Use of Options for Income and Higher Risk-adjusted Returns

By Matthew Moran

Vice President, Chicago Board Options Exchange®

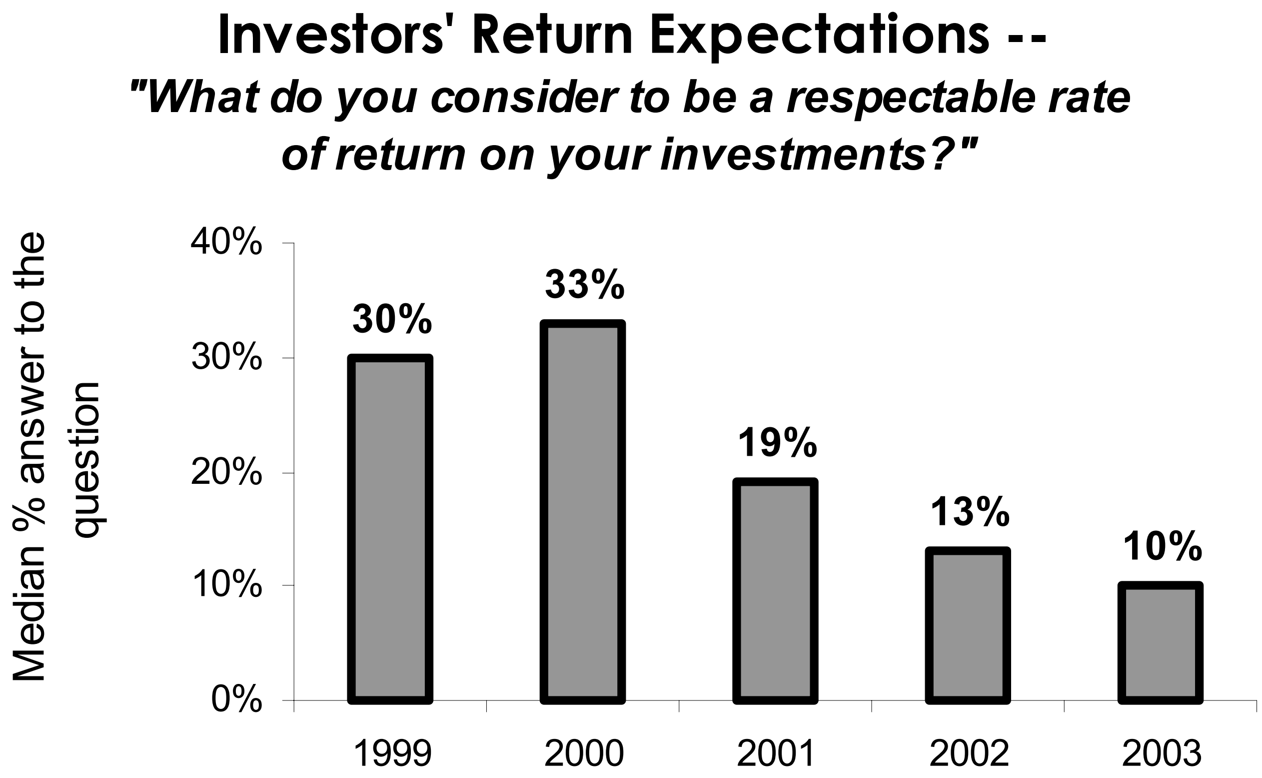
(312) 786-7249

Prepared for the 5th Annual Closed-end Funds and Global ETFs Conference on April 20, 2006 at the NYC Metropolitan Club

CHICAGO BOARD OPTIONS EXCHANGE

CBOE

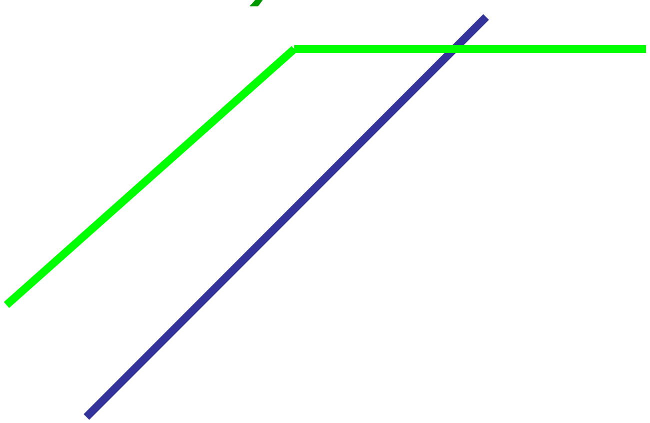
Investors' Attitudes



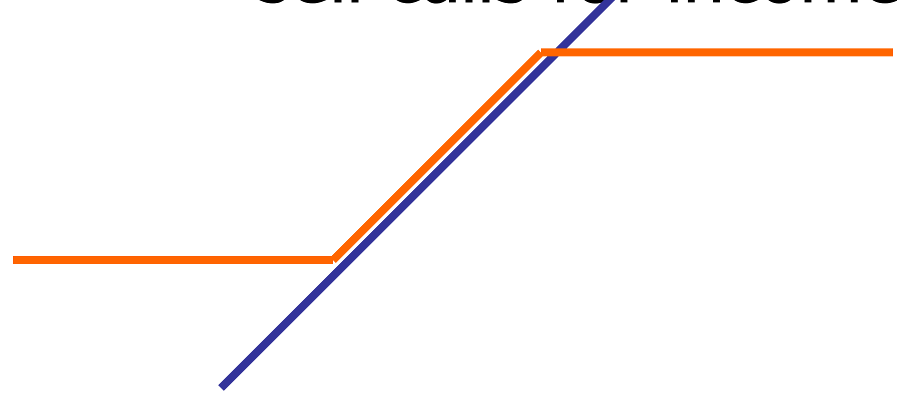
Source: 10th Annual SIA Investor Survey; Interviews with 1,500 Investors. Wirthlin [2004].

Strategies for Protection or Income

- Sell stocks
- Short index futures
- Covered call writing (stocks + short calls)



- Buy index put options
- Collar with index options (buy puts for protection and sell calls for income)

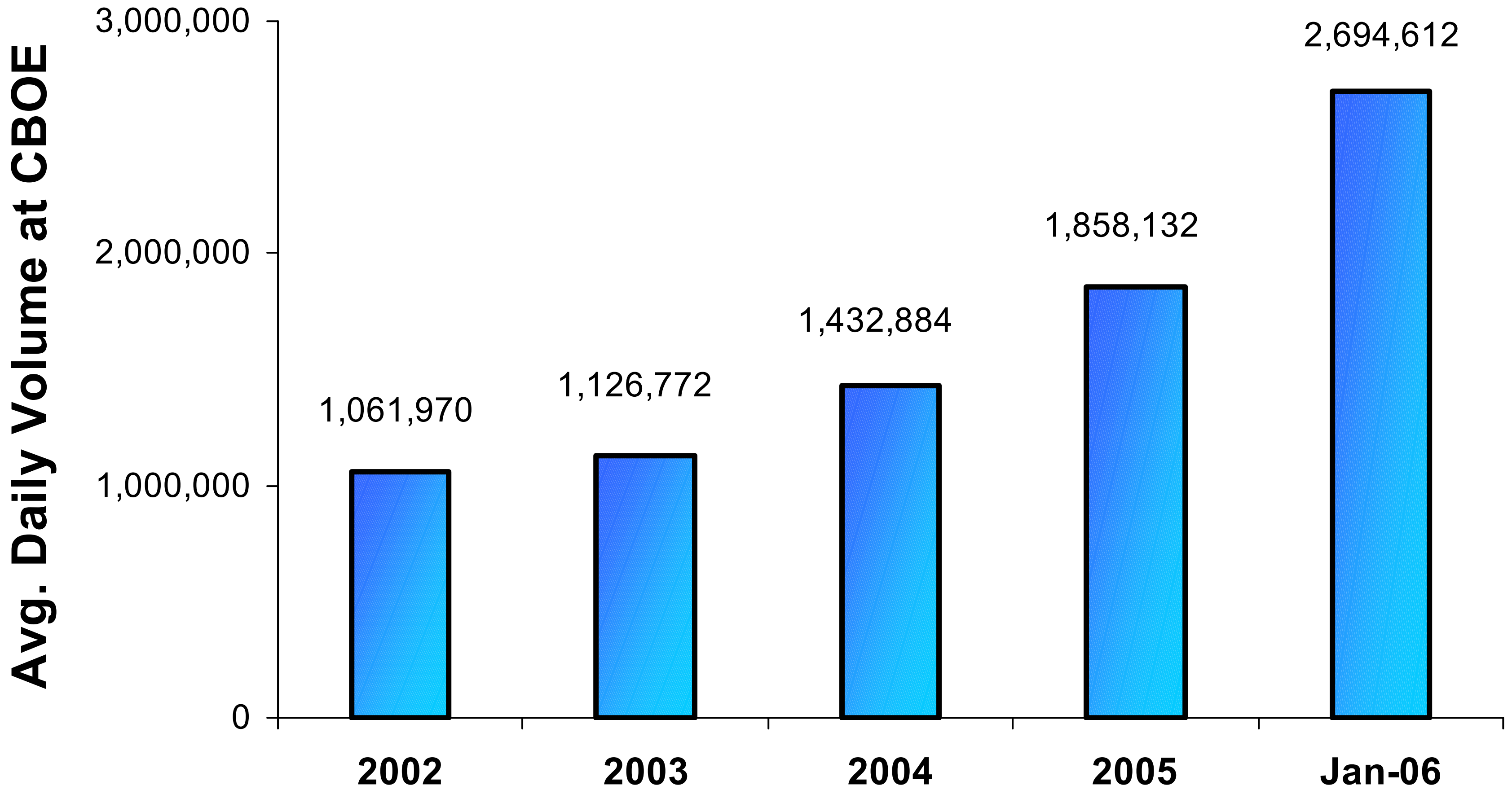


Offered by CBOE and CFE

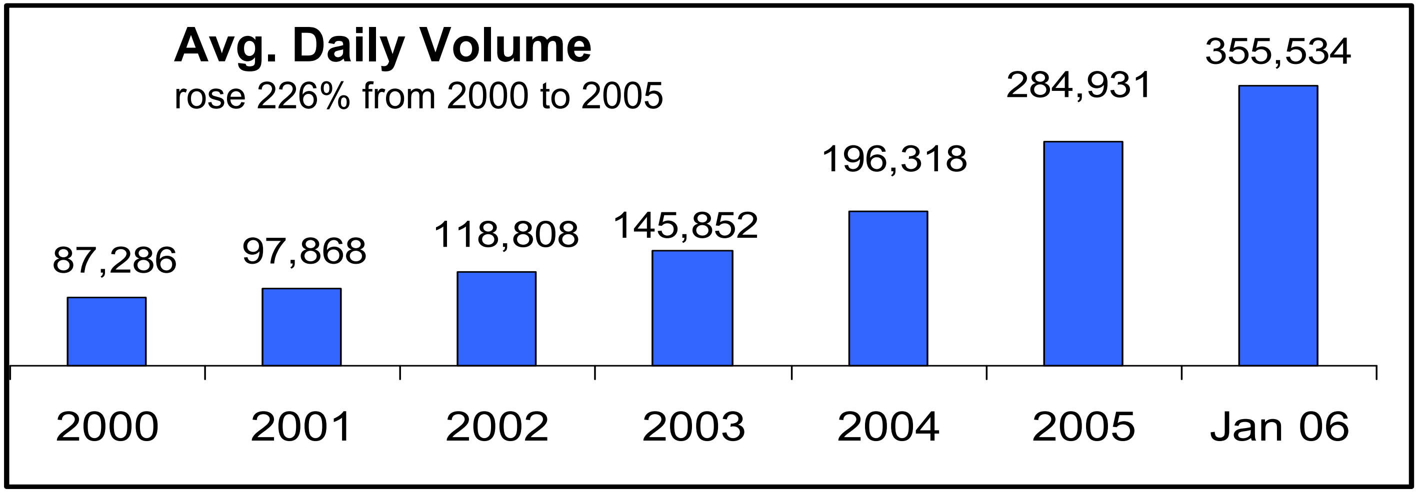
Options on more than	Futures on	Index barometers
▪ 50 cash-settled stock indexes (e.g., SPX, DJX, RUT, NDX) ▪ 50 ETFs (e.g., SPY, DIA, QQQQ, IWM, EFA) ▪ 1,400 individual stocks	▪ CBOE Volatility Index (VIX) ▪ CBOE DJIA Volatility Index ▪ S&P 500 3-Mo. Variance	▪ Volatility indexes (VIX, VXD, VXN, VXO) ▪ BuyWrite indexes (BXM, BXN, BXD, BXY)

