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# The Nasdaq Volatility Index During and After the Bubble


## David P. Simon



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## Abstract

The VIX index of implied volatilities for OEX index options was introduced in the early 1990s and is widely followed as an investor “fear index.” This article examines the VXN, a similar volatility index for Nasdaq 100 options, over a period that includes both the inflation of the Internet “bubble” and its bursting. If the VXN is the market’s best estimate of the future volatility of the Nasdaq 100 index, it should be an unbiased forecast of subsequent realized volatility. But if the VXN represents a “fear index,” it will reflect variations in investors’ emotions, for example rising after a sharp market drop to reflect heightened concern and an increase in investors’ demand to buy put options. It may also be influenced by technical indicators of market direction. Simon finds that even after correcting for the effect of a little-known built-in bias in the way it is constructed, the VXN averages about 7-1/2 percentage points higher than subsequent realized volatility. It also shows a strong asymmetrical response to positive and negative index returns, as has been found in other implied volatility studies. A GARCH model fitted to the returns on the actual index also reveals an asymmetrical response of volatility to returns, but much smaller than for the VXN. The evidence suggests that implied volatilities from options on the Nasdaq 100 index reflect the stochastic properties of the index itself, but they also show behavior that appears to be more closely related to investor sentiment.

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