



Effective: December 14, 2011

PC-Bond* has been publishing indices to measure the performance of the Canadian fixed income market since 1947. Our indices are the most widely used fixed income performance benchmarks in Canada. The best known of these indices is the DEX Universe Bond Index, which tracks the broad Canadian bond market. In addition to the Universe, we publish a variety of sub-indices for different term and credit sectors, as well as indices for tracking other segments of the market, including High Yield, Euro, and Yankee Bonds, inflation-indexed Real Return Bonds, Strip Bonds, 20+ Bonds, Maple Bonds, T-Bills, residential and commercial Mortgage-Backed Securities, as well as the Universe + Maples Bond Index.

Maple Bond Index™ Overview

The DEX Maple Bond Index was introduced on April 3, 2006. The Maple Bond Index consists of Canadian dollar-denominated bonds, issued in Canada (or globally inclusive of Canada), by foreign governments and corporations. Bonds issued by supra-national entities are also eligible for the Maple Bond Index, except where the Canadian government or other Canadian entity is a member of the supra-national. In this latter case, the supra-national is instead eligible for inclusion in the DEX Universe Bond Index. All bonds eligible for the Maple index must pay a fixed-rate coupon, and have an effective term to maturity greater than one year.

Statistics as of November 30, 2011:

Maple Bond Index

- 84 securities each with an effective term of 1 year or greater
- Total market value of approximately \$32 billion
- Modified duration of 5.29 years

The DEX Maple Bond Index has been built with daily history, calculated and available from December 30, 2005 and is calculated and published daily. It is also a transparent index, with individual security holdings and prices, disclosed electronically each day. All prices used for this index are provided directly by PC-Bond and utilize the DEX Multi-Dealer Pricing Methodology (effective April 2007).



Eligibility Criteria

Minimum Issue size:	\$100 Million
Minimum number of buyers:	10 institutional buyers
Minimum Credit Rating:	BBB (low)
Currency:	Canadian dollars
Country of Issuer:	Any (Excluding Canada & Supranationals – Canadian members)
Market of Issue:	Any

Weighting

The securities in the DEX Maple Bond Index are weighted by their relative market capitalization. Thus, the return on any issue in the index influences the return on the index in proportion to the individual issue's market value. Market value of any issue equals the adjusted amount outstanding, multiplied by the gross price (market price plus accrued interest), with the gross price expressed as a percentage.

Effective Term

For a bond with an embedded option feature, including putable, callable, extendible, and retractable securities, the effective term is either the option exercise date, or the bond's final maturity date, depending on where the bond is trading in the market. In the case of a fixed-floater, the effective term is the date of the final fixed coupon payment.

Re-Balancing: Handling New Issues, Coupon Payments, and Roll-Outs

Entering the Index

New issues enter the index on the day they are issued, or as soon thereafter once it is confirmed that they meet all eligibility criteria. Eligibility criteria must be established by 3:00pm Eastern Standard Time for a security to enter the index on that day.



Exiting the Index (all issues)

A bond is removed from the DEX Maple Bond Index on the day its remaining effective term to maturity declines to one calendar year. For example, on March 1, 2006, the index sells an issue maturing in one year, March 1, 2007, at the 4:00 pm mark-to-market price. This issue therefore contributes to the return of the DEX Maple Bond Index from February 28, 2006 to March 1, 2006. It does not contribute to index duration and other risk statistics calculated at the close on March 1, 2006. A June 1, 2012 bond callable as of June 1, 2007 and trading to its call date would be removed from the index on June 1, 2006.

A security that is downgraded below BBB (low) will be removed from the index 3-months after the date of the downgrade.

Coupon Payments

Coupon income is reinvested across all bonds in the index in proportion to their market value. Coupon income is recognized each day as coupon income accrues, as well as when an actual coupon payment is made.

Valuation

The securities that make up the DEX Maple Bond Index are priced using inputs from 11 of the leading fixed income broker / dealers in Canada at 4:00 pm Eastern Time. Normal settlement rules apply and the derived single quote per issue, or data, (Multi Dealer quote) is devised using proprietary filters that first remove any severe outliers, followed by a Standard Deviation Mean calculation. This Multi Dealer data best represents the marketplace by removing the ability of any one dealer to have undue influence upon the final calculated price / yield.

The same derived 4:00 pm prices are electronically distributed to investors through a variety of channels, including the PC-Bond software system, BondPerform Performance Attribution System, FastQuote service, and via third party data vendors. Thus, a portfolio valued using one of these sources can be compared on a consistent basis with the appropriate DEX Fixed Income Index. The index is constructed using mid-market prices.

