Using fear to guide smart investments

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Playing the stock market can be a risky game. And when the market behaves unpredictably, public fear can lead to erratic investment responses and market chaos.

But there is a way to make this fear work in your favor, say Prof. Eshel Ben-Jacob and Dr. Yoash Shapira of Tel Aviv University's Raymond and Beverly Sackler School of Physics and Astronomy. The team's recent research demonstrates that a smart stock market portfolio should not only take into account negative correlations on returns among the stocks, but also the dynamics of volatility. "It's a way to build a portfolio that takes fear and other cognitive investor responses into account," says Prof. Ben-Jacob.

Reported in *AIP Advances*, the journal of the American Institute of Physics, this is the first study that uses the prism of volatility to study the effect of human behavior on financial markets.

Drawing inspiration from neurons

As they investigated trends in market volatility over long periods of time, the researchers, with their doctoral student Dror Y. Kenett, were able to discover a certain method to the market's madness — a pattern within the chaos.

Currently, Prof. Ben-Jacobs explains, market analysis assumes that occurrences within the market are random — what happens one day is unrelated to what may happen the next. But this is unrealistic, he says.

Any change in the market, from a declining index to a change in policy, informs the way people invest. They might not remember precisely what they reacted to, but the cognitive sensation of uncertainty will stay with them.

Like Prof. Ben-Jacobs' earlier research into similarities between the U.S. market and the epileptic brain, this research was also inspired by neuron networks. The firing of neurons in the brain, says Prof. Ben-Jacobs, might appear to be random, but when you measure variations of activity, a pattern emerges. The same can be said of stock market volatility.

The researchers looked at 50 years worth of information taken from 10 stock markets in seven different countries to analyse fear volatility, determined by time variations in the volatility. What emerged was a strong correlation between the level of volatility and price variations in the market. A higher level of volatility represents bigger fear, says Dr. Shapira, and less volatility, less fear.

Mastering fear of the market

The researchers believe that understanding how human behavior impacts the stock market will help investors conquer their fear of an unpredictable market. "People usually look at volatility as a danger. It makes the market risky," says Prof. Shapira.

However, being able to analyse the variations in market volatility can help redefine risk parameters — and this includes the factors that make people fearful, adds Prof. Ben-Jacobs. Fear can be systematically measured by looking at changes in volatility.

Prof. Ben-Jacobs suggests that investors can enrich their portfolios with stocks whose volatility behaves in different ways. A portfolio should include pairs of stocks with negative return correlations and similar high

or low levels of volatility, as well as pairs of stocks with positive return correlations, but varying levels of high and low volatility. It should also include stocks with both rapid and slow changes in volatility, he suggests. When you assume there is a hidden order to the chaos, you can also estimate or predict with some level of certainty what the coming phases of volatility will bring.

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