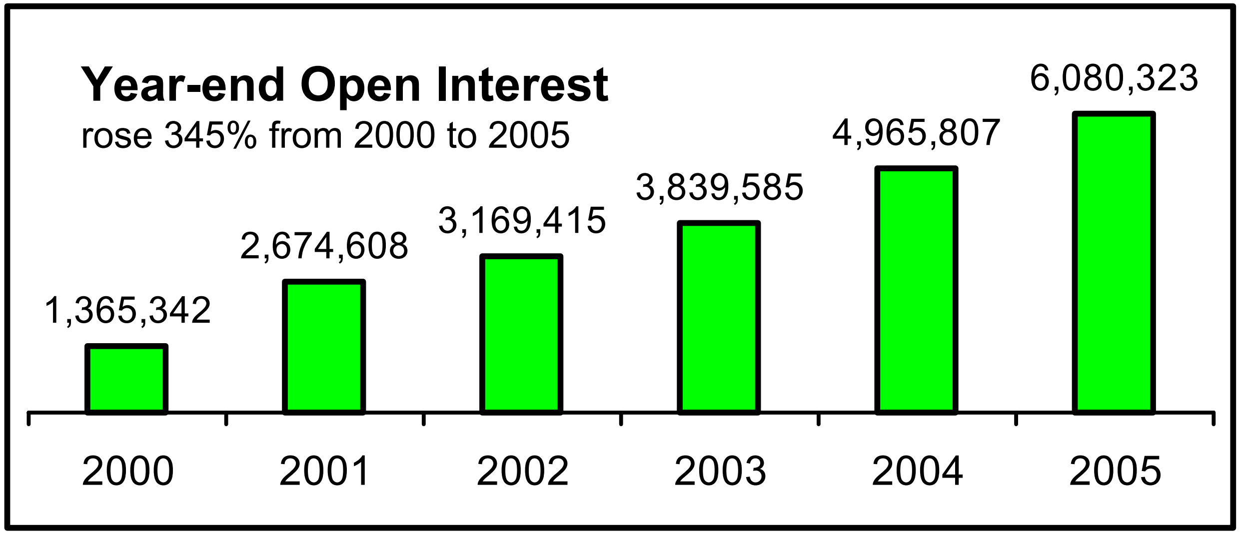
Growth in Volume on the CBOE

75% Growth from 2002 to 2005

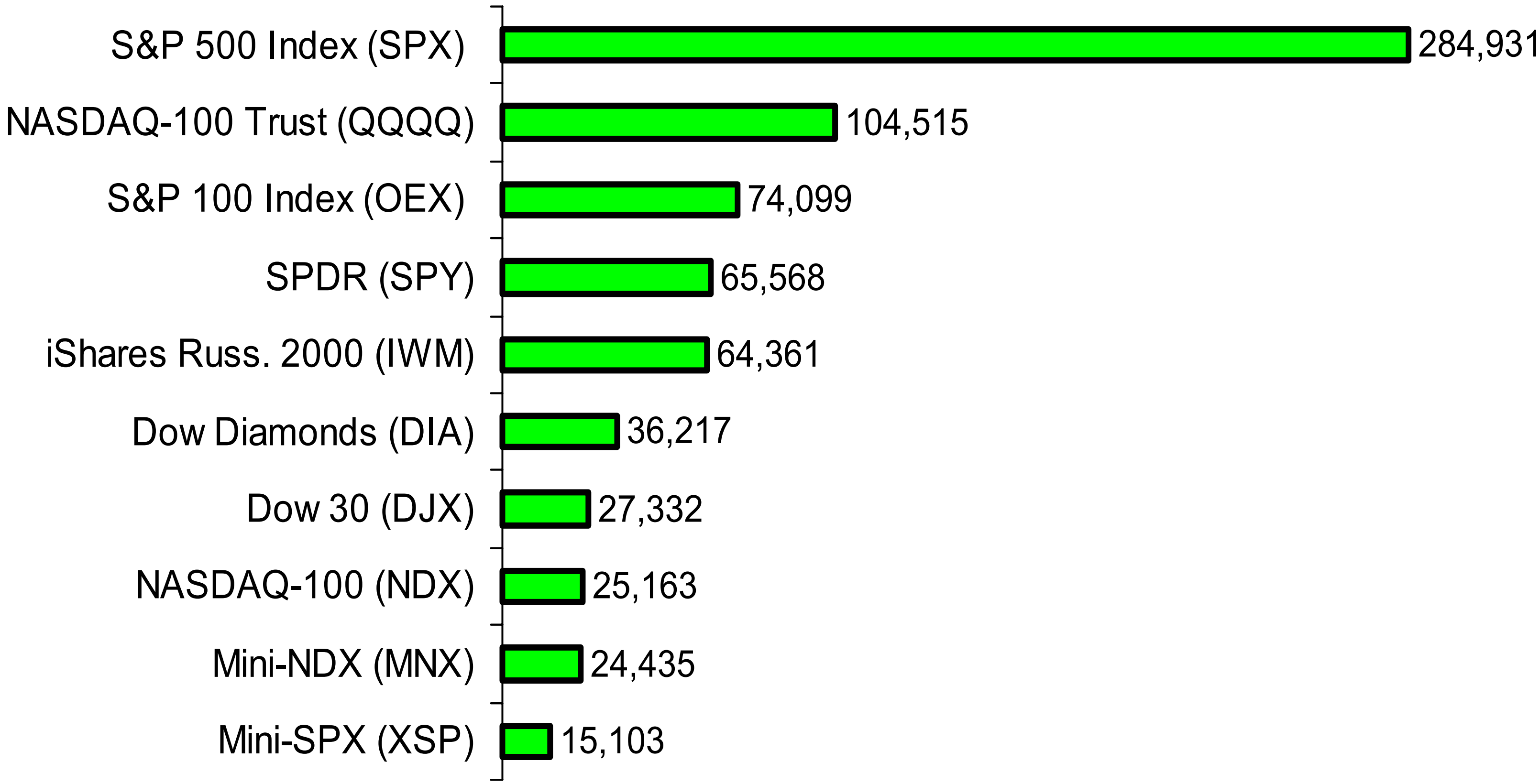


S&P 500 (SPX) Options





Leading CBOE Index Options



Average Daily Volume in 2005. Source: CBOE

CBOE

A Chronology of Key Options and Buy-write Developments

1973 Black-Scholes Options Pricing Model
1973 Listed Options on CBOE
1983 Index Options
1990s Covered Call Funds Struggle w Bull Market
2002 BXM Index Benchmark (Study by Duke Univ.)
2004 Ibbotson Study on BXM Index
2004 BXM wins “Most Innovative Index” award
2004-05 Eight firms gain BXM licenses
2004-05 $18 billion+ in new buy-write products
2005 BXD Index (benchmark based on DJX options)
2005 BXN Index (benchmark based on NDX options)
2006 BXY Index (benchmark on out-of-the money SPX)

CBOE S&P 500 BuyWrite Index (BXM)

Options portfolio managers said they needed a benchmark for performance.

Prof. Robert Whaley of Duke U. was commissioned by the CBOE.

Passive buy-write strategy calculated for period from June 1, 1988 (when S&P began reporting daily dividends).

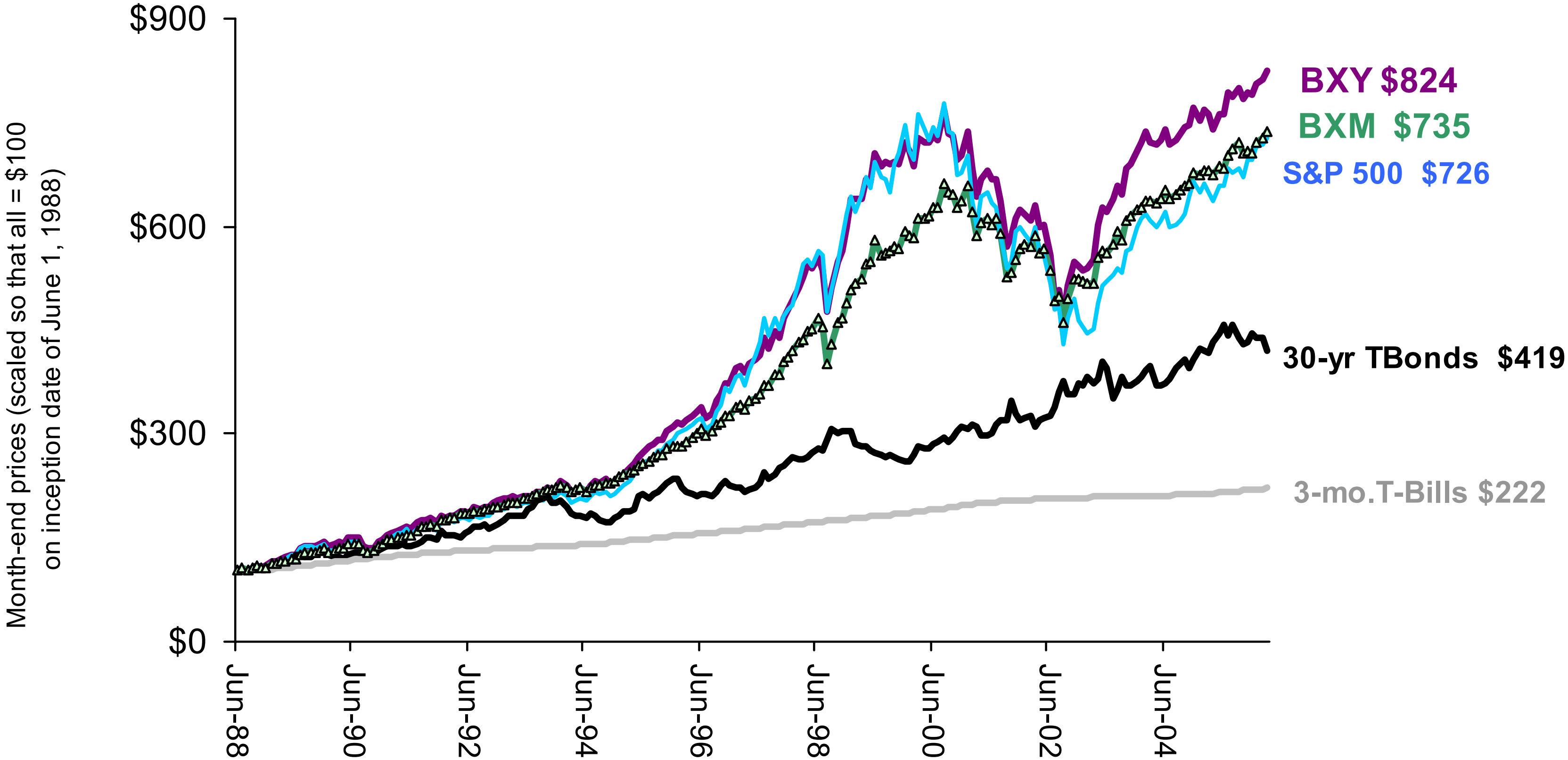
CBOE S&P 500 BuyWrite Index (BXM)

Methodology

- Buy and hold S&P 500 stock portfolio
- Write (sell) S&P 500 (SPX) call option 12 times a year
  - Index option has exercise price just above prevailing index level (*i.e.,* slightly out-of-the money)
  - Index option is held until expiration and cash-settled, at which time a new one-month call is written

