

Use of Volatility Products

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Overview of Volatility Markets

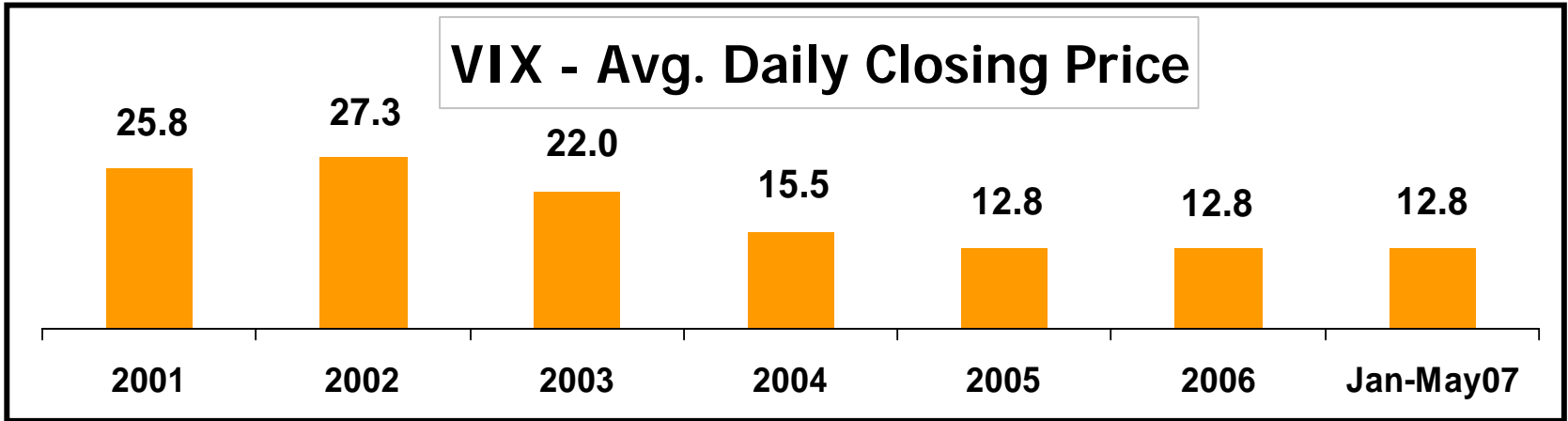
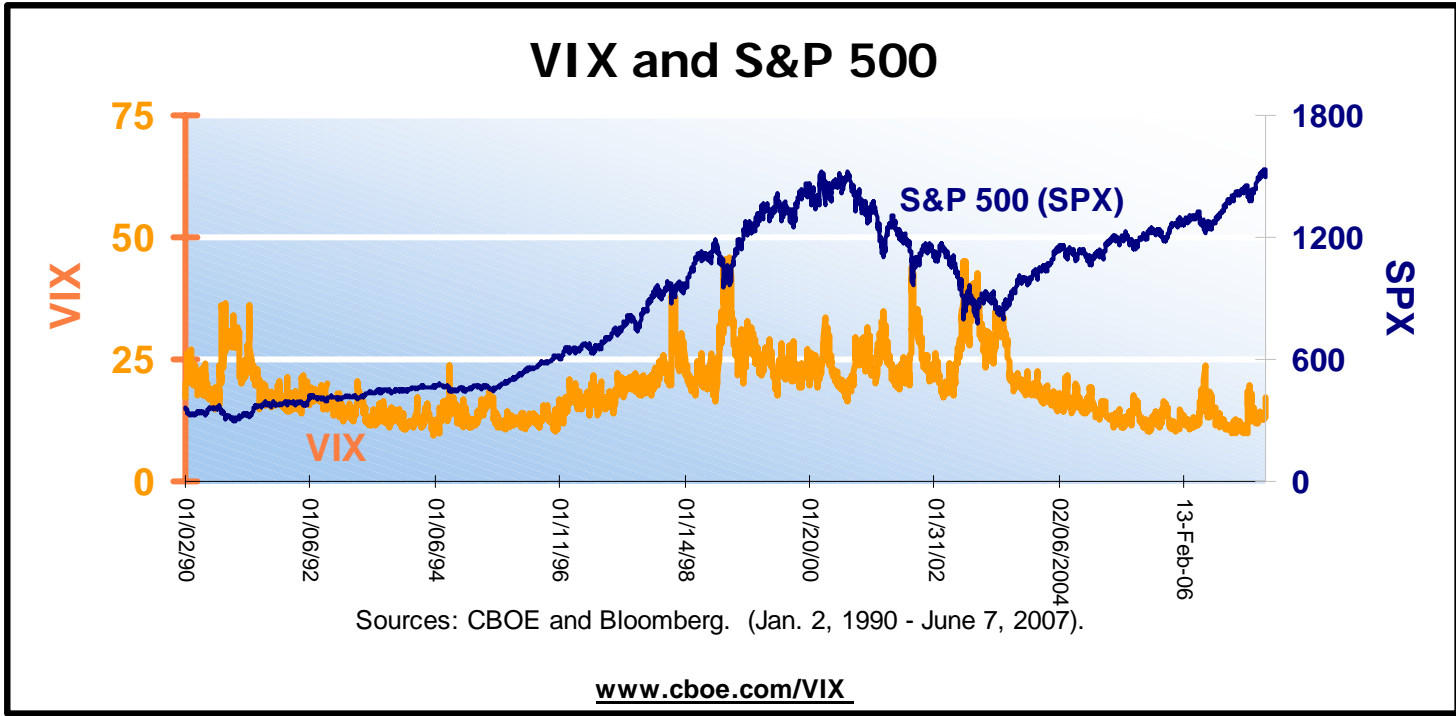
- \$80 - \$100 MM Vega traded globally each day.
- SPX largest; also EuroStoxx 50, Nikkei 225. NDX, RUT (IWM) small.
- Vanilla variance swaps most common, but growing interest in variance options, conditional variance, corridor variance, correlation & dispersion and VIX. Some forward starting variance products. Growing demand for long-dated options (>10 yrs.)
- Expiry ranges from 1 month to 10 years. Most activity is 3 months to 1 year.
- Hedge funds, mutual funds, pension funds, insurance companies hedging equity volatility risk. Non-equity & fixed income managers looking for uncorrelated returns. End-user groups slowly broadening, still learning & need to identify risks and benefits. Volatility buyers might become sellers if risk/return is right.

