

A VIX for Canada

October 14, 2010

See what others don't, so you can do what others can't.[∞]

PROPRIETARY.

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What is VIX[®]?

- Introduced in U.S. in 1993 by CBOE; reformulated in 2003.
- Benchmark for implied volatility for the U.S. equity market, as represented by the S&P 500.
- Commonly referred to as the "investor fear gauge"; widely used as a market indicator and trading signal.
- Measures constant 30 day implied volatility based on European style index option quotes.



Introducing....





S&P/TSX 60 VIX

- A VIX for Canada will be launched on October 18, 2010. It will serve as a "Opportunity" gauge for the Canadian market.
 - Real time index of 30-day implied volatility based on about 25,000 quotes per day on two near term options on S&P/TSX 60 index.
 - Same methodology as the CBOE VIX for the U.S. equity market, with slight tweak to accommodate the local market.



VIXC Calculation in a Nutshell



S&P/TSX 60 VIX

$$R_{I} = \frac{N_{y}}{N_{T_{I}}} \left\{ T_{on} R_{on} \left[\frac{N_{Im} - N_{T_{I}}}{N_{Im} - N_{on}} \right] + T_{Im} R_{Im} \left[\frac{N_{T_{I}} - N_{on}}{N_{Im} - N_{on}} \right] \right\}$$

$$R_{2} = \frac{N_{y}}{N_{T_{2}}} \left\{ T_{1m} R_{1m} \left[\frac{N_{2m} - N_{T_{2}}}{N_{2m} - N_{1m}} \right] + T_{2m} R_{2m} \left[\frac{N_{T_{2}} - N_{1m}}{N_{2m} - N_{1m}} \right] \right\}$$

$$\sigma^{2} = \frac{2}{T} \sum_{i} \frac{\Delta K_{i}}{K_{i}^{2}} e^{RT} Q(K_{i}) - \frac{1}{T} \left[\frac{F}{K_{o}} - 1 \right]^{2}$$

$$VIXC = \sqrt{\frac{N_y}{N_m}} \left\{ T_1 \sigma_1^2 \left[\frac{N_{T_2} - N_m}{N_{T_2} - N_{T_1}} \right] + T_2 \sigma_2^2 \left[\frac{N_m - N_{T_1}}{N_{T_2} - N_{T_1}} \right] \right\} * 100$$

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	S&P/TSX 60 VIX	S&P 500 VIX
Strikes	Same option selection criteria. Full strip of strikes with non-zero bid prices.	
Calculation	Same variance swap pricing mechanism of weighted averaging of entire strip of call and put quotes.	
Input Option Price	Option quotes (bid / ask)	
Rolling Convention	Rolls on the 5th calendar day prior to the expiration of near-term options.	Rolls when the near-term options have less than a week to expiration.
Risk Free Rate	Uses interpolated rates of CORRA, 1, 2 and 3 Month CDOR matching to relevant expiry date of underlying options.	Uses the bond-equivalent yield of the U.S. T-bill maturing closest to the expiration dates of relevant SPX options.



	S&P/TSX 60 VIX	MVX
Strikes	Full strip of strikes with non-zero bid prices.	At-the-money options only.
Calculation	Variance swap pricing mechanism of weighted averaging of entire strip of call and put quotes.	Black-Scholes model.



Source, S&P Indices, Montreal Exchange. Data shown above is from October 1, 2009 through September 30, 2010. Charts and graphs are provided for illustrative purposes only. S&P Indices are rules based statistical composites and their returns do not include the payment of any sales charges or fees an investor would pay to purchase the securities the Indices represent. Such costs would lower performance. Past correlation and performance is not an indication of future results. It is not possible to invest directly in an Index. The S&P/TSX 60 VIX Index is currently not in existence and is planned to be launched on October 18, 2010 with a base date of October 1, 2009. All data presented reflects hypothetical historical performance based on a number of assumptions. Please see the Performance Disclosure at the end of this document for more information on some of the inherent limitations associated with back-tested Index data and performance information.



S&P 500 VIX vs. S&P/TSX 60 VIX



Canada VIX is positively correlated to the U.S. VIX. The moving average of 21-day correlation since Oct-2009 is 52%.

Source, S&P Indices, Bloomberg. Correlations are calculated using daily returns from October 1, 2009 through September 30, 2010. Charts and graphs are provided for illustrative purposes only. S&P Indices are rules based statistical composites and their returns do not include the payment of any sales charges or fees an investor would pay to purchase the securities the Indices represent. Such costs would lower performance. Past correlation and performance is not an indication of future results. It is not possible to invest directly in an Index. The S&P/TSX 60 VIX Index is currently not in existence and is planned to be launched on October 18, 2010 with a base date of October 1, 2009. All data presented reflects hypothetical historical performance based on a number of assumptions. Please see the Performance Disclosure at the end of this document for more information on some of the inherent limitations associated with back-tested Index data and performance information.



Volatility vs. Equity – U.S.



Volatility vs. Equity - Canada



21-Day Correlation between S&P/TSX 60 VIX and S&P/TSX60

10 Biggest Daily Drop in Canada Equity Market Date S&P/TSX 60 S&P/TSX 60 VIX -3.03% 1.13% 6/29/2010 -2.30% 12.32% 8/11/2010 2/4/2010 -2.29% 4.89% 2.11% 6/4/2010 -2.21%-2.20% 4.94% 5/20/2010 10/27/2009 -1.84% 3.92% 7.32% 1/29/2010 -1.78%5.93% 1/21/2010 -1.74%8.38% 5/17/2010 -1.60%7/16/2010 -1.60% 4.67%

Source, S&P Indices, Bloomberg. Correlations are calculated using daily returns from October 1, 2009 through September 30, 2010. Charts and graphs are provided for illustrative purposes only. S&P Indices are rules based statistical composites and their returns do not include the payment of any sales charges or fees an investor would pay to purchase the securities the Indices represent. Such costs would lower performance. Past correlation and performance is not an indication of future results. It is not possible to invest directly in an Index. The S&P/TSX 60 VIX Index is currently not in existence and is planned to be launched on October 18, 2010 with a base date of October 1, 2009. All data presented reflects hypothetical historical performance based on a number of assumptions. Please see the Performance Disclosure at the end of this document for more information on some of the inherent limitations associated with back-tested Index data and performance information.



Road Map





Questions or comments?



Performance Disclosure

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- The S&P/TSX 60 VIX Index is not currently in existence and is planned to be launched on October 18, 2010 with a base date of October 1, 2009. All data in this presentation is back-tested data that was calculated using the same methodology that will be in effect when the Index is launched. The index is calculated daily. No rebalancing is needed. Complete index methodology details we be available at www.indices.standardandpoors.com.
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