Stocks, Bonds, T-Bills and BuyWrite Indexes

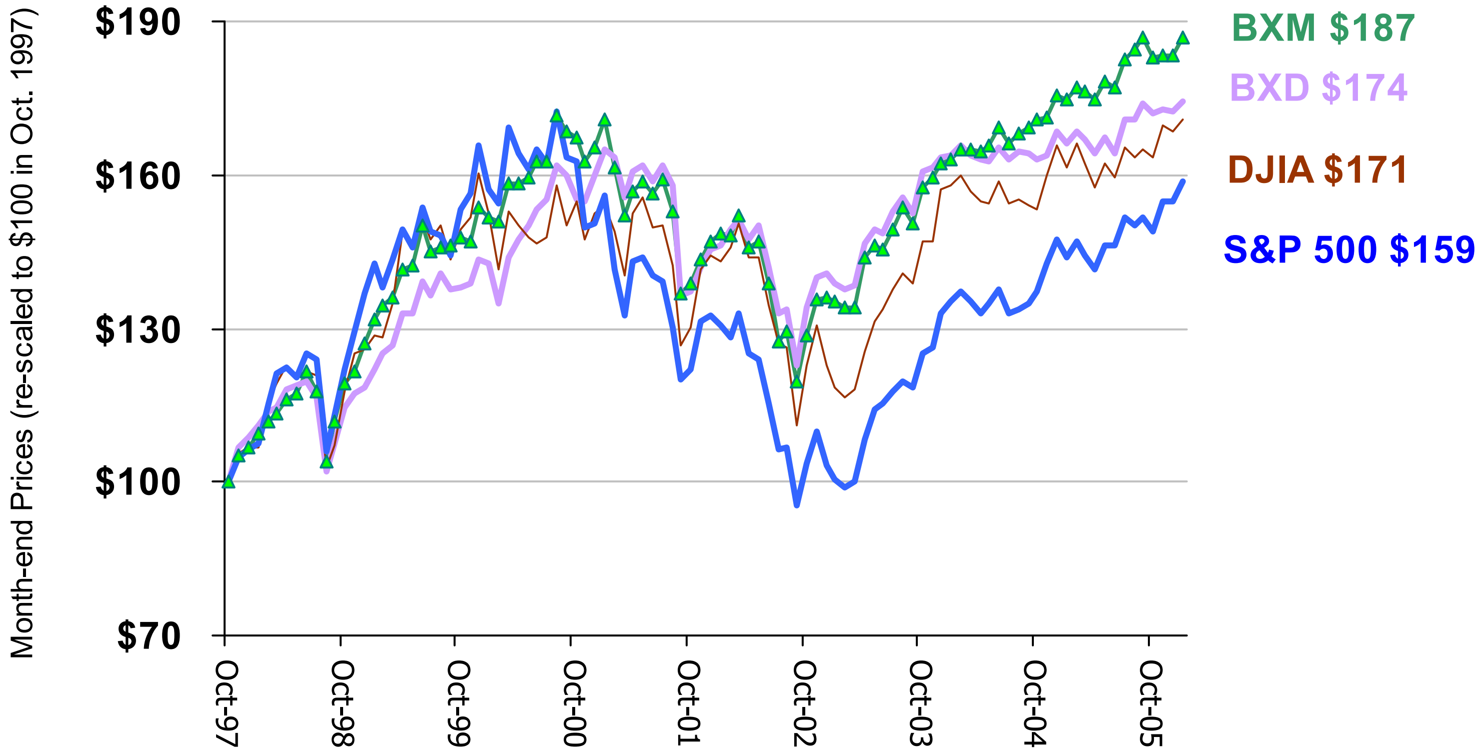
Total Return Indexes from June 1988* – Mar. 2006



* June 1988 is the first month for daily prices for the SPTR and BXM indexes. Sources: CBOE & Bloomberg. The BXM Index is designed to represent a hypothetical buy-write strategy. Like many passive indexes, the BXM Index does not take into account significant factors such as transaction costs and taxes and, because of factors such as these, many or most investors should be expected to underperform passive indexes. T-Bills and T-Bonds are represented by Citigroup indexes. See Risk Disclosure at www.cboe.com/BXM for more information.

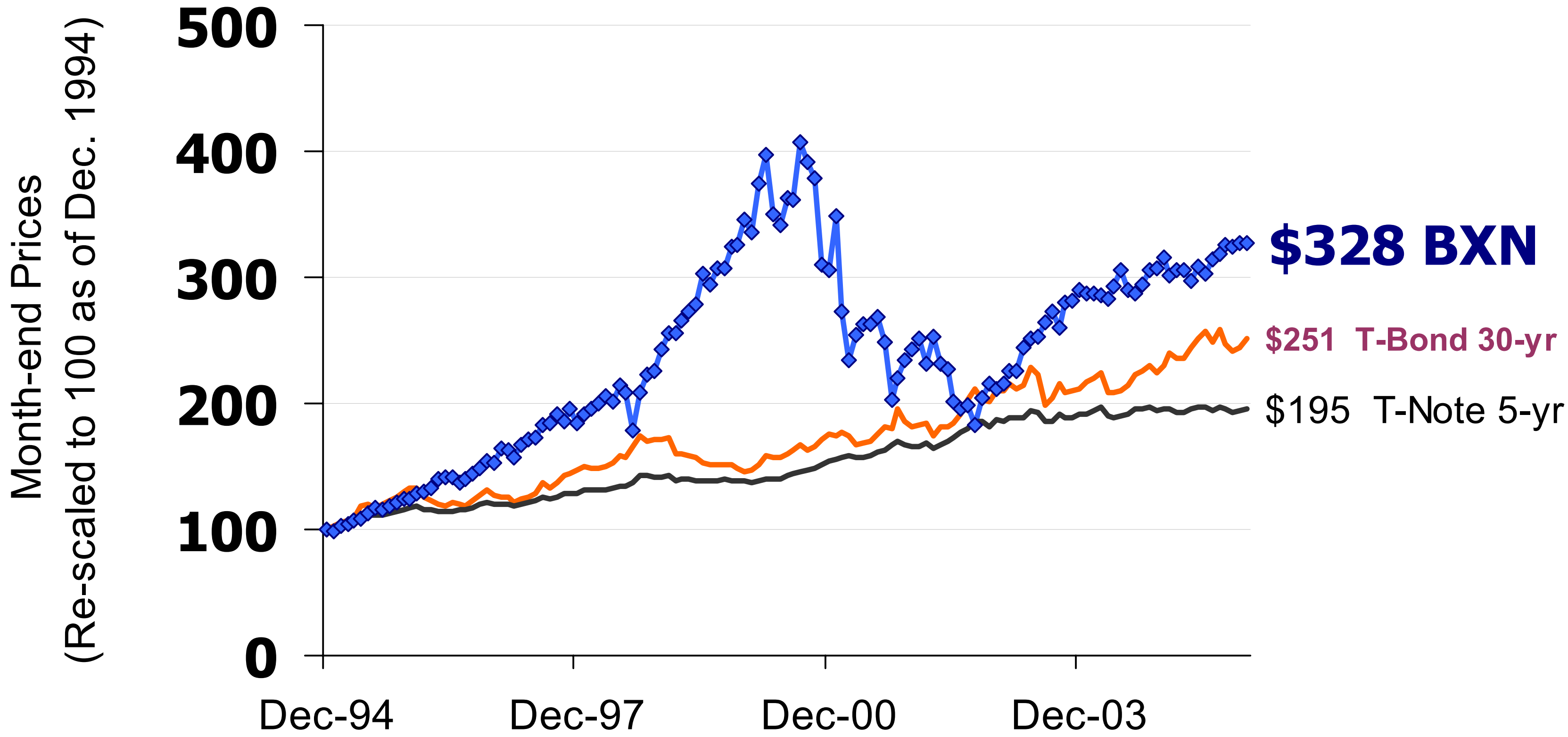
Buy-write and Stock Indexes

(October 31, 1997 – Jan. 31, 2006)



Sources: CBOE & Bloomberg. All four indexes above show returns with reinvested dividends. Oct. 1997 was the first month for the CBOE DJIA BuyWrite (BXD) Index. www.cboe.com/bxd The BXM and BXD Indexes are designed to represent a hypothetical buy-write strategy. Like many passive indexes, the BXM and BXD Indexes do not take into account significant factors such as transaction costs and taxes and, because of factors such as these, many or most investors should be expected to underperform passive indexes. See Risk Disclosure at last slide for more information.

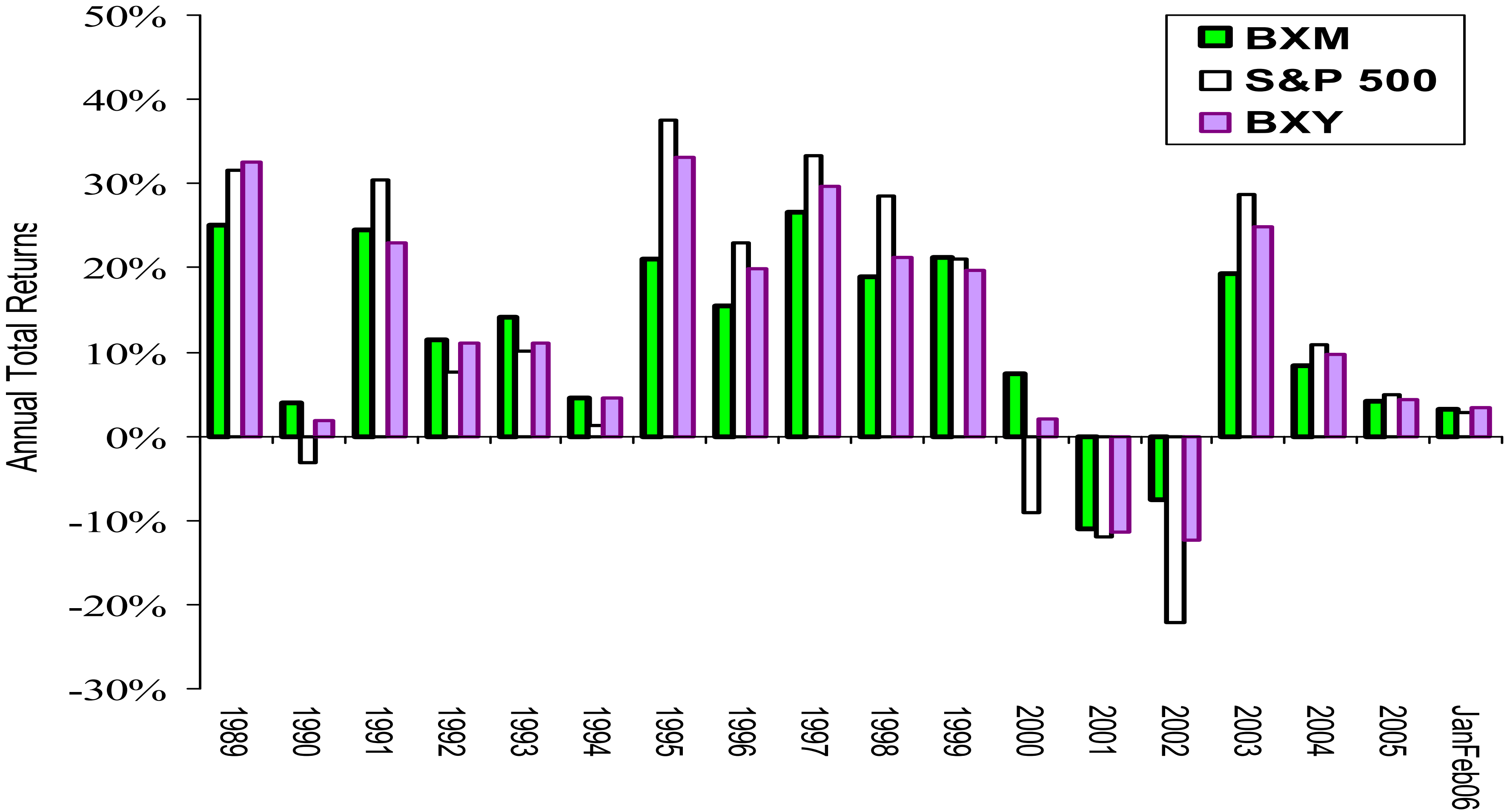
The CBOE NASDAQ-100 Index (BXN)



(Dec. 31, 1994 - Dec. 30, 2005). Sources: CBOE and Bloomberg.
BXN is compared to Citigroup indexes.