Why Trade Volatility?

- Negative correlation to most equity indexes
- Positive correlation to credit prices
- Efficient way to manage unwanted market risk
- Unique properties of volatility create trading opportunities
 - Historical difference between realized and implied volatility
 - Volatility Term Structure
 - Volatility of Volatility

CBOE Volatility Index[®] (VIX[®])

- Since 1993 a premier barometer of investor sentiment and market volatility.
- In Sept. 2003 new VIX methodology.
- Implied volatility index -- measures the market's expectation of 30-day volatility implicit in the prices of near-term S&P 500 (SPX) options. VIX is quoted in percentage points, just like the standard deviation of a rate of return, e.g. 16.26.
- The SPX options used in the VIX calculation are –
 - O-T-M puts and call covering the entire range of strike prices (the “volatility skew”)
 - From the nearby and next-to-nearby expiration months for a constant 30-day volatility measure

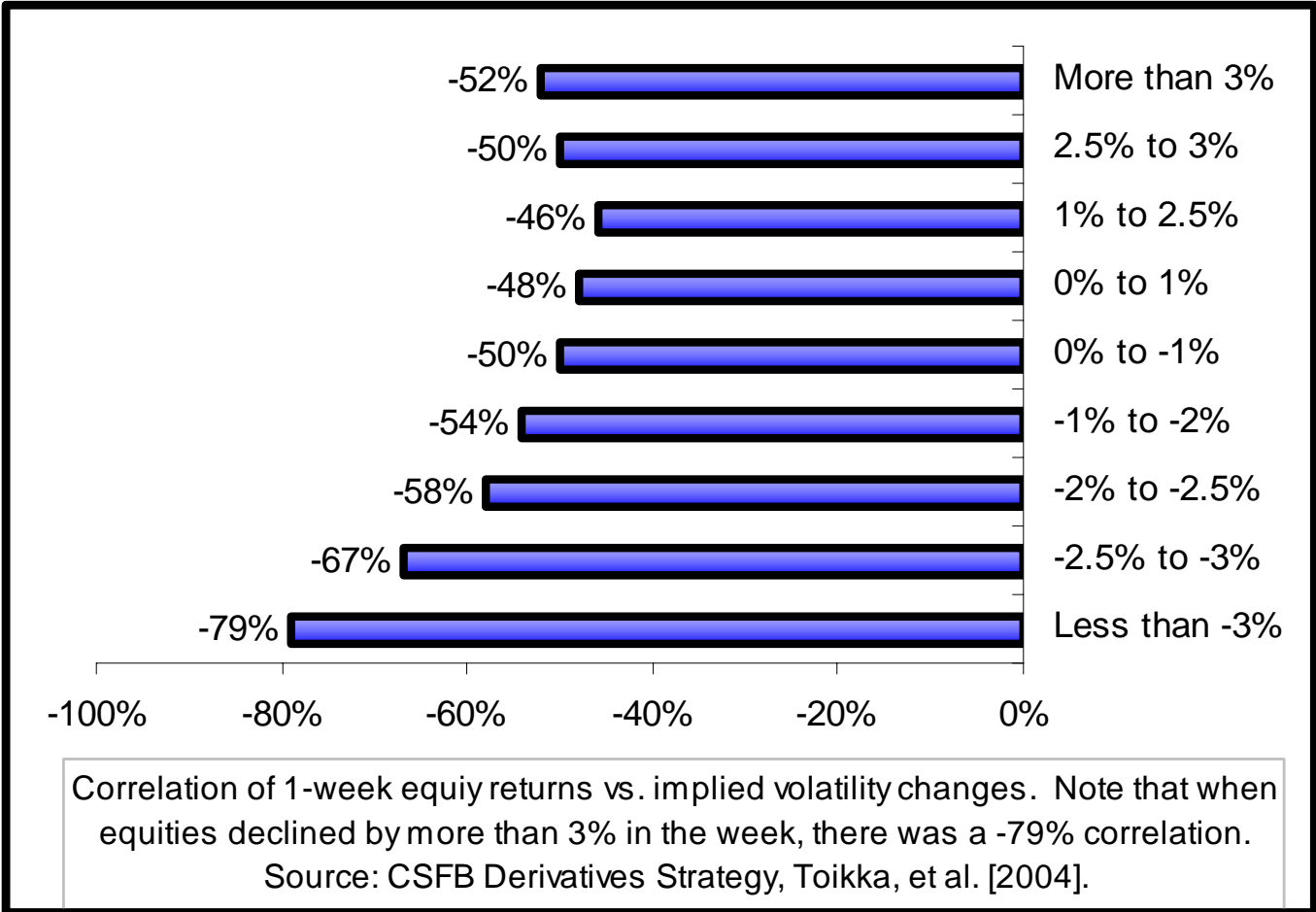


Volatilities of VIX, Stocks, & Stock Index

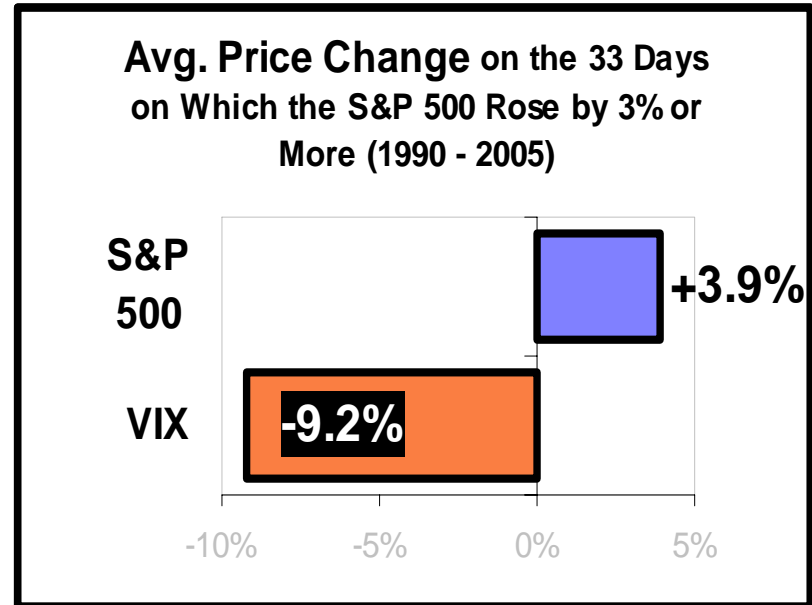
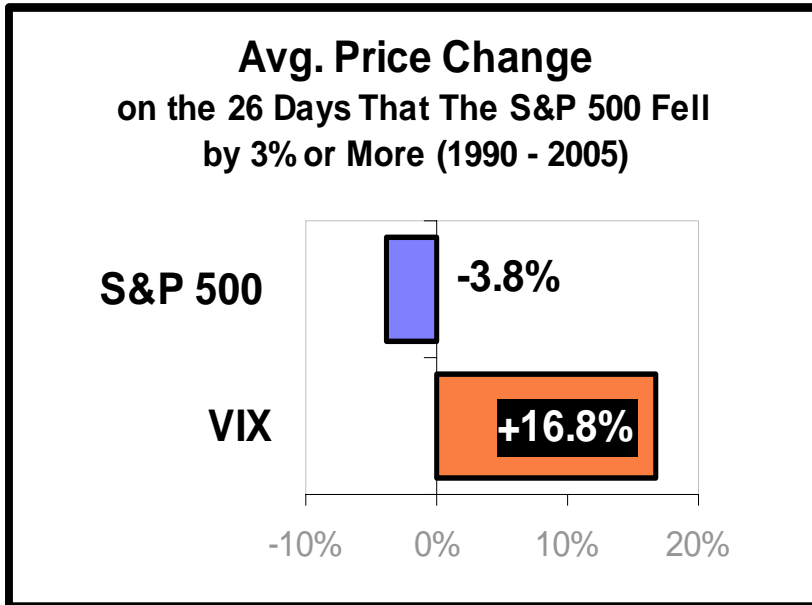
Historic Volatilities in 2005 and 2006

	<u>2005</u>	<u>2006</u>
VIX Spot Index	83.3%	94.2%
VX Near-Term Futures	45.8%	56.0%
GM	42.6%	41.3%
AAPL	38.8%	38.1%
GOOG	32.1%	34.0%
IBM	17.9%	14.2%
S&P 500 (SPX)	10.3%	10.0%
Source: CBOE Research.		

