



CBOE Volatility Index (VIX)

([Click here](#) to see a live example of the VIX)

Introduced by the CBOE in 1993, VIX is a weighted measure of the implied volatility for 8 OEX put and call options. The 8 puts and calls are weighted according to time remaining and the degree to which they are in or out of the money. The result forms a composite hypothetical option that is at-the-money and has 30 days to expiration. (An at-the-money option means that the strike price and the security price are the same.) VIX represents the implied volatility for this hypothetical at-the-money OEX option.

OEX Oct 800 Call		OEX Oct 800 Put	
current date	11-Sep-00	current date	11-Sep-00
expiration date	20-Oct-00	expiration date	20-Oct-00
days to expiry	40	days to expiry	40
time to expiry	0.1096	time to expiry	0.1096
risk-free rate	5.92%	risk-free rate	5.92%
stock price	807.69	stock price	807.69
strike price	800	strike price	800
option price	27.39	price	14.58
implied volatility	19.20%	implied volatility	19.25%

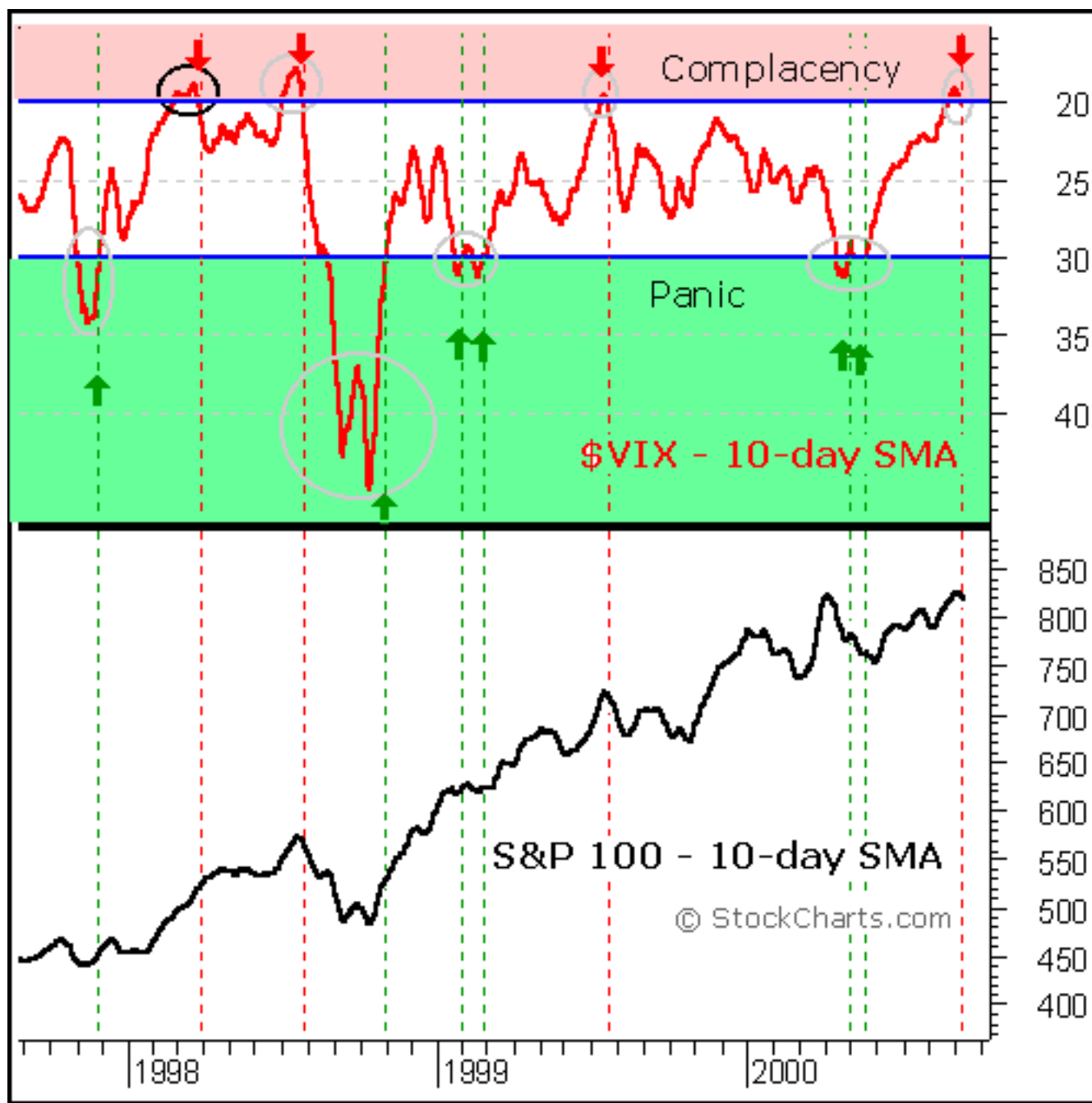
OEX options are by far the most traded and most liquid index options on the CBOE. Because of their dominant activity, OEX options represent a good proxy for implied volatility of the market as a whole. As OEX trades, VIX is updated throughout the day and can be tracked as an intraday, daily, weekly or monthly indicator of implied volatility and market expectations.