Yearly Returns for Total Return Indexes

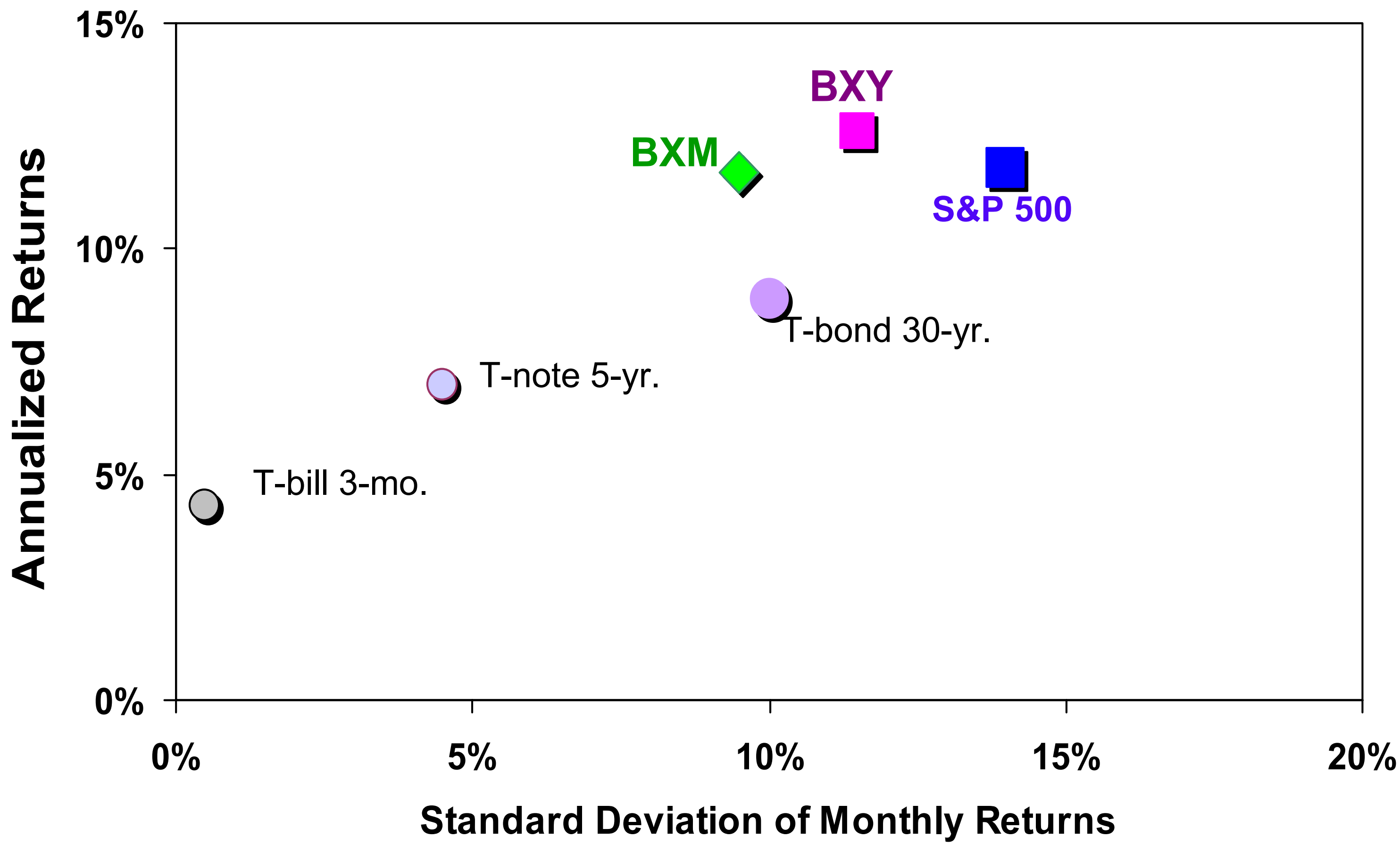
1989 –- 2005



The BXM Index is designed to represent a hypothetical buy-write strategy. Like many passive indexes, the BXM Index does not take into account significant factors such as transaction costs and taxes and, because of factors such as these, many or most investors should be expected to underperform passive indexes. Please see Risk Disclosures at last slide and at www.cboe.com/bxm.

Many Investors Want Better Risk-adjusted Returns

(1 June 1988 – 30 Dec. 2005)



Sources: CBOE and Bloomberg. The figures above represent total return indexes; Citigroup indexes are used for the fixed income numbers. Time period starts in June 1988 because that is the 1st month for the S&P 500 (TR) & BXM index prices. Please see risk disclosures. Past performance is not a guarantee of future returns.

CBOE

Returns and Volatility

Annualized Returns (Through Dec. 30, 2005)

	CBOE S&P 500 BuyWrite	2% OTM BW	CBOE DJIA BuyWrite	CBOE NASDAQ-100 BuyWrite	S&P 500 Total Return	S&P 500	DJIA Total Return	Citigroup 3-mo T-bil	Citigroup 10-yr Treasury	Citigroup 30-yr Treasury
	BXM	BXQ	BXD	BXN	SPTR	SPX	DJITR	T-Bill	T-Note	T-Bond
One Year	4.2%	4.4%	2.3%	3.8%	4.9%	3.0%	1.7%	3.0%	2.0%	8.8%
Three Years	10.5%	12.7%	7.0%	15.8%	14.4%	12.4%	11.2%	1.8%	2.7%	6.0%
Five Years	2.1%	2.2%	1.5%	1.4%	0.5%	-1.1%	2.0%	2.2%	5.3%	7.5%
Ten Years	9.6%	9.9%	n/a	10.2%	9.1%	7.3%	9.8%	3.7%	5.5%	6.5%
Since Inception (June 1, 1988)	11.8%	12.6%	n/a	n/a	11.7%	9.2%	12.7%	4.6%	7.5%	8.9%

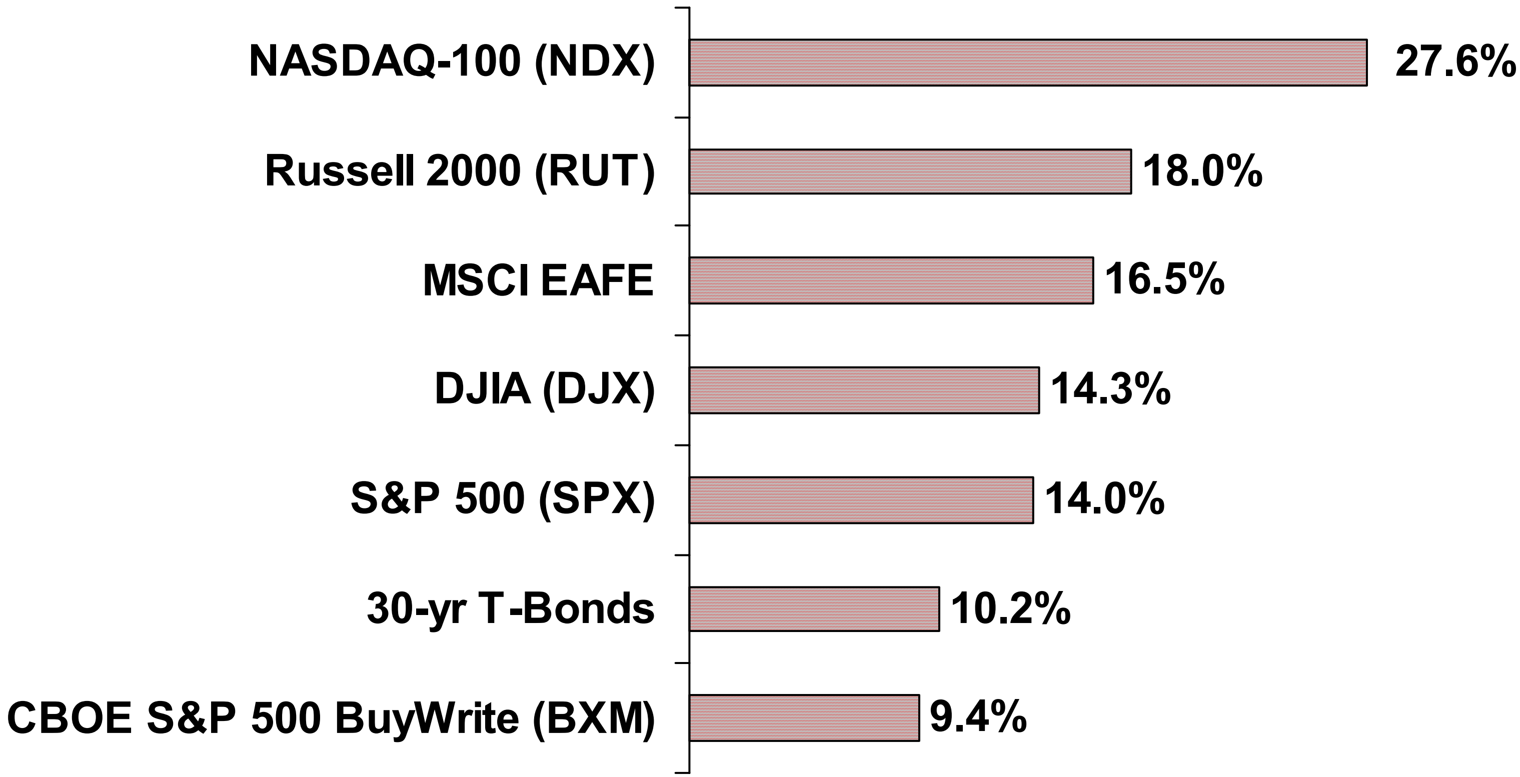
Standard Deviation of Monthly Returns (through Dec. 30, 2005)

	BXM	BXQ	BXD	BXN	SPTR	SPX	DJITR	T-Bill	T-Note	T-Bond
One Year	4.9%	6.6%	6.1%	8.4%	7.9%	7.8%	8.9%	0.2%	6.1%	10.0%
Three Years	6.3%	7.8%	6.7%	10.5%	9.2%	9.1%	9.7%	0.3%	8.2%	12.1%
Five Years	11.4%	13.0%	11.7%	22.5%	14.9%	14.9%	15.2%	0.4%	8.1%	12.0%
Ten Years	11.0%	12.9%	n/a	21.3%	15.6%	15.6%	15.9%	0.5%	7.3%	10.7%
Since Inception (June 1, 1988)	9.4%	11.3%	n/a	n/a	14.1%	14.0%	14.4%	0.6%	7.0%	10.2%

	BXM	BXQ	BXD	BXN	SPTR	SPX	DJITR	T-Bill	T-Note	T-Bond
Approximate Sharpe Ratio (for period from June 1, 1988 to Dec. 30, 2005)*	0.72	0.67	n/a	n/a	0.47	0.30	0.53	-0.73	0.35	0.38

* Caution: The Sharpe Ratio can be overstated when applied to non-normal distributions with a negative skew. Please see Ibbotson BXM study at www.cboe.com/BXM for a discussion.

Many Investors Want Less Volatility

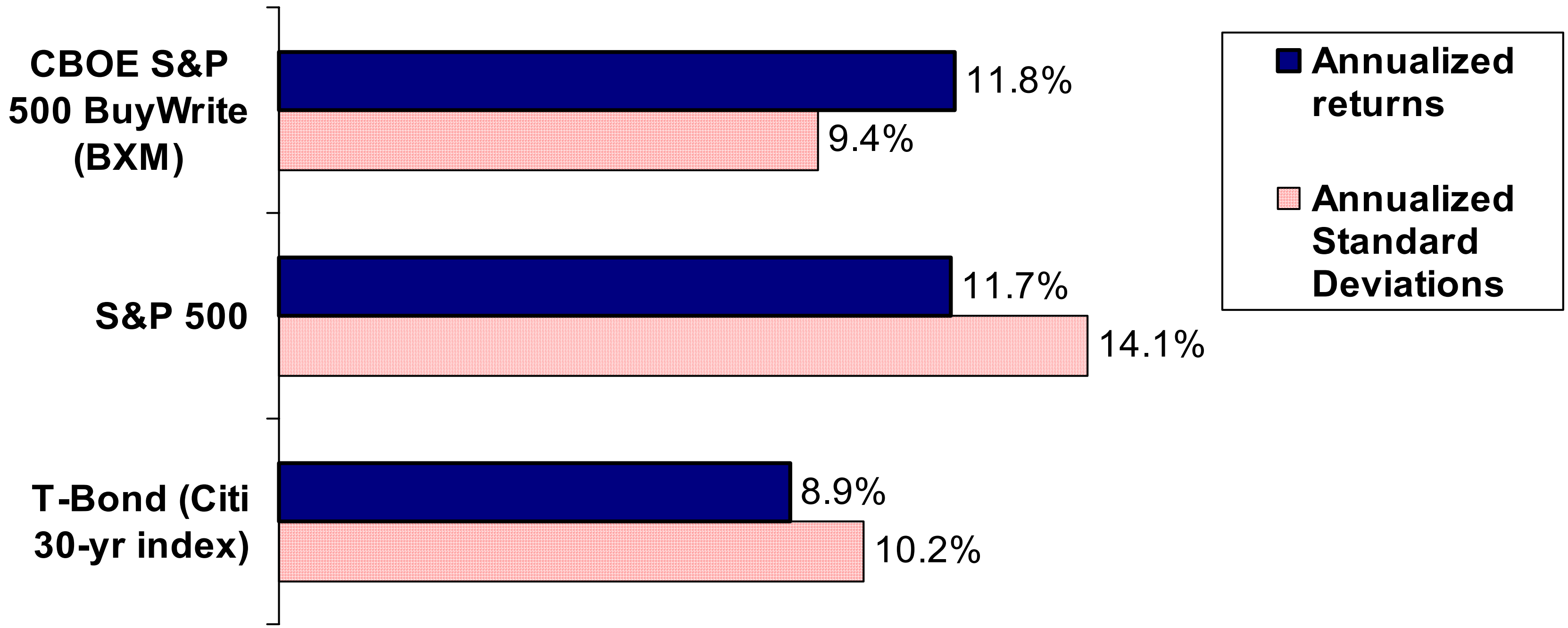


Standard Deviation of Monthly Returns (June 1988 - Dec. 2005).

