



Strip Bond Index – Methodology

January 19, 2007

Introduction

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 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, and residential and commercial Mortgage-Backed Securities.

As of December 22nd, 2005, PC-Bond* introduced a new index for publication - the Scotia Capital Strip Bond Index. The Strip Bond Index contains Federal and Provincial Government coupons and residuals over \$50 Million in size.

Overview – Strip Bonds

A strip bond is created from existing conventional bonds by a trustee who, following deposit of the bond, separates each of the coupon payments, as well as the principal payment, from one another. Following the stripping process, each cash flow (piece of the original bond) can trade and is registered as a separate security, allowing the holder to receive a single known payment on a specific date. The interest payments are known as "coupons" after their source of cash flow, and the final payment at maturity is known as the "residual" since it is what is left over after the coupons are stripped off. Both coupons and residuals are known as "zero coupon" bonds or "zeros". The strip bond market in Canada has grown substantially since the late 1980s and is now an integral part of Canadian fixed-income markets with an overall market capitalization of over \$100 Billion.

Overview – Scotia Capital Strip Bond Index

The Scotia Capital Strip Bond Index is designed to be a broad measure of the Canadian investment-grade fixed income strip marketplace. As of December 29th, 2006, the Overall Strip Bond Index consisted of 546 securities, with a total market value of approximately \$54 Billion. Returns for the Strip Bond Index are calculated daily, and are weighted by market capitalization, so that the return on a strip bond influences the return on the index in proportion to the bond's market value. The Scotia Capital Strip Bond Index has been built with daily history, calculated and available from December 29,



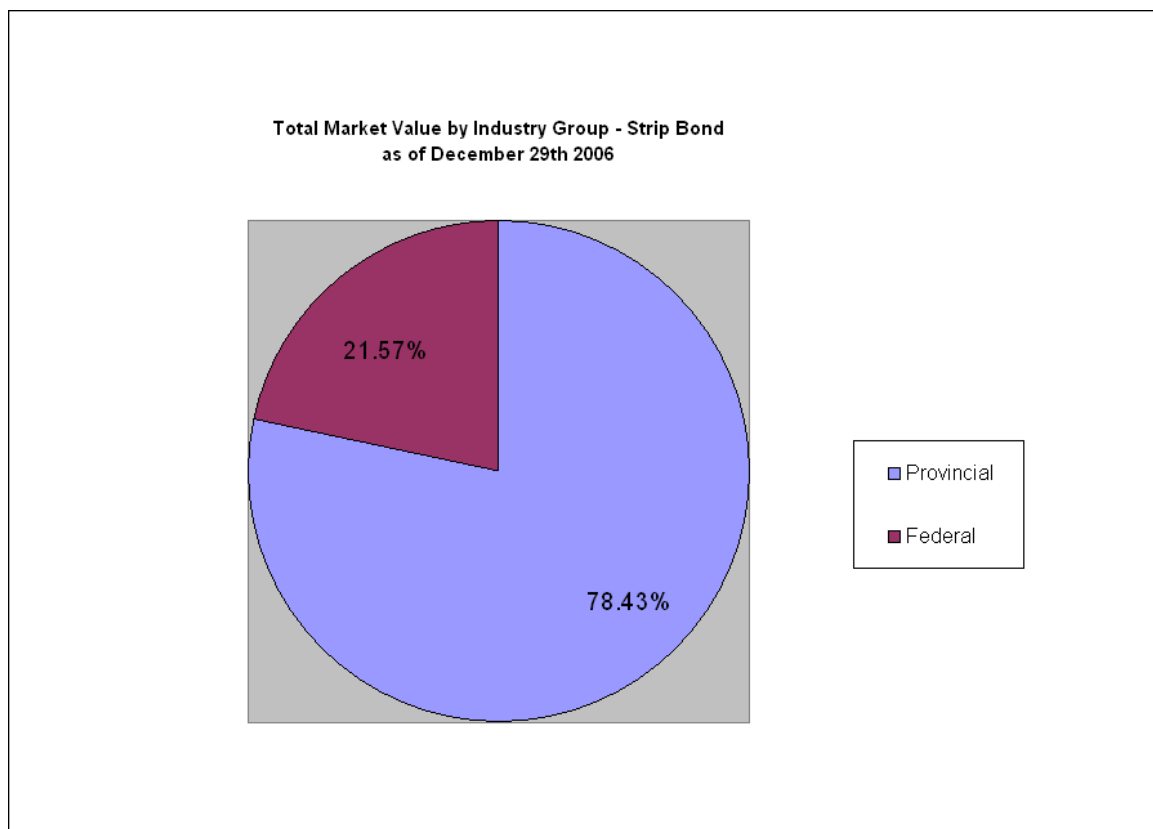
2000. Rebalancing is done on the first business day of the month utilizing the monthly CDS (Canadian Depository for Securities) reports that detail the amount outstanding for all strip issues in Canada.

