

## **A VIX for Canada**

October 14, 2010

See what others don't, so you can do what others can't.<sup>∞</sup>

PROPRIETARY.

Permission to reprint or distribute any content from this presentation requires the written approval of Standard & Poor's. Copyright © 2010 Standard & Poor's Financial Services LLC, a subsidiary of The McGraw-Hill Companies, Inc. All rights reserved.

The McGraw · Hill Companies

## What is VIX<sup>®</sup>?

- 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

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

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

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

$$VIXC = \sqrt{\frac{N_{y}}{N_{m}}} \left\{ T_{1}\sigma_{1}^{2} \left[ \frac{N_{T_{2}} - N_{m}}{N_{T_{2}} - N_{T_{1}}} \right] + T_{2}\sigma_{2}^{2} \left[ \frac{N_{m} - N_{T_{1}}}{N_{T_{2}} - N_{T_{1}}} \right] \right\} * 100$$

S&P INDICES



	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**

- The S&P/TSX 60 VIX Index ("Index") measures the 30-day implied volatility of the S&P/TSX 60 options. It is not possible to invest directly in an S&P index. Past performance of an index is no indication of future results.
- 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.
- Prospective application of the methodology used to construct the Index may not result in performance commensurate with the backtest returns shown. The backtest period does not necessarily correspond to the entire available history of the Index. Please refer to the methodology paper the index, available at www.standardandpoors.com for more details about the Index, including the manner in which it is rebalanced, and the timing of such rebalancing and index calculation. The index is rules based, although the Index Committee reserves the right to exercise discretion, when necessary.
- The Index performance shown has inherent limitations. The Index return shown does not represent the results of actual trading of investor assets. Standard & Poor's maintains the Index and calculates the Index levels and performance shown or discussed, but does not manage actual assets. Indices are statistical composites and their returns do not reflect payment of any sales charges or fees an investor would pay to purchase the securities they represent. The imposition of these fees and charges would cause actual and backtested performance to be lower than the performance shown. For example, if an index returned 10 percent on a \$100,000 investment for a 12-month period (or \$10,000) and an annual asset-based fee of 1.5 percent were imposed at the end of the period (or \$1,650), the net return would be 8.35 percent (or \$8,350) for the year. Over 3 years, an annual 1.5% fee taken at year end with an assumed 10% return per year would result in a cumulative gross return of 33.1%, a total fee of \$5,375 and a cumulative net return of 27.2% (or \$27,200).



#### <u>S&P</u> INDICES

This document does not constitute an offer of services in jurisdictions where Standard & Poor's or its affiliates do not have the necessary licenses. Standard & Poor's receives compensation in connection with licensing its indices to third parties.

All information provided by Standard & Poor's is impersonal and not tailored to the needs of any person, entity or group of persons. Standard & Poor's and its affiliates do not sponsor, endorse, sell, promote or manage any investment fund or other vehicle that is offered by third parties and that seeks to provide an investment return based on the returns of any Standard & Poor's index. Standard & Poor's is not an investment advisor, and Standard & Poor's and its affiliates make no representation regarding the advisability of investing in any such investment fund or other vehicle. A decision to invest in any such investment fund or other vehicle on any of the statements set forth in this document. Prospective investors are advised to make an investment in any such fund or other vehicle only after carefully considering the risks associated with investing in such funds, as detailed in an offering memorandum or similar document that is prepared by or on behalf of the issuer of the investment fund or other vehicle. Inclusion of a security within an index is not a recommendation by Standard & Poor's to buy, sell, or hold such security, nor is it considered to be investment advice.

Exposure to an asset class is available through investable instruments based on an index. It is not possible to invest directly in an index. There is no assurance that investment products based on the index will accurately track index performance or provide positive investment returns. Standard & Poor's is not a tax advisor. A tax advisor should be consulted to evaluate the impact of tax-exempt securities on portfolios and the tax consequences of making any particular investment decision.

Standard & Poor's does not guarantee the accuracy and/or completeness of any Standard & Poor's index, any data included therein, or any data from which it is based, and Standard & Poor's shall have no liability for any errors, omissions, or interruptions therein. Standard & Poor's makes no warranties, express or implied, as to results to be obtained from use of information provided by Standard & Poor's and used in this service, and Standard & Poor's expressly disclaims all warranties of suitability with respect thereto. While Standard & Poor's has obtained information believed to be reliable, Standard & Poor's shall not be liable for any claims or losses of any nature in connection with information contained in this document, including but not limited to, lost profits or punitive or consequential damages, even if it is advised of the possibility of same. These materials have been prepared solely for informational purposes based upon information generally available to the public from sources believed to be reliable. Standard & Poor's makes no representation with respect to the accuracy or completeness of these materials, the content of which may change without notice. The methodology involves rebalancings and maintenance of the indices that are made periodically during each year and may not, therefore, reflect real-time information.

Analytic services and products provided by Standard & Poor's are the result of separate activities designed to preserve the independence and objectivity of each analytic process. Standard & Poor's has established policies and procedures to maintain the confidentiality of non-public information received during each analytic process. Standard & Poor's and its affiliates provide a wide range of services to, or relating to, many organizations, including issuers of securities, investment advisers, broker-dealers, investment banks, other financial institutions and financial intermediaries, and accordingly may receive fees or other economic benefits from those organizations, including organizations whose securities or services they may recommend, rate, include in model portfolios, evaluate or otherwise address.

Copyright © 2010 by Standard & Poor's Financial Services LLC. All rights reserved. Redistribution, reproduction and/or photocopying in whole or in part is prohibited without written permission. S&P, S&P 500, and STANDARD & POOR'S are registered trademarks of Standard & Poor's Financial Services LLC.

VIX" and "VIXC" are trademarks of the Chicago Board Options Exchange, used by S&P, TSX and its affiliates with the permission of CBOE. "S&P" is the trademark of Standard & Poor's Financial Services LLC. "TSX" is the trademark of TSX Inc. The VIX methodology is the property of the Chicago Board Options Exchange ("CBOE"). CBOE has granted Standard & Poor's Financial Services LLC ("S&P"), a license to use the VIX methodology to create the S&P/TSX 60 VIX Index.



Analytic services and products by Standard & Poor's are the result of separate activities designed to preserve the independence and objectivity of each analytic process. Standard & Poor's has established policies and procedures to maintain the confidentiality of non-public information received during each analytic process.

The McGraw Hill Companies