Correlation of VIX to Rising and Falling Equities

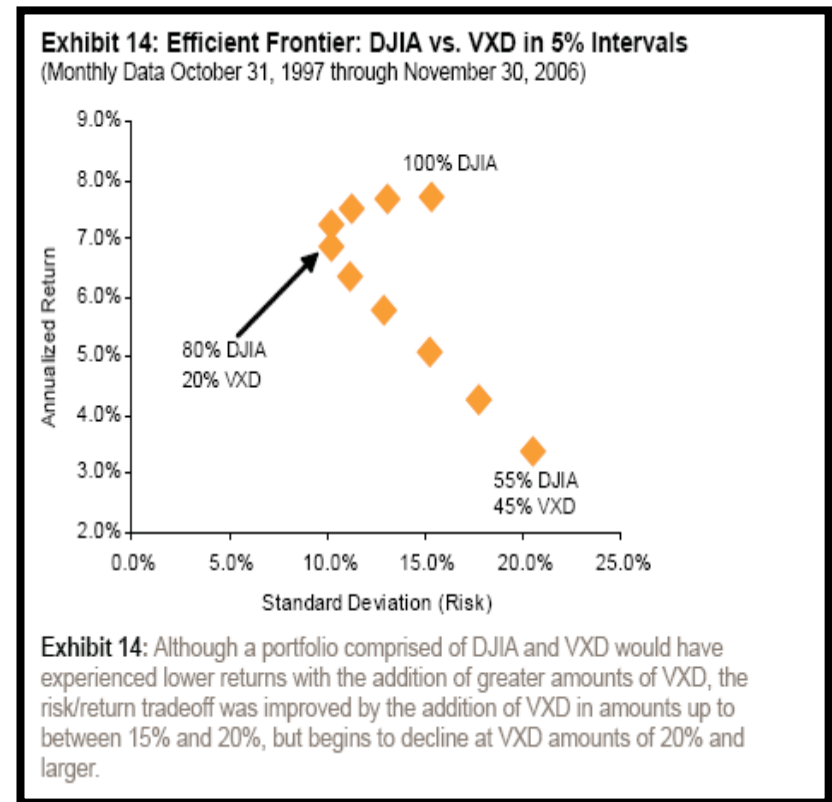
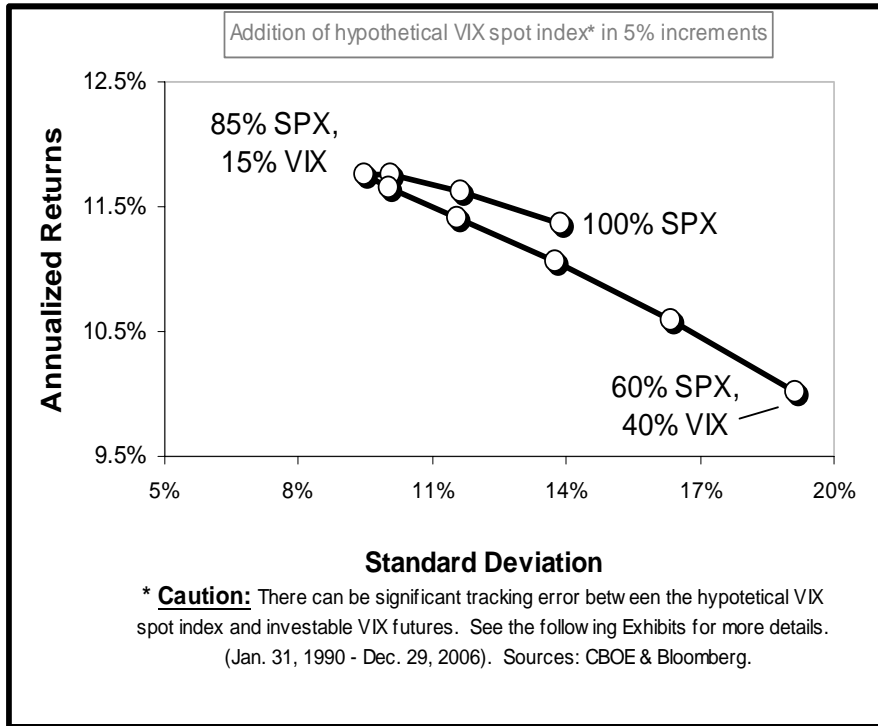


If Stocks Have a Big Move, VIX Often Has a Bigger Move in Opposite Direction



Adding Spot Volatility Indexes to Stock Portfolios*

Efficient Frontier Over 17 Years - Adding Hypothetical Spot VIX to an S&P 500 (SPX) Portfolio