Sources: CBOE and Bloomberg. The Citigroup index is used for T-Bonds

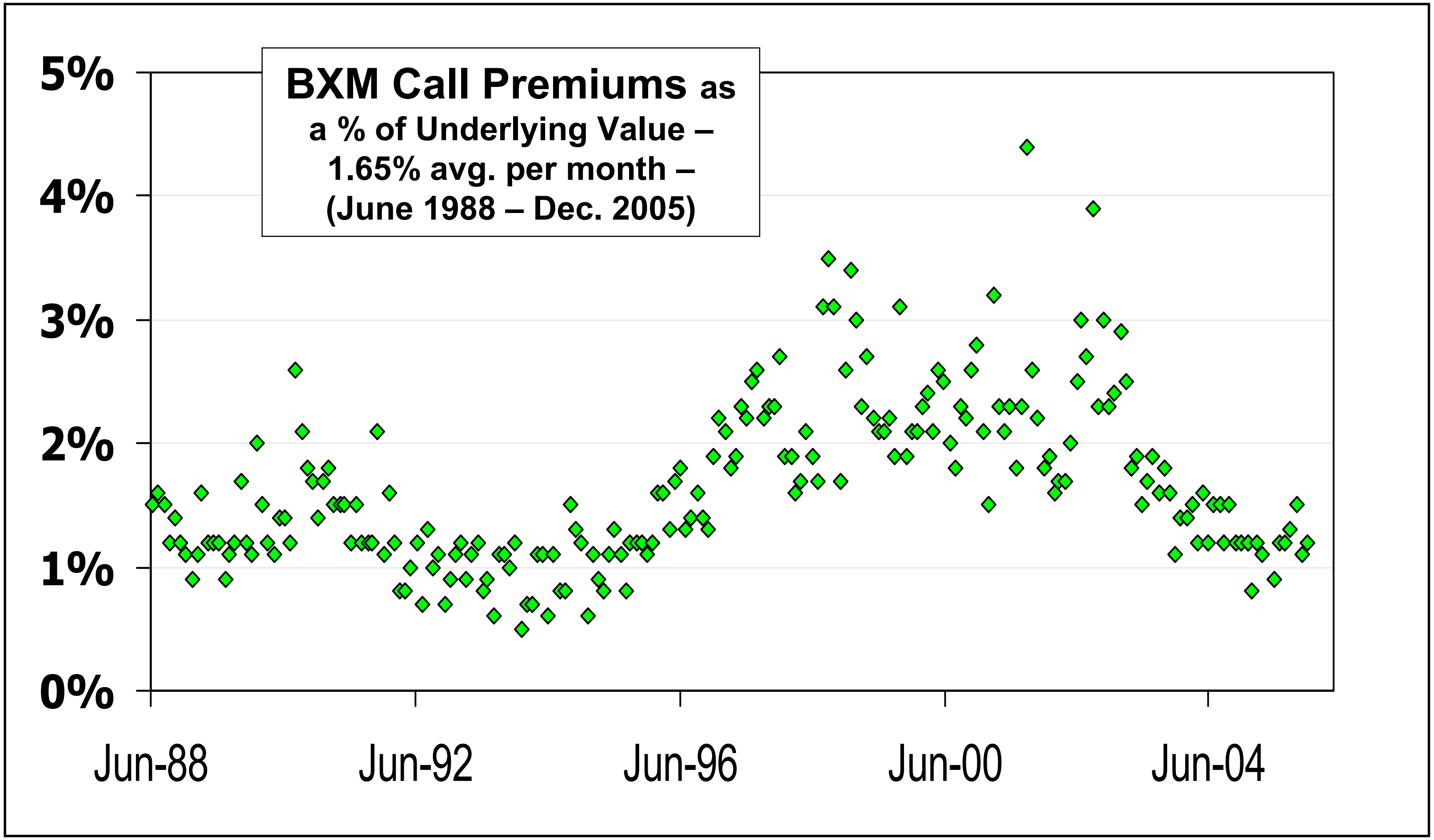
Returns and Standard Deviations

for Select Indexes (June 1, 1988* - Dec. 30, 2005)



* Time period starts in June 1988 because that is the 1st month for SPTR & BXM prices.
Please see risk disclosures. Past performance is not indicative of future returns.
** The stock indexes are total return indexes that include dividends.

Many Investors Want Higher Yields



CBOE

Possible Source of Returns

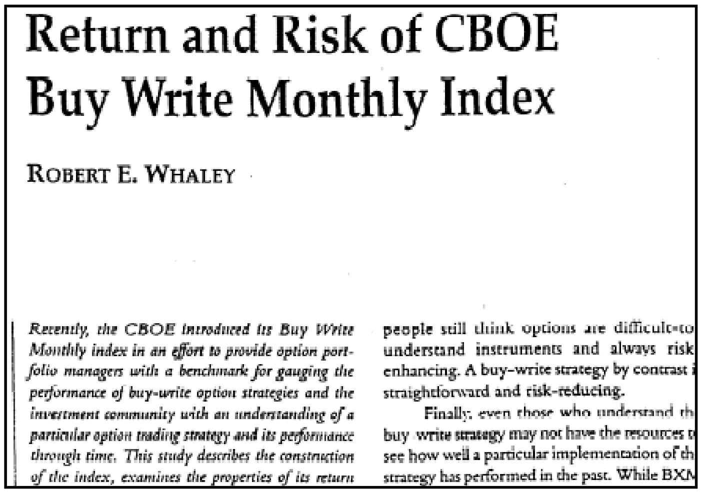
Implied volatility usually exceeded realized volatility for index options during the period studied –

Conclusion reached by –

- *Morgan Stanley (1990)*
- *UMass (2001)*
- *Duke U. (2002)*

Duke U. Professor Whaley

8-page paper in the Winter 2002 Journal of Derivatives


Return and Risk of CBOE Buy Write Monthly Index

ROBERT E. WHALEY

Recently, the CBOE introduced its Buy Write Monthly index in an effort to provide option portfolio managers with a benchmark for gauging the performance of buy-write option strategies and the investment community with an understanding of a particular option trading strategy and its performance through time. This study describes the construction of the index, examines the properties of its return

people still think options are difficult to understand instruments and always risk enhancing. A buy-write strategy by contrast i straightforward and risk-reducing.

Finally, even those who understand th buy write strategy may not have the resources t see how well a particular implementation of th strategy has performed in the past. While BXM

- "BXM outperformed the S&P 500 by about 0.2% per month on a risk-adjusted basis" over 13-plus years
- Possible explanation for out-performance – "volatilities implied by (S&P) index option prices are too high relative to realized volatility" due to demands for portfolio protection

CBOE

Awards for Index Innovation

First annual IMN/IndexUniverse.com “Innovations in Indexing Awards” were announced at the Super Bowl of Indexing Conference in Dec. 2004. Winners included:

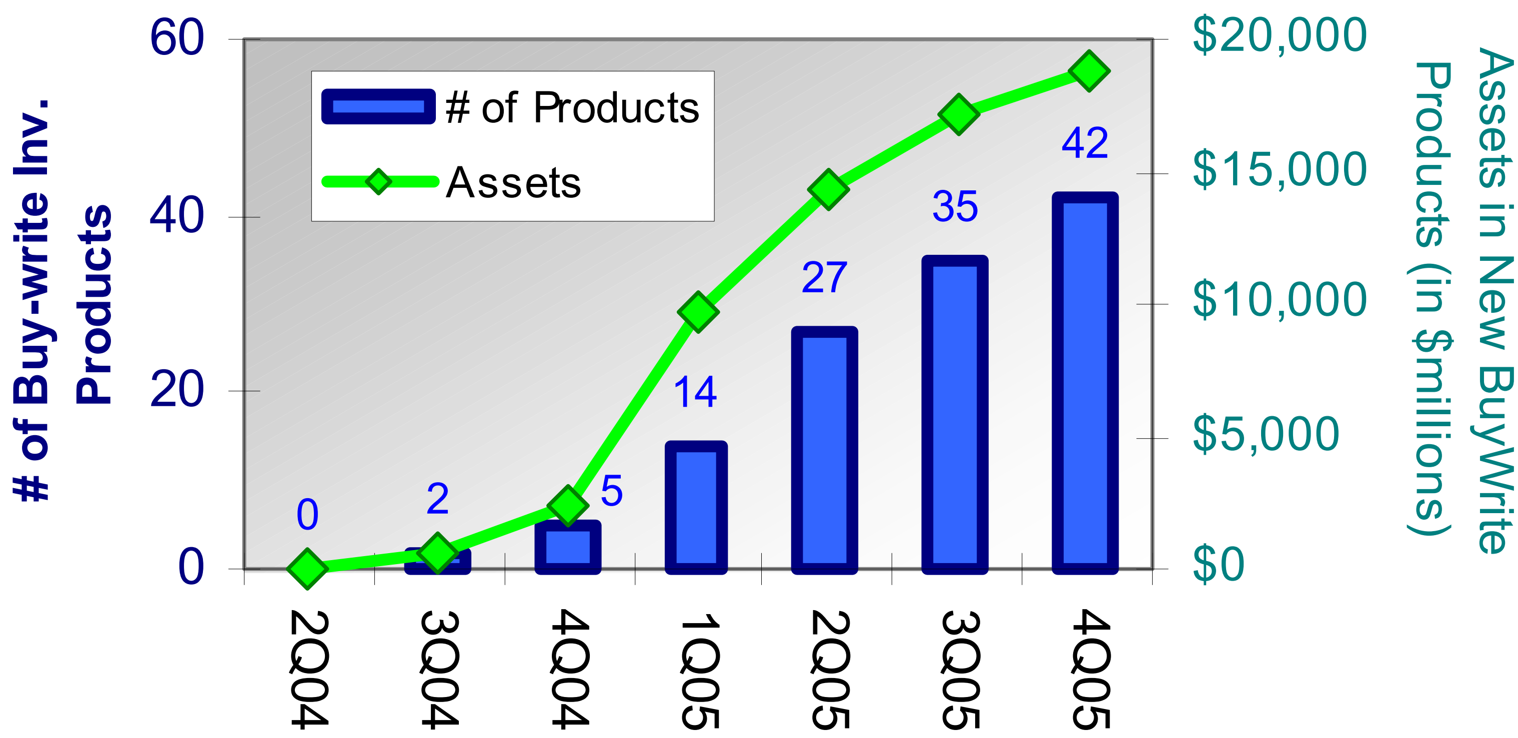
- CBOE S&P 500 BuyWrite Index (BXM) – Most Innovative Benchmark Index
- CBOE Volatility Index Futures (VIX) – Most Innovative Index Derivative
- Lower index fund fee structures by Fidelity – Fund Innovation
- iShares Emerging Markets (EEM) and EAFE (EFA) – ETF Innovation

Recent Headlines

- "Buy Writing Makes Comeback as Way to Hedge Risk.“ **Pensions & Investments**. May 16. 2005, pg 3.
- Ferry, John. "An Array of Options - A Buy-write Strategy Can Add Some Octane to Portfolios When the Markets Lack Direction." **Worth Magazine**, April 2005, pp. 102 - 104.
- Demby, Elayne. “In a Sideways or Falling Market, Writing Call Options Is One Way to Give Your Clients Some Traction,” **Bloomberg Wealth Manager**, Feb. 2004.
- Woolley, Suzanne. “Squeeze Your Portfolio Harder,” **BusinessWeek**, December 27, 2004. “You can bring in extra dollars by selling options …. “
- Tan, Kopin, "Yield Boost -- Firms Market Covered-call Writing to Up Returns." **Barron's**. Oct. 25, 2004.
- Smith, Steven "More Options on Covered Calls" **TheStreet.com**., Oct. 13, 2004.
- Schurr, Stephen, "Spoilt for Choice? Time to Explore Your Options." **Financial Times**. Oct. 11, 2004.
- "Covered Call Strategy Could Have Helped, Study Shows" **Pensions & Investments**, Sept. 20, 2004, p. 38.
- Roeder, David. "New Funds Try Options to Boost Stock Income." **Chicago Sun-Times**. October 10, 2004.

