Ground Rules

July 2024

FTSE Canada Treasury Bill Index

v3.3

FTSE RUSSELL
An LSEG Business

www.lseg.com/en/ftse-russell/

Contents

Section 1

Introduction

1. Introduction

1.1 FTSE Canada Treasury Bill Index Series

1.1.1 The FTSE Canada Treasury Bill Index Series consists of benchmarks to track the performance of Government of Canada Treasury Bills, with separate indices for 1-month, 2-month, 3-month, 6-month, and 1-year T-Bills. Each index is designed to reflect the performance of a portfolio that only owns a single security, the current on the run T-Bill for the relevant term, switching into the new T-Bill at each auction.

1.1.2 The index series consist of the following indices:

– FTSE Canada 30 Day T-Bill Index

– FTSE Canada 60 Day T-Bill Index

– FTSE Canada 91 Day T-Bill Index

– FTSE Canada 182 Day T-Bill Index

– FTSE Canada 365 Day T-Bill Index

1.2 The FTSE Canada Treasury Bill Index Series does not take account of ESG factors in its index design.

1.3 IOSCO

1.3.1 FTSE International Limited (FTSE) considers that the FTSE Canada Treasury Bill Index Series meets the IOSCO Principles for Financial Benchmarks as published in July 2013.

Full details can be accessed at www.iosco.org.

Details of FTSE Russell's Statement of Compliance with respect to the IOSCO Principles can be accessed through the following link:

IOSCO Statement of Compliance

1.4 FTSE hereby notifies users of the index series that it is possible that circumstances, including external events beyond the control of FTSE, may necessitate changes to, or the cessation of, the index series and therefore, any financial contracts or other financial instruments that reference the index series or investment funds which use the index series to measure their performance should be able to withstand, or otherwise address the possibility of changes to, or cessation of, the index series.

1.5 Index users who choose to follow this index or to buy products that claim to follow this index should assess the merits of the index's rule-based methodology and take independent investment advice before investing their own or client funds. No liability whether as a result of negligence or otherwise is accepted by FTSE nor its subsidiary undertakings (or any person concerned with the preparation or publication of these Ground Rules) for any losses, damages, claims and expenses suffered by any person as a result of:

– any reliance on these Ground Rules, and/or

– any inaccuracies in these Ground Rules, and/or

– any non-application or misapplication of the policies or procedures described in these Ground Rules, and/or

– any inaccuracies in the compilation of the Index or any constituent data.

1.6 These Ground Rules

1.6.1 This document sets out the Ground Rules for the construction and management of the FTSE Canada Treasury Bill Index Series.

1.7 FTSE Russell

1.7.1 FTSE Russell is a trading name of FTSE International Limited, Frank Russell Company, FTSE Global Debt Capital Markets Limited (and its subsidiaries FTSE Global Debt Capital Markets Inc. and FTSE Fixed Income Europe Limited), FTSE Fixed Income LLC, FTSE (Beijing) Consulting Limited, Refinitiv Benchmark Services (UK) Limited, Refinitiv Limited and Beyond Ratings.

1.8 **Capital index** (also known as the Price Index)

1.8.1 The capital index is calculated every business day. The index returns are adjusted during the auction period to reflect the performance of a T-Bill fund manager under the methodology that will be discussed in the Appendix A.

1.9 The base currency of the benchmark is Canadian Dollars (CAD).

Section 2

Management responsibilities

2. Management responsibilities

2.1 FTSE International Limited (FTSE)

2.1.1 FTSE is the benchmark administrator of the index series[1].

2.1.2 FTSE is responsible for the daily calculation, production and operation of the FTSE Canada Universe Bond Index Series and will:

- maintain records of all the constituents;
- be responsible for the addition and deletion of bonds and changes of nominal amounts, in accordance with the Ground Rules.

2.1.3 These Ground Rules set out the methodology and provide information about the publication of the FTSE Canada Treasury Bill Index Series.

2.2 FTSE Canada Fixed Income Advisory Committee

2.2.1 The FTSE Canada Fixed Income Advisory Committee is established by FTSE Russell.

2.2.2 The purpose of the Committee is to provide a forum for FTSE Russell to interact with index users and other stakeholders with a view to enhancing the underlying methodologies of FTSE Russell indices.

2.2.3 The Terms of Reference of the FTSE Canada Fixed Income Advisory Committee are set out on the FTSE Russell website and can be accessed through the following link:

FTSE_Canada_Fixed_Income_Advisory_Committee.pdf

2.3 Amendments to these Ground Rules

2.3.1 These Ground Rules shall be subject to regular review (at least once a year) by FTSE Russell to ensure that they continue to best reflect the aims of the index series. Any proposals for significant amendments to these Ground Rules will be subject to consultation with FTSE Russell advisory committees and other stakeholders if appropriate. The feedback from these consultations will be considered by the FTSE Russell Index Governance Board before approval is granted.