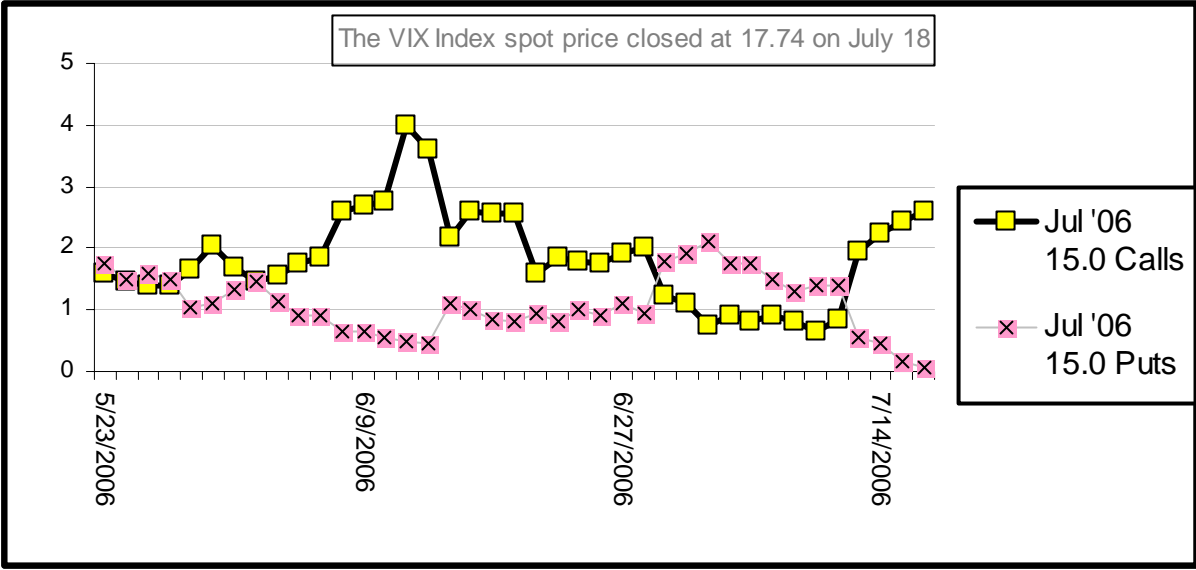
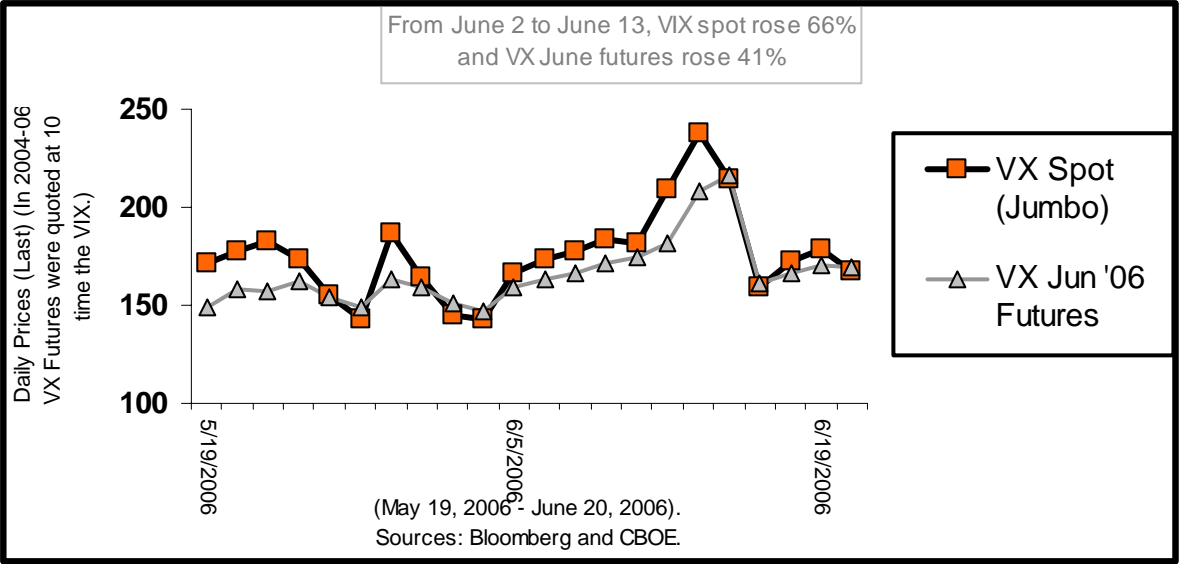


* **Caution** – This slide refers to the addition of spot volatility indexes, which are not investable. The use of VIX futures probably would not produce as dramatic a result.

