because we invented this benchmark and it is now being offered as closed-end funds and exchange-traded funds.

These are things that in my view are in their infancy. Today, we might have \$20 billion or \$30 billion indexed to our BuyWrite Fund. It could be \$100 billion two or three years from now, because it is such a great product. We also have volatility products. And my view is that volatility products today are where the index products were 25 years ago. We're seeing these prod-



Yass: "All decisions in business or life have some element of optionality."

ucts used not only by institutional investors and professional investors, but by a broad array of retail customers, who very clearly have learned how to use these products in very productive ways.

All right, let's move into our lightning round of questions, in which each panelist gets 30 seconds for an answer. Jeff, if you had a \$1 million to invest today, what would you do?

Yass: The simplest answer is to put it into the municipal-bond market, which is completely broken and yields 120% of Treasuries. I'm pretty confident the muni market will outperform the Treasury market in the long run. I don't see anything else as dislocated as that.

Myron, what would you do?

Scholes: I'd pay off my subprime mortgage and save my house. The government-bond markets are dislocated now. Even municipals have risk. If you look at the forward rates implied by the swap curve and look at the forward rates implied by the [Treasury-bond yield curve], it looks as if the U.S. government is safer than our banks for the next seven years, but that the banks are safer than the government for eight years thereafter, but that the government is safer than the banks 15 years thereafter. Something is amiss.

Bob, how would you invest a million dollars?

Merton: Well, I'd rather not answer that. You'd better ask someone else. You'd get much more out of him than from anything I could add on the markets.

Anyone else have a thought on this?

Brodsky: Well, as a disclaimer, I would first say that these are my ideas, not the CBOE's. I'd invest for the long term, primarily in equity markets—and in an equity realm where I would choose to use equity products that have options offered on them. But I would take 55% of the money and I would put it in U.S. stocks. Of that, I'd put 15% into SPDRs (ticker: SPY), because I can then use SPDR Options. I would take 15% in the BuyWrite Index through the recently issued **PowerShares S&P 500 Buy Write** exchange-traded fund, which has the symbol PBP. And then I would do 25% in the IWM, the exchange-traded fund on the Russell 2000 Index, which also is optionable. I'd put 30% into international equities.

Of that, half would go into the **iShares MSCI Emerging Markets Index** Fund, symbol EEM, which is the exchange-traded fund on the MSCI Emerging Markets Index. The other 15% would go into **iShares MSCI EAFE**, symbol EFA. And then I would do 15% alternatives, and I would suggest the **iPath Dow Jones AIG Commodity Index**, which is DJP.

This portfolio is very flexible. There are options for all of it except the Dow Jones AIG, and I would hope that there would be one on that in the near future.

And, by the way, I want you to know that I practice a lot of what I'm saying here. I happen to be a long-term investor and a long-term optimist. My view is that this country will thrive. Equity markets will continue to grow in value over the long term.

OK, thanks to all. ■