Growth in Listed Buy-write Products -

42 New Products with $18.8 Billion by the End of 2005



Source: CBOE. The estimated totals are based on exchange-listed closed-end funds & structured products w ith ticker symbols.

CBOE

Sampling of New Closed-end Funds

That Use Options

	Closed-end Fund	Ticker Symbol	Announcement Date	Approximate Amount Raised
26	Nuveen Equity Premium and Growth Fund	JPG	Nov. 23, 2005	$380 million
25	ING Global Advantage and Premium Opportunity Fd	IGA	Oct. 27, 2005	$345 million
24	Evergreen International Balanced Income Fund	EBI	Oct. 27, 2005	$215 million
23	BlackRock World Investment Trust	BWC	Oct. 24, 2005	$700 million
22	Enhanced S&P 500 Covered Call Fund (seeks leveraged BXM returns)	BEO	Sept. 28, 2005	$185 million
21	Eaton Vance Tax-Mgd Global Buy-Write Opport. Fund	ETW	Sept. 28, 2005	$2 billion
20	Eaton Vance Tax-Managed Buy-Write Opportun. Fd	ETV	June 28, 2005	$1.1 billion
19	Enhanced Equity Yield & Premium Fund.	ECV	June 28, 2005	$320 million
18	Enhanced Equity Yield Fund, Inc (may sell S&P calls)	EEF	June 21, 2005	$370 million
17	BlackRock Global Opportunities Equity Trust	BOE	May 26, 2005	$300 million
16	Nuveen Equity Premium Advantage Fund	JLA	May 2005	$464 million
15	Eaton Vance Tax-Managed Buy-Write Income Fund (sells S&P 500 calls)	ETB	April 27, 2005	$450 million
14	Fiduciary/Claymore Dynamic Equity Fund	HCE	April 27, 2005	$107 million
13	Madison Strategic Sector Premium Fund	MSP	April 27, 2005	$110 million
12	Nicholas-Applegate Intl. & Premium Strategy Fund	NAI	April 27, 2005	$230 million
11	Dow 30 Premium & Dividend Income Fund	DPD	April 27, 2005	$230 million
10	S&P 500 Covered Call Fund (approximate the BXM Index)	BEP	March 29, 2005	$312 million
9	ING Global Equity Div and Prem.Opportunity Fd	IGD	March 29, 2005	$1.7 billion
8	Nuveen Raises $1.3 Billion In IPO for Second Index Options and Equities Fund	JSN	Jan. 27, 2005	$1.3 billion
7	Eaton Vance Enhanced Equity Income Fund II	EOS	Jan. 27, 2005	$875 million
6	NFJ Dividend, Interest & Premium Strategy Fd (Largest Closed-End IPO in History)	NFJ	Feb. 28, 2005	$2.475 billion
5	Advent/Claymore Enh Growth & Inc Fd	LCM	Jan. 27, 2005	$251 million
4	Eaton Vance Enhanced Equity Income Fd	EOI	Oct. 27, 2004	$750 million
3	Nuveen Equity Premium Fund	JPZ	Oct. 2004	$770 million
2	Madison/Claymore Covered Call Fd	MCN	July 28, 2004	$260 million
1	First Trust/Fiduciary Asset Management Cov. Call Fd	FFA	Aug. 26, 2004	$383 million

The data above is provided for informational purposes and is not meant to be a solicitation or recommendation.

CBOE

Sampling of New

Structured Products

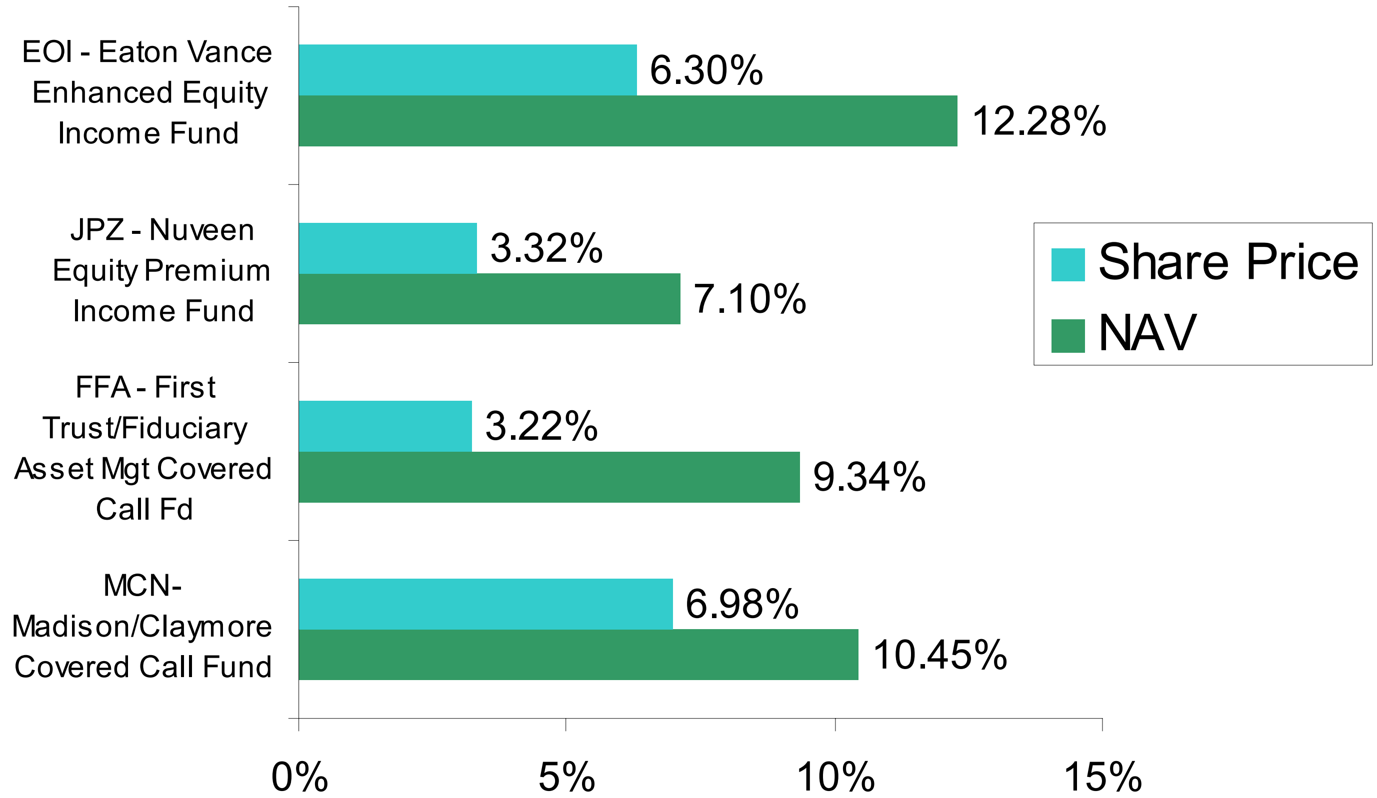
Linked to Buy-write Indexes

Fund or Product	Ticker Symbol	Announcement Date
Morgan Stanley's 8% Targeted STARS based on BXM	BWN	Dec. 23, 2005
Merrill Lynch 8% Monthly Income Strategic Return Notes Linked to the CBOE DJIA BuyWrite Index	BWR	Nov. 3, 2005
Morgan Stanley 8% Targeted Income STARS on CBOE's BXD Index	DBY	July 25, 2005
Morgan Stanley STARS on CBOE's BXD Index	DBZ	July 25, 2005
Merrill Lynch 8% S.R. Notes Linked to BXM Index	BXA	July 8, 2005
Morgan Stanley 8% Targeted Income Strategic Total Return Securities Based on the CBOE BXM Index	MBJ	March 24, 2005
Morgan Stanley Strategic Total Return Securities (STARS linked to BXM Index)	MBS	Nov. 23, 2004

The data above is provided for informational purposes and is not meant to be a solicitation or recommendation.

Four Options-based Funds - Annualized Total Returns

from Inception in 2004 Through March 31, 2006

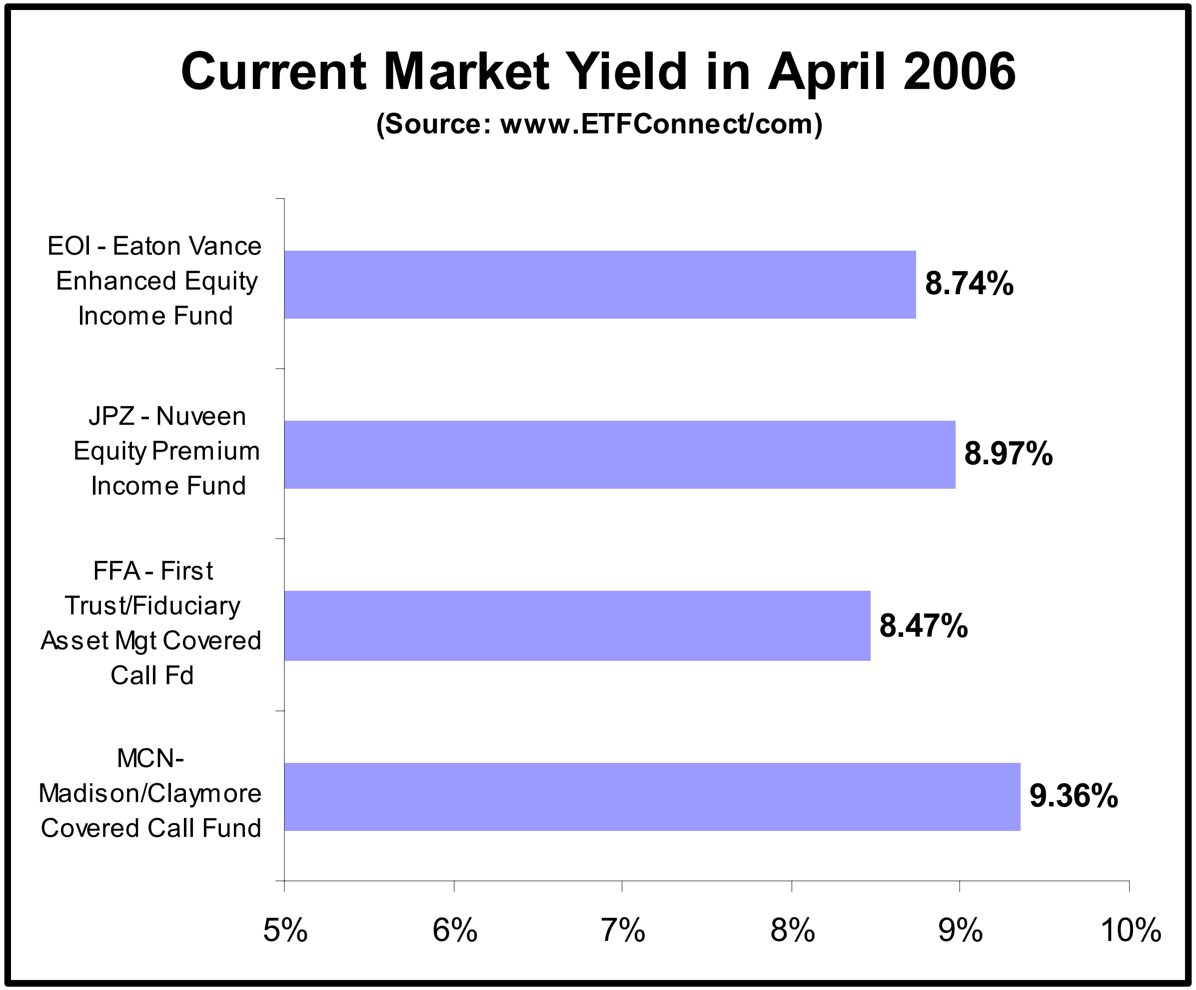


Source: www.ETFConnect.com. Please note that these funds had different inception dates - July through October 2004.