The Scotia Capital Strip Bond Index is a transparent index, with individual security holdings and prices, disclosed electronically each day. All prices used for this index (both historically - from December 29, 2000, and going forward) are provided directly by the Scotia Capital Strip Bond trading system.

Term and Credit Sub-Sectors

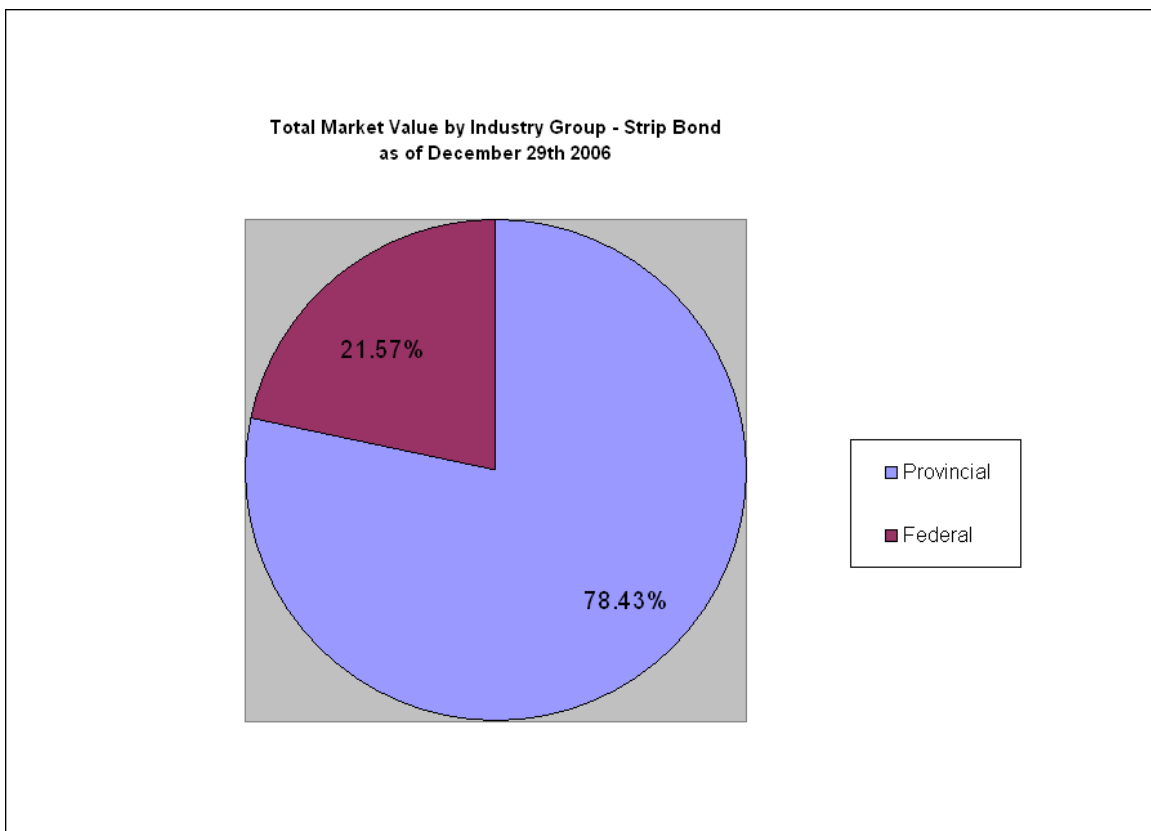
The Scotia Capital Strip Bond Index is divided into a variety of sub-indices according to term and sector. The main term sub-sectors are Short, Mid, Long and Overall with the following characteristics:

- Short - remaining effective term greater than 1 year and less than or equal to 5 years
- Mid – remaining effective term greater than 5 years and less than or equal to 10 years
- Long – remaining effective term greater than 10 years





As of December 29th, 2006, the Short sector made up approximately 25.98% of the Strip Bond Index, while the Mid and Long sectors made up 21.15% and 52.87%, respectively. There are two main credit or borrower categories: bonds issued by the Federal Government of Canada (including Crown Corporations), Provincial bonds (including provincially-guaranteed securities). As of December 29th, 2006, the Federal Sector accounted for approximately 21.57 of the Strip Bond Index, while the Provincial sector was 78.43%.



Eligibility Criteria

The Scotia Capital Strip Bond Index consists of Government issued Coupons and Residual (also known as: Strip or Zero Coupon) bonds stripped from bonds issued domestically in Canada and denominated in Canadian dollars, with a remaining effective term to maturity of at least one year.

The majority of the Strip Bonds in the index are stripped from semi-annual pay bullet securities with no call or other option features. However, the index may also include stripped issues from the following types of bonds: callable bonds, extendible/ retractable



bonds, sinking funds and exchangeable bonds. Strip Bonds with option features are assigned to index term sectors based on their effective maturity date (either the option exercise date or the final maturity date). Although most bonds in the index are public issues, private issues that meet the above criteria are also eligible for inclusion.

The Strip Bond Index does not include stripped issues from: floating-rate notes, convertible bonds, residential and commercial mortgage-backed securities (CMBS and MBS), other monthly-pay securities, pre-payable securities, inflation-indexed securities, or securities specifically targeted to the retail market. It also excludes securities that are not priced, which would typically be securities that are closely held and do not trade.

The Strip Bond Index specifically excludes stripped issues from Corporate bonds, due to the lack of liquidity in this small market segment. As an investible Index it is important to reflect the market conditions in place hence the Strip Bond Index only includes Federally and Provincially backed Coupon and Residuals of \$50 Million or more outstanding.

The following minimum sizes apply for index inclusion:

- \$50 Million for Federal and / or Provincial Government bonds

Weighting

The securities in all Scotia Capital Bond Indices are weighted by relative market capitalization. Thus, the return on a Strip bond influences the return on the index in proportion to the Strip bond's market value. Market value of a Strip bond equals the adjusted amount outstanding, multiplied by the price.

The total amount outstanding of each issue is adjusted according to the monthly disclosure of Strip Amounts outstanding by CDS (Canadian Depository for Securities)

Effective Term

Strip Bonds are classified into term sub-indices based on their effective terms, so that each term sub-index reflects securities that trade off of comparable parts of the yield curve. 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

The Scotia Capital Strip Bond Index is re-balanced on the first of each month according to the issues and amounts outstanding provided by CDS (Canadian Depository for Securities) for the Canadian Strip marketplace.

Exiting the Index

A Strip bond is removed from the Scotia Capital Strip Bond Index on the day its remaining effective term to maturity declines to one calendar year, whether that year has 365 or 366 days. For example, on December 1 2006, the index sells a bond maturing in one year, December 1 2007, at the 4:00 pm mark-to-market price. This Strip bond therefore contributes to the return on the Strip Bond Index from November 30 2006 to December 1, 2006. It does not contribute to index duration and other risk statistics calculated at the close on December 1st 2006. Analogous rules apply for the movement of bonds from one term sub-index to another, for example from Long to Mid.