Typically, VIX (and by extension implied volatility) has an inverse relationship to the market. A chart of the VIX will usually be shown with the scale inverted to show the low readings at the top and high readings at the bottom. The value of VIX increases when the market declines and decreases when the market rises. It seems that volatility would be a two-way street. However, the stock market has a bullish bias. A rising stock market is viewed as less risky and a declining stock market more risky. The higher the perceived risk is in stocks, the higher the implied volatility and the more expensive the associated options, especially puts. Hence, implied volatility is not about the size of the price swings, but rather the implied risk associated with the stock market. When the market declines, the demand for puts usually increases. Increased demand means higher put prices and higher implied volatilities.

For contrarians, comparing VIX action with that of the market can yield good clues on future direction or duration of a move. The further VIX increases in value, the more panic there is in the market. The further VIX decreases in value, the more complacency there is in the market. As a measure of complacency and panic, VIX is often used as a contrarian indicator. Prolonged and/or extremely low VIX readings indicate a

high degree of complacency and are generally regarded as bearish. Some contrarians view readings below 20 as excessively bearish. Conversely, prolonged and/or extremely high VIX readings indicate a high degree of anxiety or even panic among options traders and are regarded as bullish. High VIX readings usually occur after an extended or sharp decline and sentiment is still quite bearish. Some contrarians view readings above 30 as bullish.

Conflicting signals between VIX and the market can yield sentiment clues for the short term, also. Overly bullish sentiment or complacency is regarded as bearish by contrarians. On the other hand, overly bearish sentiment or panic is regarded as bullish. If the market declines sharply and VIX remains unchanged or decreases in value (towards complacency), it could indicate that the decline has further to go. Contrarians might take the view that there is still not enough bearishness or panic in the market to warrant a bottom. If the market advances sharply and VIX increases in value (towards panic), it could indicate that the advance has further to go. Contrarians might take the view that there is not enough bullishness or complacency to warrant a top.



The chart above shows the inverse relationship between VIX and OEX. Generally, VIX decreases in value as OEX rises, and visa versa. A 10-day SMA was applied to both the VIX and OEX for smoothing. Over the last three years (Oct-97 to Sept-00), VIX produced roughly 7 extreme readings greater than 30 (light green) or less than 20 (light red). The four readings above 30 indicated excessive bearishness, panic or an extremely high implied volatility: Nov-97, Sept-98, Feb-99 and Apr-00 (green arrows). The three

readings below 20 indicated excessive bullishness, complacency or low implied volatility (red arrows).

Once the extreme readings were recorded, a confirmation signal was given when VIX returned above 20 or below 30 (vertical dotted line). Except for the first bearish signal in Mar-98 (black circle), most of the signals were pretty timely. Two of the bullish signals produced small double bottoms in the VIX that could have led to small [whipsaws](#), but the subsequent "second" signals proved quite profitable. As of this writing (13 September 2000), the VIX 10-day SMA has just risen above 20 and this could be considered the fourth signal of excessive bullishness or complacency among option traders.

Note on Rex Takasugi's VIX chart: Rex inverts VIX by taking the reciprocal of the open, high, low and close. If VIX is 30, then $1/30 = .033$.

For more information on options, option pricing and volatility, see the following:

- [CBOE Website](#)
- [Trading Index Options](#) by James B. Bittman
- [Buying and Selling Volatility](#) by Kevin Connolly

Written by Arthur Hill

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