Valuation at the 4:00 pm close is based on the trader's judgment of where a security should be priced, taking into account such factors as where the security previously traded, liquidity, and any market-wide as well as security-specific developments that can be expected to affect the price. This policy is intended to reflect changing market conditions, even in cases where a security may not frequently trade.



For securities that trade actively, the closing price will generally be close to where the security last traded, if not the same. For securities that trade less frequently, however, there could be a larger difference between the closing price and the price where the security last traded. Consider the extreme case of a security that trades in the morning, is subsequently and unexpectedly downgraded, and does not trade for the rest of the day. When setting the 4:00 pm price, it is more accurate and conservative for the trader to reflect the expected impact of the credit rating downgrade, rather than simply rely on the latest available transaction

Please see the Multi Dealer Pricing Methodology found at www.canadianbondindices.com

Settlement Conventions

The DEX Maple Bond Index risk measures are calculated using same day settlement.

Credit Rating Categories

The DEX Maple Index is at this time not classified into the broad credit rating categories of AAA/AA, A, and BBB, nor term or sector categories.

Index Risk Measures

Several risk measures are calculated for the DEX Indices each day. Modified duration, Macaulay duration, and Convexity are calculated as market-value weighted averages of the respective measures for constituent bonds. Val01, which measures the dollar price sensitivity to a change in yield (in contrast to modified duration, which measures percentage price sensitivity), is calculated by weighting the individual bonds by their adjusted par values. All risk measures are calculated based on same-day settlement.

Data Quality

The integrity of the prices in the index begins with the trading desk, which directly values virtually every security that goes into the database. All data inputs to the index, including price, credit rating, and amount outstanding, must pass through a scrubbing process each day that checks for data variances. The scrub results must be approved by the data analyst each day before the system will allow the index to run.

The data inputs into the index calculation are based on electronic transfer of information as much as possible, with minimal user involvement. This includes the electronic transfer of prices from the trading desk to the various indices engines, PC Bond, and the FastQuote Pricing services



Revision of Index Rules Over Time

The rules and practices for constructing the DEX Maple Bond and other fixed income indices necessarily change over time in order to reflect developments in the market.

We will endeavor to provide reasonable advance notice of any such changes, as well as an assessment of the expected impact on the index.

PC-Bond

PC-Bond is a software suite that provides daily price & yield updates for more than 19,000 fixed income securities. Users have the ability to generate daily portfolio measurement, or view specific prices, yields, volumes, and yield curves as historical charts. The main module, BondMan TrX is an excel-based application. In addition to being used for portfolio measurement and analytics, it allows users to retrieve daily index holdings (and specific sub-sectors of the index), or even generate custom benchmarks using blended components of the Index. Prices in PC-Bond are the same prices used to value the DEX Fixed Income Indices each day. The PC-Bond Index Team also provides the FastQuote service, which provides users same-day access to the 4:00pm bond prices used in the Index calculations and PC-Bond database.

BondPerform Performance Attribution

BondPerform is an interactive Windows-based performance attribution system that can be used to decompose returns on a portfolio or index into several different factors. BondPerform computes and analyzes daily returns, breaking them down to sources such as the passage of time, changes in the yield curve, changes in spreads, and transaction costs. Returns can be analyzed at the absolute level or relative to a benchmark such as the Universe Bond Index.

Information Sources and Publications

The DEX Fixed Income Indices can be monitored on a daily basis through a variety of electronic information channels.

Our public internet site, www.candianbondindices.com, also provides daily index returns and statistics for our domestic Short, Mid, Long and Universe Bond Indices and for our Money Market Indices. In addition, this site provides general descriptions of the different indices.



Daily index performance is also available through electronic information sources like Bloomberg, Thomson, as well as major newspapers.

Bloomberg		CBXI	
In print		National Post	
Index Email	pcbond@tsx.com	Internet	www.canadianbondindices.com www.pcbond.com



Disclaimer

PC-Bond* calculates and publishes the DEX Universe Bond Index and other DEX Fixed Income Indices at its own expense as an information service to financial market participants. The indices are published on a best-efforts basis, and do not constitute a recommendation to trade any particular security.

The indices are based on data believed to be reliable. No guarantee is made as to the accuracy, timeliness, or completeness of the data used in the indices. In the event a data input to a published index calculation is subsequently believed to be in error, we may at our sole discretion declare the data error to be immaterial to the published index value, and are under no obligation to re-calculate an already published index value. Index construction rules, guidelines, and practices may be changed at any time at our sole discretion, though we will endeavor to provide reasonable advance notice of such changes.