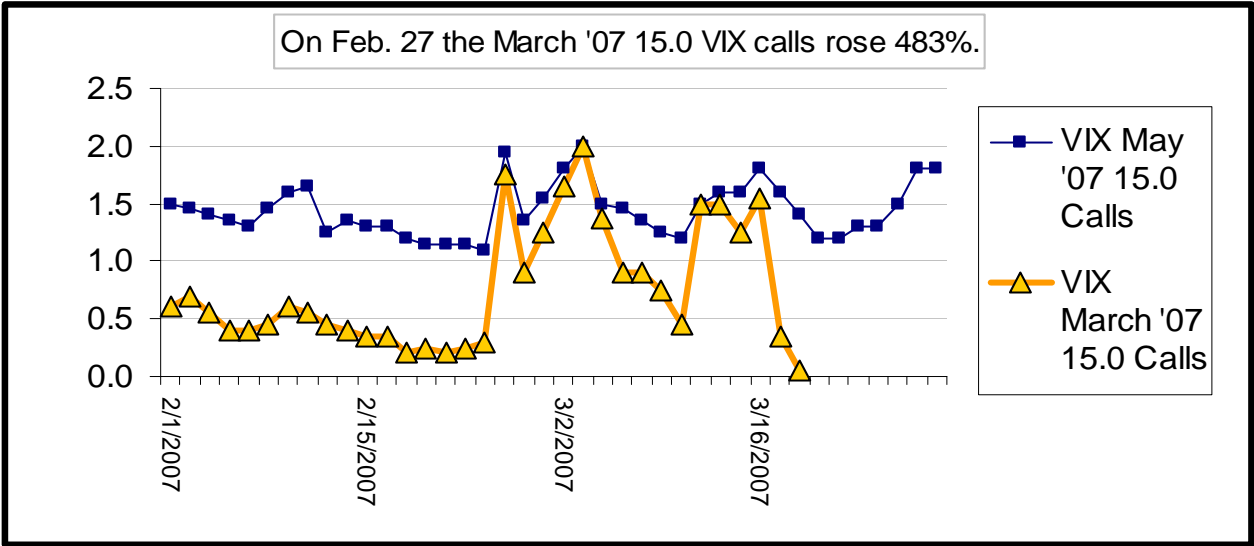
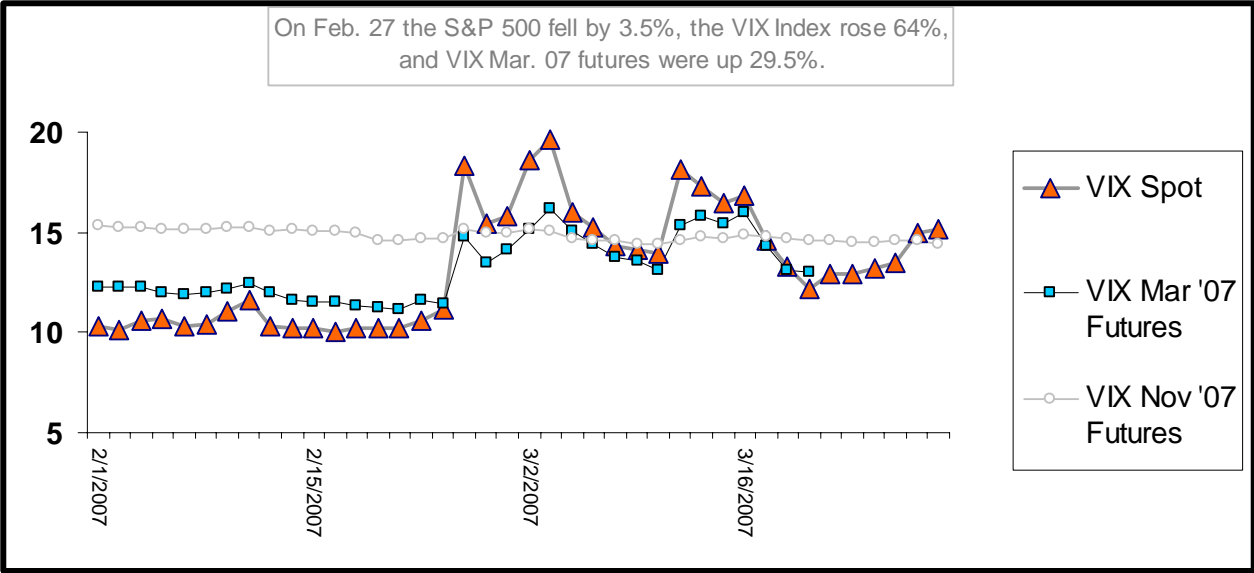
VIX Futures and Options