Please read the applicable prospectus. CBOE does not endorse particular investment funds.

Yield for Options-based Funds

Launched in 2004



Please read the applicable prospectus. CBOE does not endorse particular investment funds.

Bibliography on Options and on Buy-Write Strategies

Black, Fischer and Scholes, Myron, "The Pricing of Options and Corporate Liabilities", Journal of Political Economy, (1973) 81:637-654.

Blake, Rich. “Investors Are Dusting Off an Old Strategy, Options Overlay; When It Works, It Offers Both Yield Enhancement and Risk Management.” Institutional Investor, Sept. 2002, pp. 173 – 174.

Clair, Chris. "Colorado's Use of Call Strategy Covers Its 80% Equities Allocation." Pensions & Investments, May 14, 2001, p. 3.

Crowley, Paul. “Improve Your Morningstar Rating Using Options.” The Journal of Investing, Winter 2001, pp. 73 – 84.

Moran, Matthew. “Risk-adjusted Performance for Derivatives-based Indexes – Tools to Help Stabilize Returns.” Journal of Indexes. Fourth Quarter, 2002, pp. 34 – 40.

Natenberg, Sheldon: Option Volatility and Pricing, Revised Edition, Irwin Professional Publishing, 1994.

Rendleman, R. "Option Investing from a Risk-return Perspective." Journal of Portfolio Management, May 1999, pp. 109 - 121.

Schneeweis, Thomas, and Richard Spurgin. "The Benefits of Index Option-Based Strategies for Institutional Portfolios." The Journal of Alternative Investments, Spring 2001, pp. 44 - 52.

Stux, Ivan, & Peter Fanelli. "Hedged Equities as an Asset Class." Morgan Stanley Research Paper (1990).

Tergesen, Anne. "Taking Cover with Covered Calls." Business Week, May 21, 2001, p. 132.

Tsu, Maria. "Writing Covered Calls to Enhance Returns on U.S. Stocks." Goldman Sachs Paper (1997).

Whaley, Robert. "Return and Risk of the CBOE BuyWrite Monthly Index," The Journal of Derivatives (Winter 2002) pp. 35 - 42.

A Chronology of Key

Volatility–based Products

1973 Black-Scholes Options Pricing Model

1993 VIX (based on S&P 100) – Prof. Whaley

1998 Equity Index Volatility & Variance Swaps

1998 VOLAX Futures in Germany

2001 VXN Index (based on Nasdaq-100 options)

2003 New VIX (based on S&P 500 options)

2004 VIX and Variance Futures

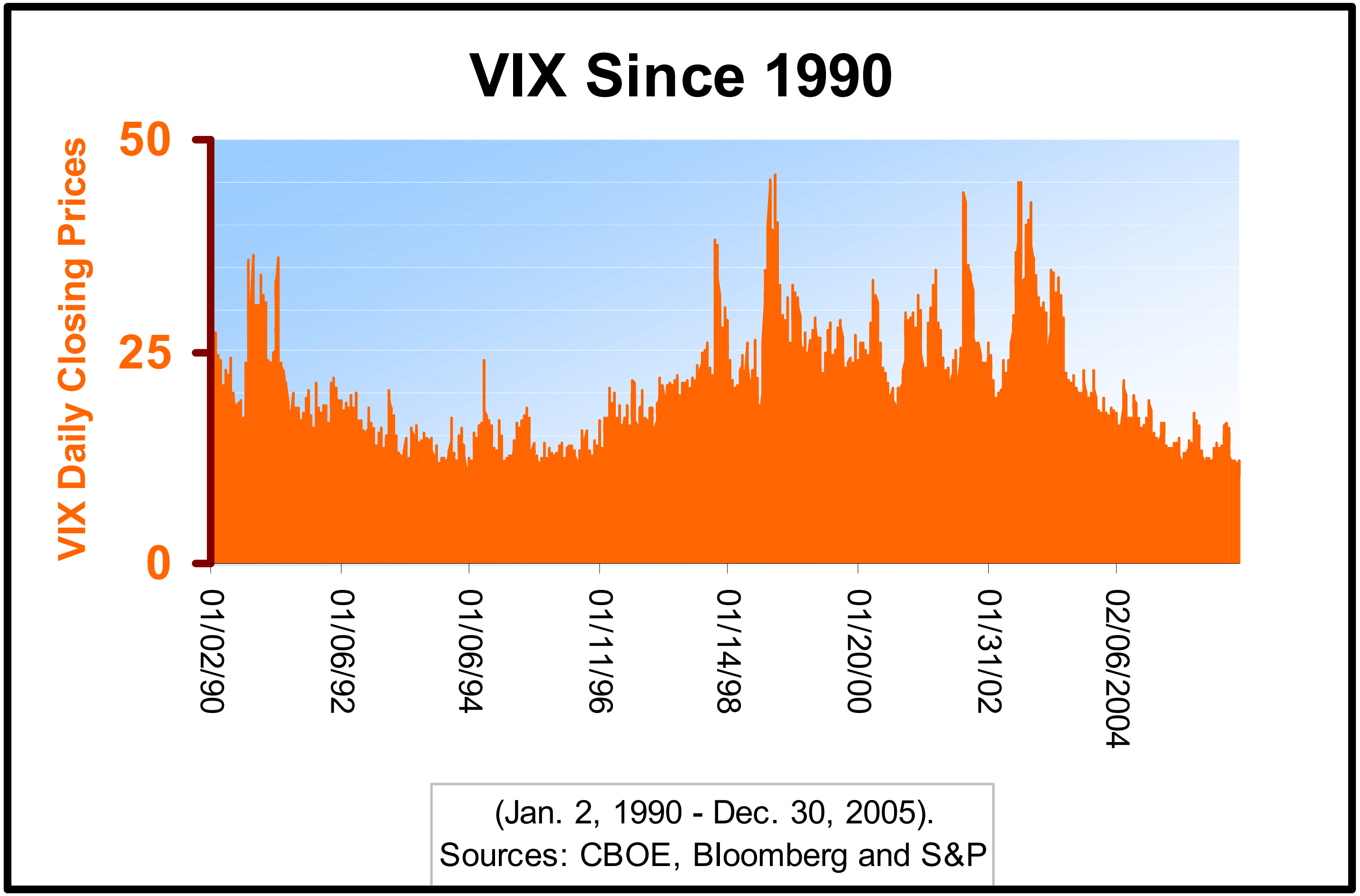
2005 VXD Index

2006 VIX Options

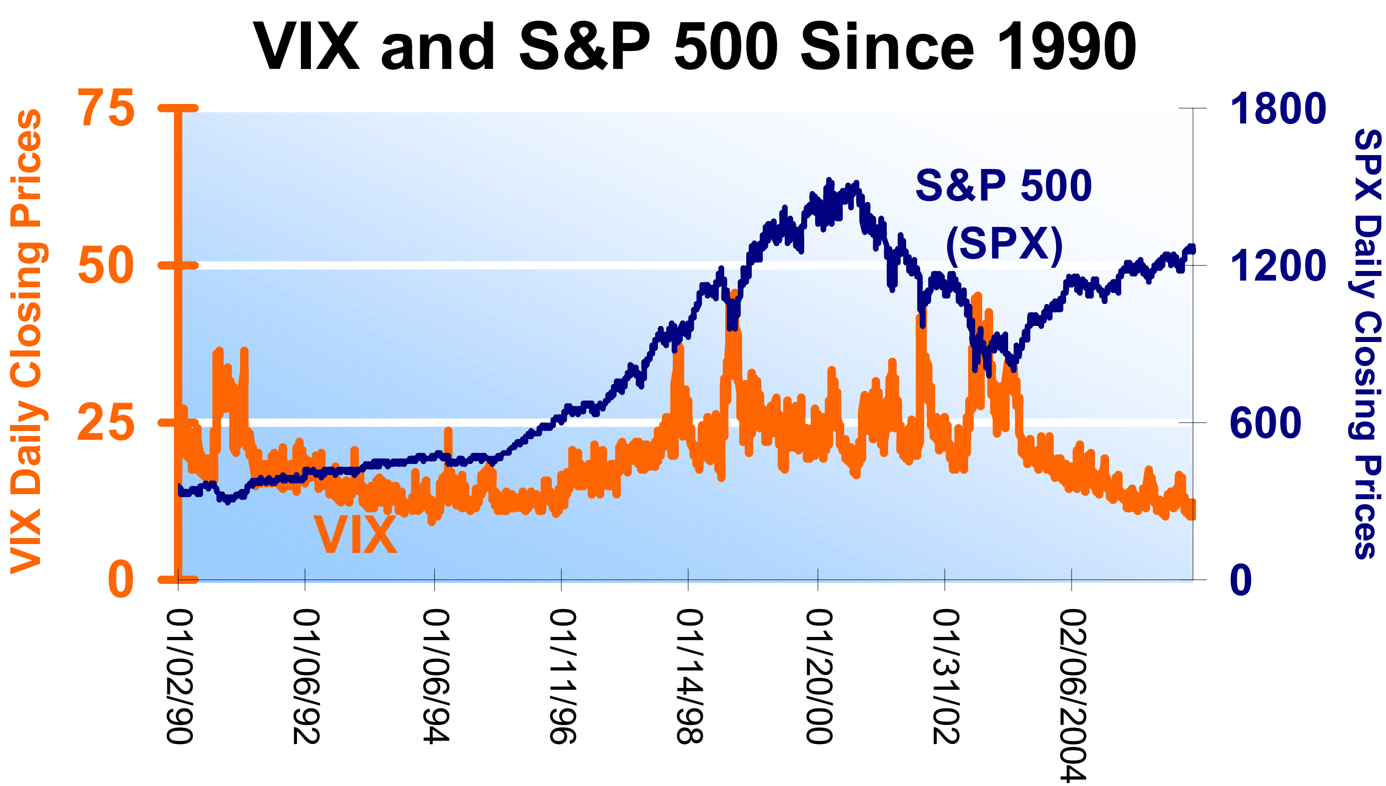
CBOE Volatility Index® (VIX®)

- Since 1993 a premier barometer of investor sentiment and market volatility
- In Sept. 2003 new VIX methodology
- VIX futures introduced in March 2004, with settlement date on the 3rd Wednesday of each month
- VIX options in February 2006
- www.cboe.com/vix

CBOE Volatility Index® (VIX®)