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Appendix: Index Return Calculation

The one day index return measures the total return on the constituent bonds, including capital gains, accrued income, and coupon payments. The one day return from time t-1 to time t is calculated as follows, where P and AI denote market price and accrued interest, respectively, Q denotes the adjusted amount outstanding, and CPN denotes the total coupon cash flow:

$$r_t = \frac{\sum_i Q_{i,t-1} \cdot (P_{i,t} + AI_{i,t}) / 100 + \sum_{i^*} CPN_{i,t}}{\sum_i Q_{i,t-1} \cdot (P_{i,t-1} + AI_{i,t-1}) / 100} - 1$$

Ignoring coupon payments, the equation says that the return on the index is calculated from the change in price and accrued from t-1 to t, holding the index constituents fixed as of t-1. The coupon cash flows are summed only for those bonds that pay coupons on day t.

Given the index value at day t-1 and the one-day return, the index value for day t is calculated as follows:

$$Index_t = Index_{t-1} \times (1 + r_t)$$

A series of one-day returns calculated as described above can be linked together geometrically to obtain the total return index over a longer time period:

$$Index_t = Index_{t-k} \times (1 + r_{t-k+1}) \times \dots \times (1 + r_{t-1}) \times (1 + r_t)$$

Given two index levels, the periodic rate of return can be calculated as follows:

$$r_{t-k,t} = \frac{Index_t}{Index_{t-k}} - 1$$

The above chain-linking procedure ensures that the measurement of market performance is not distorted by changes in index composition. Note that it is consistent with the Time-Weighted Rate of Return (with daily weighting) advocated by the Association for Investment Management and Research (AIMR) for measuring portfolio performance³¹.

¹ AIMR Performance Presentation Standards Handbook 1997, Association for Investment Management and Research.



Calculation Example

To illustrate the index total return calculation, consider a simple 2-bond index, with prices and accrued as shown below. Assume there is initially 5 million outstanding of bond 1, and 10 million of bond 2. On day 2 an additional 5 million of bond 1 is issued, and bond 2 pays a coupon of 275,000. On day 3, the outstanding amount of bond 2 is reduced by 2.5 million to reflect amounts that have been stripped.

	Market Price		Accrued Interest	
	Bond 1	Bond 2	Bond 1	Bond 2
Day1	101.083	101.489	1.3089	2.7274
Day2	101.188	101.775	1.3233	0.0000
Day3	101.293	102.062	1.3377	0.0151
Day4	101.398	102.350	1.3521	0.0301

The total return from day 1 to day 2 is calculated as follows. Note that the coupon payment is included in the return calculation, but that the 5 million re-opening of bond A is not included.

$$r_2 = \frac{\$5M \times (101.188 + 1.3233)/100 + \$10M \times (101.775 + 0.00)/100 + \$0.275M}{\$5M \times (101.083 + 1.3089)/100 + \$10M \times (101.489 + 2.7274)/100} - 1$$

$$= 0.23698\%$$

The total return from day 2 to day 3 is calculated as follows. Note that now the 5 million re-opening of bond 1 is included in the return calculation, and the day 2 coupon payment no longer appears.

$$r_3 = \frac{\$10M \times (101.293 + 1.3377)/100 + \$10M \times (102.062 + 0.0151)/100 + 0.0}{\$10M \times (101.188 + 1.3233)/100 + \$10M \times (101.775 + 0.00)/100} - 1$$

$$= 0.20630\%$$

From day 3 to day 4, the total return is calculated as follows, using the reduced amount of 7.5 million for bond 2 to reflect the 2.5 million of this bond that has been stripped.

$$r_4 = \frac{\$10M \times (101.398 + 1.3521)/100 + \$7.5M \times (102.350 + 0.0301)/100 + 0.0}{\$10M \times (101.293 + 1.3377)/100 + \$7.5M \times (102.062 + 0.0151)/100} - 1$$

$$= 0.19348\%$$



If we assume an index value of 100 on day 1, the index value for day 2 is:

$$\begin{aligned} Index_2 &= 100 \times (1.0023698) \\ &= 100.23698 \end{aligned}$$

Similarly, the index values for days 3 and 4 are:

$$\begin{aligned} Index_3 &= 100.23698 \times (1.0020630) \\ &= 100.44377 \end{aligned}$$

$$\begin{aligned} Index_4 &= 100.44377 \times (1.0019348) \\ &= 100.63811 \end{aligned}$$