	<u>Futures</u>	<u>Options</u>
Exchange	CFE	CBOE
Ticker	VX	VIX
Multiplier	\$1,000	\$100
Last Day of Trading	Generally on Tuesday, the day before expiration date.	
Expiration Date	Wednesday 30 days prior to the 3rd Friday of calendar month immediately following the expiring month.	
Trading Hours	8:30 a.m. – 3:15 p.m. Chicago Time	
Launch Date	March 26, 2004	Feb. 24, 2006
Avg. Daily Volume (Jan. - May 2007)	2,513	55,801
Open Interest (May 31, 2007)	43,609	1,385,655

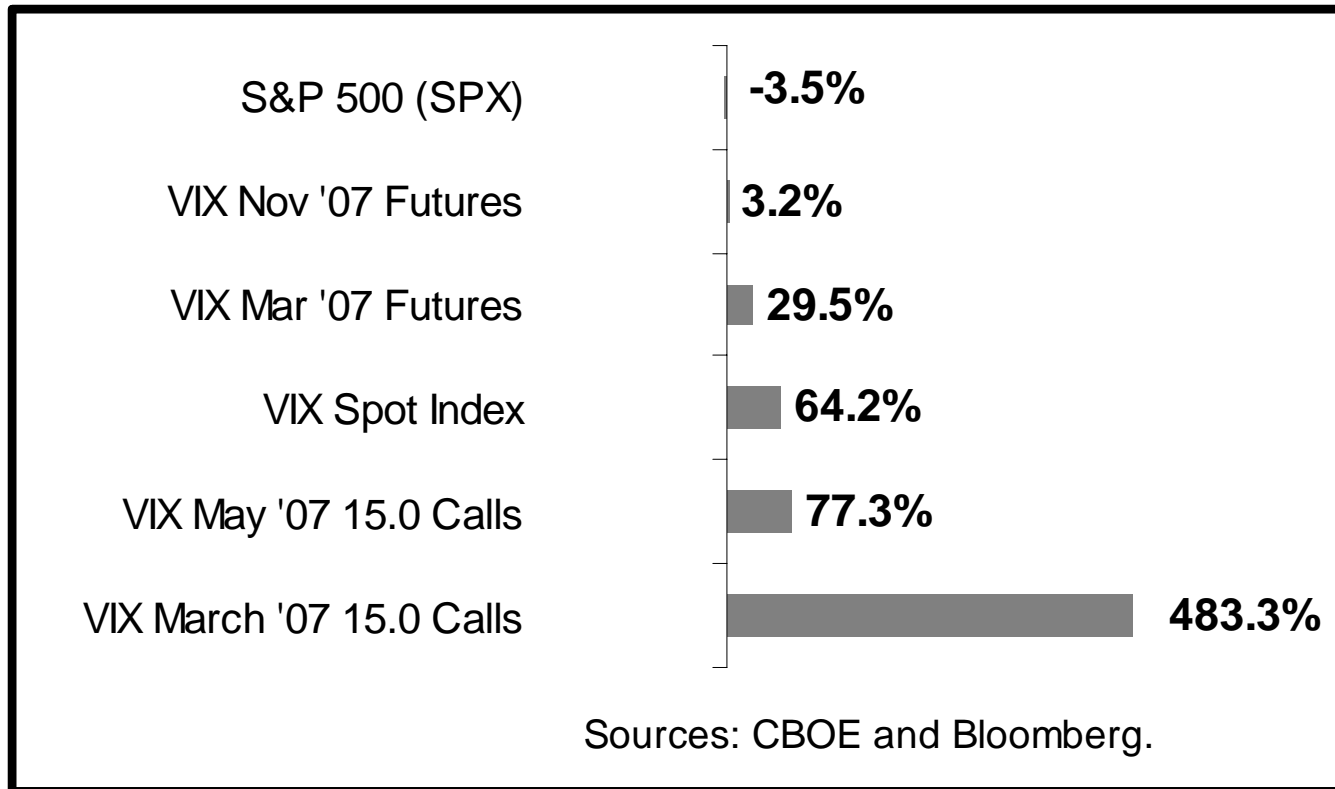
VIX Spot, Futures & Options in mid-2006



VIX Spot, Futures & Options in Feb.-Mar. 2007



% Change on Feb. 27, 2007



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