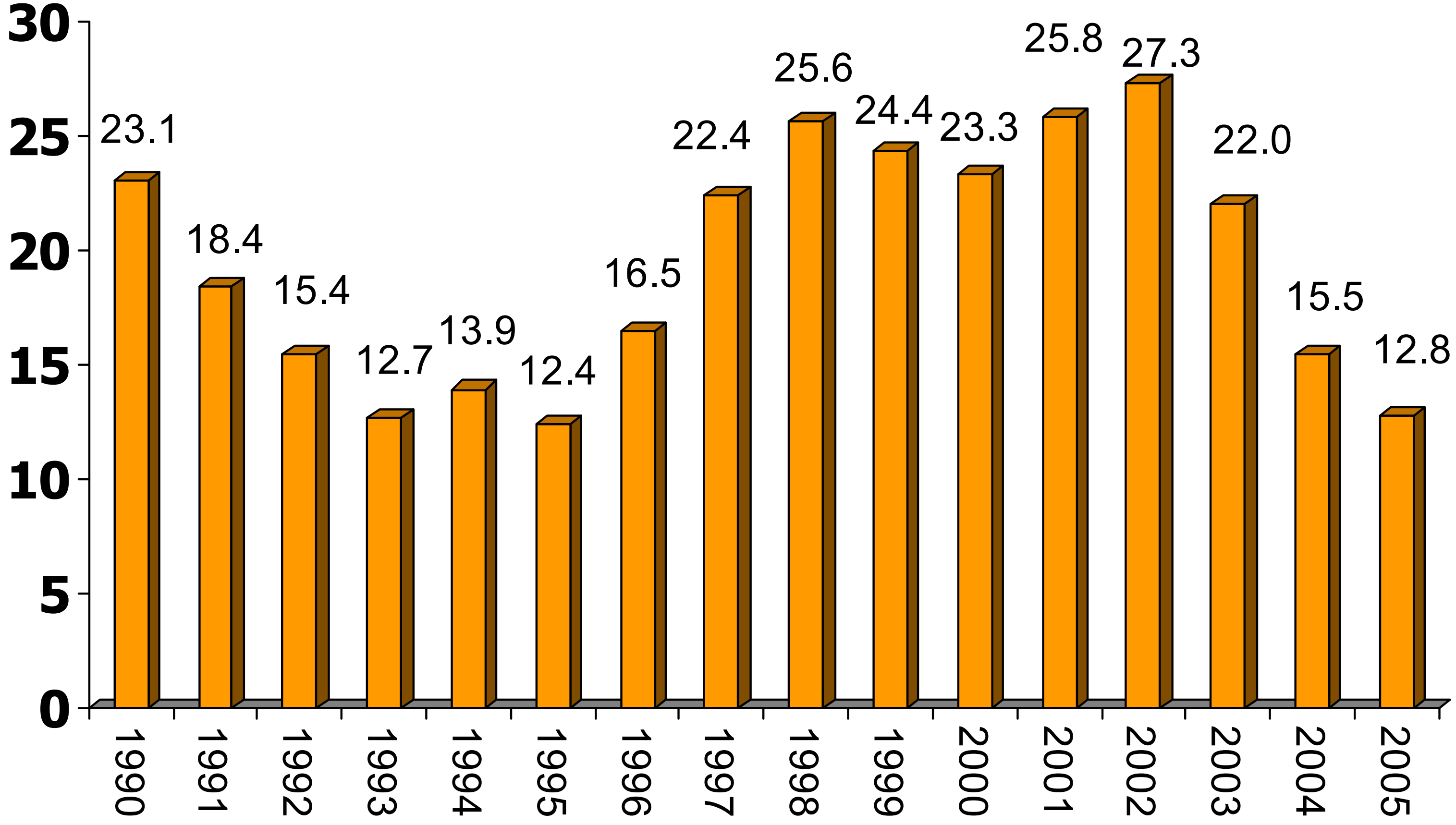
VIX and S&P 500 Since 1990



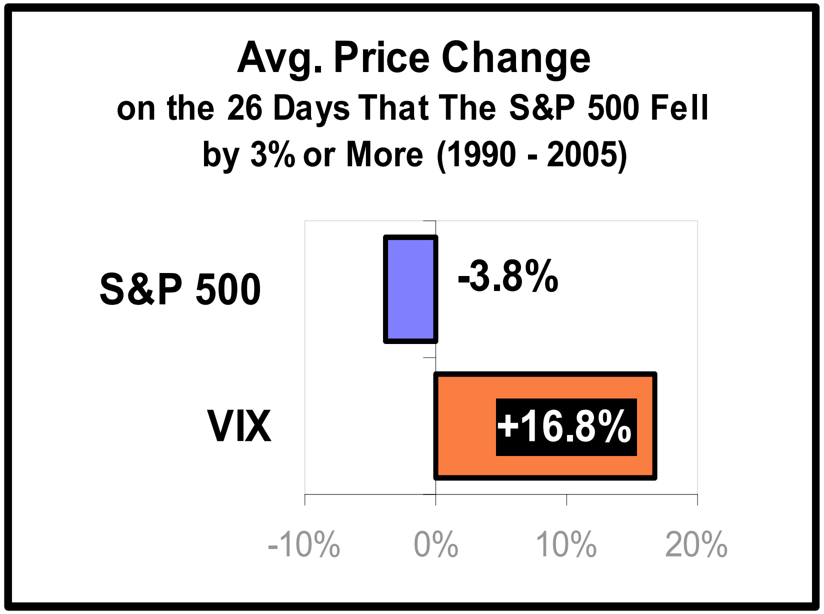
(Jan. 2, 1990 - Dec. 30, 2005).
Sources: CBOE, Bloomberg and S&P

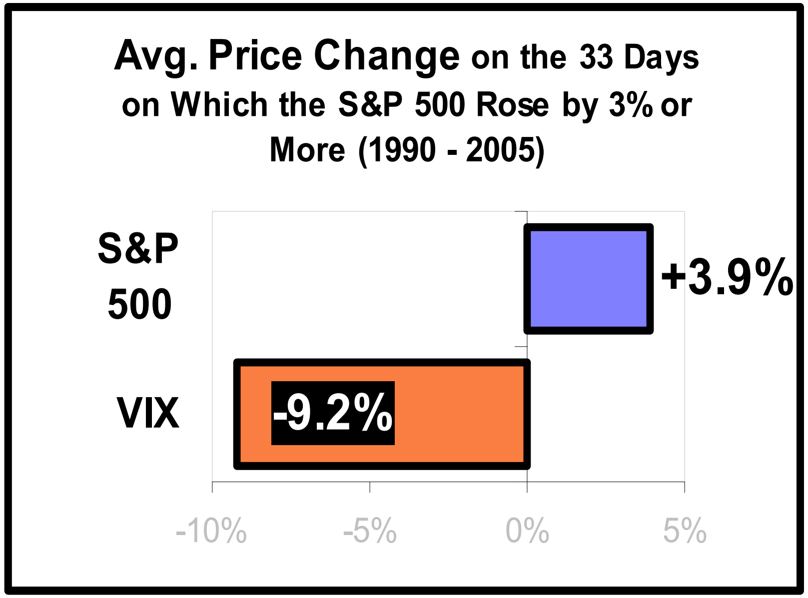
VIX

Avg. Daily Closing Price for
Each of 16 Calendar Years (1990 – 2006)



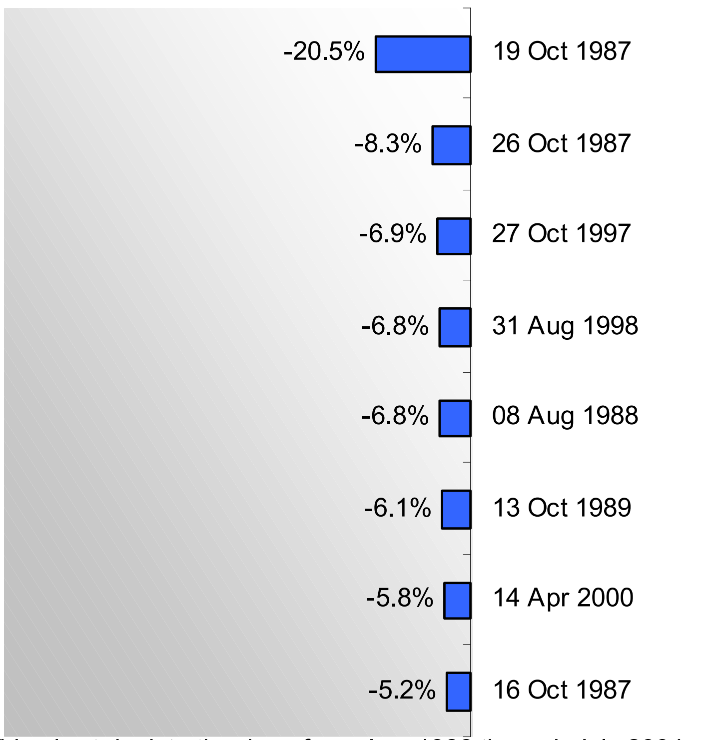
If Stocks Have a Big Move, VIX Often Has a Bigger Move in Opposite Direction





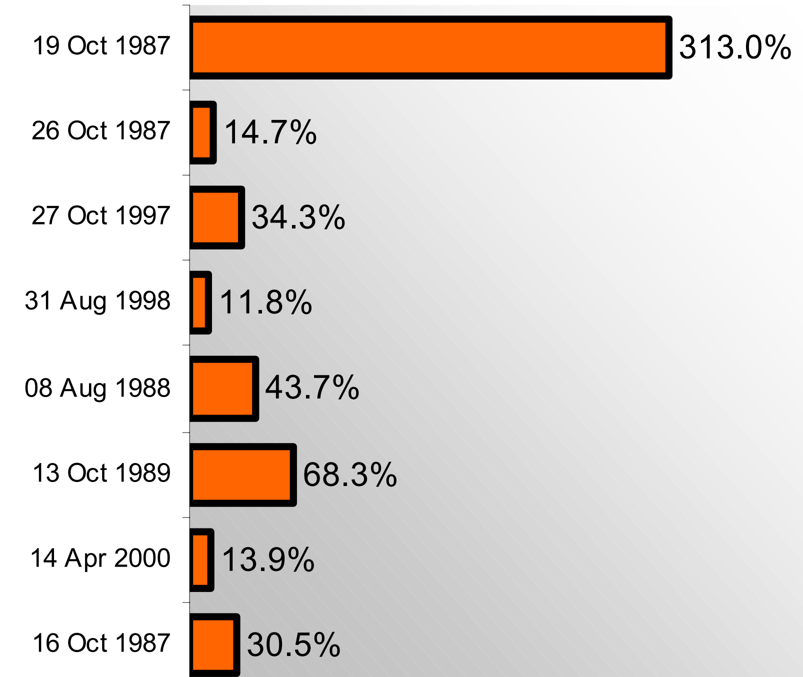
Potential Catastrophe Protection?

On the Eight Days the S&P 500 Fell by More Than 5% ...



This chart depicts the days from Jan. 1986 through July 2004 on which the daily closing price of the S&P 500 fell by more than 5%

... the volatility indexes rose by at least 10%



This chart depicts the % change in the CBOE's volatility indexes (VIX after 1989 and VXO prior to 1990) for days the S&P 500 Index fell more than 5% (from Jan. 1986 through July 2004).

Papers on Volatility and VIX

- Antognelli, Ferreira, McArdle, and Traub. "Fear and Greed in Global Asset Allocation." The Journal of Investing. (Spring 2000), pp. 27 - 32. VIX "is a good indicator of the level of fear or greed in U.S. and global capital markets. When investors are fearful, the VIX level is significantly higher than normal. Market participants require additional compensation in the form of above-average excess returns for riskier assets. … Using implied volatility as an asset allocation factor would have added significant value over the last thirteen years."

- Rattry and Balasubramanian. "The New VIX® as a Market Signal – It Still Works!" Goldman Sachs Options and Volatility Report. (Sept. 5, 2003). (1) A high level of the New VIX has a similar power in predicting the market's subsequent direction as the Old VIX. On average, the S&P 500 has risen after the New VIX reached extreme levels, with a more frequent positive return the more extreme the New VIX level. (2) A low level of the New VIX has not been a consistently successful indicator of subsequent market weakness. (3) A reversion of the New VIX occurs both after upside and downside extremes. …

CBOE

Papers on Volatility and VIX

- Connors, Larry. "A Volatile Idea." Futures (Jul 1999): p. 36-37. The best market indicator “to capture the pulse of the market is the VIX … Extreme VIX readings and reversals often signal quick reversals in the stock market, making it an effective tool” for short-term trading strategies.
- Copeland, Maggie. "Market Timing: Style and Size Rotation Using the VIX." Financial Analysts Journal, (Mar/Apr 1999); pp. 73-82. Changes in VIX are “statistically significant leading indicators of daily market returns. … The implication is that market timing may be feasible-at least for portfolio yield enhancement." ...
- Bibliography is at **www.cboe.com/vix**

Educational Opportunities

- Options Institute classes
- *Index Workbench* CD-ROM
- Risk Mgt. Conference www.cboe.com/rmc
- BXM Index www.cboe.com/bxm
- moran@cboe.com (312) 786-7249

CBOE