For a Strip Bond with embedded option features, the rule for moving from one term category to another, and for rolling out of the index, is based on effective term (either the option exercise date, or the final maturity date), since these bonds are classified into index term categories according to effective term. Thus, a June 1 2010 bond callable as of June 1 2007 and trading to its call date would be removed from the index on June 1 2006.

Coupon Payments

Being a Strip Bond Index there is no Coupon income, realized or unrealized, to reinvest in the Index.

Valuation

The securities that make up the Strip Bond Index are priced each day by the trading desk at 4:00 pm Eastern Standard Time. The 4:00 pm prices are automatically supplied to the Strip Bond Index calculation system. The same 4:00 pm prices are electronically distributed to investors through a variety of channels, including the PC Bond software system, the FastQuote service, and via numerous third party data vendors. Thus, a portfolio valued using one of these sources can be compared on a consistent basis with the appropriate Scotia Capital Bond index. The Strip Bond 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.

Why 4:00 PM Valuation?

The strip bond index is valued as of 4:00pm. This is the same approach as used for the Scotia Capital Universe Bond Index.

Settlement Conventions

Strip Bonds do not accrue interest and the Strip Bond Index risk measures are calculated from July 15, 2003 forward, using same day settlement. The index risk measures for the period of December 29, 2000 to, and including, July 14, 2003, were calculated using a three day settlement convention. The use of three day settlement for the period of December 29, 2000 to and including July 14, 2003, is consistent with the methodology for the Scotia Capital Universe Bond Index.

Credit Rating Categories

The Strip Bond Index is not classified into the broad credit rating categories of AAA/AA, A, and BBB, due to the lack of coverage of individual stripped issues from the rating agencies.

Index Risk Measures

Several risk measures are calculated for the Scotia Capital 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. Since July 15, 2003, all risk measures are calculated based on



same-day settlement.

A large bond issue can also significantly affect index duration. Issuance of a bond that has a shorter duration than that of the index causes index duration to decline, whereas issuance of a longer duration bond causes index duration to increase.

Other Index Statistics

The Yield Index measures the average yield of the constituent Strip Bonds, weighted by market value. A variety of other statistics are also calculated, including term, market value, and number of issues.

Data Quality

The integrity of the prices in the index begins with the trading desk, which directly values virtually every security that goes into our 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 index system, PC Bond, and FastQuote, as well as the transfer of ratings data from the ratings agencies to our database system. The electronic transfer of information speeds up the process, and minimizes the potential for data entry errors.

Revision of Index Rules Over Time

The rules and practices for constructing the Strip 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 15,000 fixed income securities. Users have the ability to generate daily portfolio measurement, or view specific prices, yields and yield curves as historical charts. The main module, BondMan XLC 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 Scotia Capital 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.

ScotiaBond Performance Attribution

ScotiaBond is an interactive Windows-based performance attribution system that can be used to decompose returns on a portfolio or index into several different factors. ScotiaBond 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 Scotia Capital Bond Indices can be monitored on a daily basis through a variety of electronic information channels.

Our public internet site, www.canadianbondindices.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, Reuters, as well as major newspapers.

Bloomberg	SMFR		
Reuters	Pages SM2A to SM2N SM2E: month to date returns SM2F: quarter to date returns SM2G: year to date returns	In print	Globe and Mail, National Post, Bank of Canada Weekly, Monthly Financial Review
Index Email	pcbond@scotiacapital.com Index Inquiries	Internet	www.canadianbondindices.com



Disclaimer

PC-Bond* calculates and publishes the Universe Bond Index and other Scotia Capital 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 recalculate 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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* PC-Bond is registered to 2099242 Ontario Inc., a subsidiary of TSX Group Inc



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 performance¹.

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:

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

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