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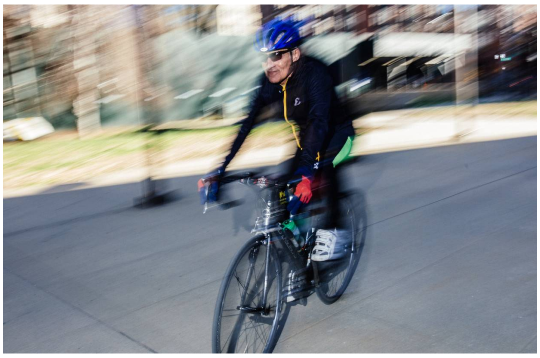
MARKETS

Wall Street's Volatility Pioneer Searches for Latest Fear Trade

A researcher whose work foreshadowed the VIX now has his eye on an entirely different barometer of market uncertainty—ambiguity



When Menachem Brenner, a New York University finance professor, isn't studying ambiguity in financial markets, he is training for triathlons. Mr. Brenner is shown riding his bike in New York City on March 2. *PHOTO: MICHAEL BUCHER/THE WALL STREET JOURNAL*

By **BEN EISEN**
March 10, 2017 5:30 a.m. ET

Investors these days are puzzling over the lack of volatility on Wall Street. Menachem Brenner hopes they'll soon be buzzing about a new indicator: the heightened level of ambiguity.

The most prominent gauge of Wall Street uncertainty, the CBOE Volatility Index, or VIX, is near its lowest level on record, confounding those who believe uncertainty is only growing.

Mr. Brenner, a professor at New York University's Stern School of Business who helped develop the first volatility index, now is focused on what he believes will be an actionable gauge of the kind of fear now pervading the markets.

"The VIX is low because it doesn't measure ambiguity. The uncertainty is much bigger than that," Mr. Brenner said. "I believe that's what ambiguity is going to capture."

Ambiguity is a measure of the degree of confidence investors have in the probabilities they use to make decisions. The concept has been around for ages, but Mr. Brenner and Yehuda Izhakian, a professor at Baruch College, are quantifying what has historically been an abstract theory, hoping to better explain the world's complexities. They intend for it to become a trading tool, like the VIX.

Mr. Brenner, a 72-year-old with a full head of gray hair and an Israeli accent, has completed two Ironman events and two races up the stairs of the Empire State Building. He spends 90 minutes or more a day working out at the NYU fitness center, flanked by students.

His work with Mr. Izhakian on ambiguity would be a fitting cap on a long career. Mr. Brenner earned his Ph.D. at Cornell in 1974, the year after publication of the Black-Scholes model for options pricing, which would catapult the options market to prominence.

After a stint in academia, Mr. Brenner in 1985 decided to become a pit trader at an options exchange. Black-Scholes had become widely accepted, and a printout of hypothetical prices derived from the model was always handy on the floor. But Mr.

New York University's Prof. Menachem Brenner, whose work aims to quantify ambiguity in financial markets, shown on the NYU campus in New York City on March 2. *PHOTO: MICHAEL BUCHER/THE WALL STREET JOURNAL*

Brenner learned that trading prices sometimes have little relationship to what the model spits out.

"You start thinking about different problems," said William Silber, a finance and economics professor at NYU, who recalls working with Mr. Brenner on the trading floor. "When the models go wrong, what do you do? What is it that's causing the market not to reflect reality?"

Mr. Brenner's eyes light up when he recalls that period, when he says he turned a profit but didn't get rich. He left the floor for NYU in 1987, one week before the stock market crashed.

In 1986, Mr. Brenner and Dan Galai, then a professor at Israel's Hebrew University of Jerusalem, published a working paper that used options prices to derive an index of stock-market volatility. They called the index Sigma and pitched it to various stock exchanges, but ran into skepticism among the financial establishment.

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"We were too early," Mr. Brenner said. It wasn't until 1993 that the Chicago Board Options Exchange would roll out the VIX, an index similar to Sigma but based on other academic work.

One constant in Mr. Brenner's career has been the class on derivatives that he has taught for three decades at NYU. The PowerPoint of the history of the VIX that he shows each class has grown longer over the years.

"Many of our colleagues, they get tired after 20 years, 25 years, and get less productive," Mr. Galai said. "Despite the fact that he is a veteran, he's still going with force."

When describing ambiguity, Mr. Brenner borrows a line from Donald Rumsfeld, the former Defense Secretary: Volatility measures the "known unknowns," or the uncertainties about which one can measure probability. Ambiguity reflects the "unknown unknowns," where the probabilities themselves are a mystery.

Mr. Brenner became interested in the topic when considering the relationship between risk and return, which hasn't always been as strong as most people believe. Taking ambiguity into account, as well as volatility, might demonstrate a stronger risk-return relationship, the thinking went.

The economist Frank Knight discussed the difference between what he called risk and uncertainty as early as 1921, drawing a distinction similar to the one Mr. Brenner makes between volatility and ambiguity. But despite the mountain of research on ambiguity, there's no widely-used measurement of it.

Mr. Izhakian, whose Ph.D. work focused on the topic of ambiguity, formulated a framework for quantifying it by analyzing market returns in five-minute increments. In that way, he and Mr. Brenner were able to conclude that risk and ambiguity together have a positive relationship with market returns.

The ambiguity measure was intriguing, showing spikes ahead of the U.S. financial crisis and European debt crisis. Now the two are working to turn it into a real-time gauge that offers a market signal to investors.

“I hope that it will become standard and this will be a measure that can be quoted in real time,” Mr. Izhakian said.

One example of what an ambiguity gauge could turn into is the VIX, which has become so prominent that options, futures, and exchange-traded products are now linked to it.

To make that happen for an ambiguity index, the two men have their work cut out.

The index is currently calculated on a monthly basis. To make it an intraday gauge, they will need more rapid-fire data and more computing power. Plus, Mr. Brenner thinks they will have to overcome early resistance from the financial industry just as the early volatility index encountered.

Colleagues agree that it will be challenging. Mr. Brenner says he doesn't think ambiguity will gain the mass audience the VIX has amassed. But he hopes eventually to see it in wide use by traders and investors. After all, he said, these times call for it.