2.3.2 As provided for in the Statement of Principles for FTSE Fixed Income Indices, where FTSE Russell determines that the Ground Rules are silent or do not specifically and unambiguously apply to the subject matter of any decision, any decision shall be based as far as practical on the Statement of Principles. After making any such determination, FTSE Russell shall advise the market of its decision at the earliest opportunity. Any such treatment will not be considered as an exception or change to the Ground Rules, or to set a precedent for future action, but FTSE Russell will consider whether the Rules should subsequently be updated to provide greater clarity.

[1] The term administrator is used in this document in the same sense as it is defined in Regulation (EU) 2016/1011 of the European Parliament and of the Council of 8 June 2016 on indices used as benchmarks in financial instruments and financial contracts or to measure the performance of investment funds (the European Benchmark Regulation) and The Benchmarks (Amendment and Transitional Provision) (EU Exit) Regulations 2019 (the UK Benchmark Regulation).

Section 3

FTSE Russell index policies

3. FTSE Russell index policies

These Ground Rules should be read in conjunction with the following policy documents which can be accessed through the links below:

3.1 Queries and Complaints

FTSE Russell's complaints procedure can be accessed through the following link:

Benchmark_Determination_Complaints_Handling_Policy.pdf

3.2 Statement of Principles for FTSE Fixed Income Indices (the Statement of Principles)

Indices need to keep abreast of changing markets and the Ground Rules cannot anticipate every eventuality. Where the Ground Rules do not fully cover a specific event or development, FTSE Russell will determine the appropriate treatment by reference to the Statement of Principles for FTSE Fixed Income Indices which summarises the ethos underlying FTSE Russell's approach to index construction. The Statement of Principles is reviewed annually and any changes proposed by FTSE Russell are presented to the FTSE Russell Policy Advisory Board for discussion before approval by the FTSE Russell Index Governance Board.

The Statement of Principles for Fixed Income Indices can be accessed through the following link:

Statement_of_Principles_Fixed_Income_Indices.pdf

3.3 Recalculation Policy and Guidelines

The Recalculation Policy and Guidelines for Fixed Income Indices document is available from the FTSE Russell website through the link below or by contacting fi.index@lseg.com.

Fixed_Income_Recalculation_Policy_and_Guidelines.pdf

3.4 Index Policy in the Event Clients are Unable to Trade a Market or a Security

Details of FTSE Russell's treatment can be accessed through the following link:

Index_Policy_in_the_Event_Clients_are_Unable_to_Trade_a_Market_or_a_Security.pdf

3.5 Policy for Benchmark Methodology Changes

3.5.1 Details of FTSE Russell's policy for making benchmark methodology changes can be accessed through the following link:

Policy_for_Benchmark_Methodology_Changes.pdf

3.6 FTSE Russell Governance Framework

3.6.1 To oversee its indices, FTSE Russell employs a governance framework that encompasses product, service and technology governance. The framework incorporates the London Stock Exchange Group's three lines of defence risk management framework and is designed to meet the requirements of the IOSCO Principles for Financial Benchmarks[2], the European benchmark regulation[3] and the UK benchmark regulation[4]. The FTSE Russell Governance Framework can be accessed through the following link:

FTSE_Russell_Governance_Framework.pdf

3.7 Real Time Status Definitions

3.7.1 Please refer to the following guide for details of real time status definitions for indices that are calculated in real time.

Real Time Status Definitions.pdf

[2] IOSCO Principles for Financial Benchmarks Final Report, FR07/13 July 2013.
[3] Regulation (EU) 2016/1011 of the European Parliament and of the Council of 8 June 2016 on indices used as benchmarks in financial instruments and financial contracts or to measure the performance of investment funds.
[4] The Benchmarks (Amendment and Transitional Provision) (EU Exit) Regulations 2019.

Section 4

Index methodology

4. Index methodology

Each T-Bill index is assumed to always own the current on the run T-Bill for the relevant term to maturity. The 3-month index rolls over the current T-Bill based on the auction schedule of 3-month T-Bills. The 6-month and 1-year indices roll over the current T-Bill based on the auction schedule of 6-month and 1-year T-Bills. If the auction is a re-opening of the current T-Bill, there is no impact on the T-Bill index. The 1 and 2-month T-Bills are treated differently because there is no auction; they roll over the current T-Bill as the 3-month T-Bill rolls down.

4.1 Rolling of the 1-month, 3-month, 6-month and 1-year T-Bill Indices

4.1.1 The index sells the old T-Bill just prior to the auction bid deadline of 12:30pm (Toronto time) on Tuesday, for settlement on Thursday at the trading desk's bid side. The index buys the new T-Bill at the average auction yield, which is known at 12:45 pm on the day of the auction, for settlement on Thursday. Effective June 3, 2024, all Government of Canada auctions of its treasury bills will be subject to (T+1) settlement. This move will follow the Canadian secondary market's own transition to (T+1) settlement, expected to occur on May 27, 2024. Treasury bill auctions will continue to occur on alternating Tuesdays, but their settlement dates will become Wednesday.[5]

4.1.2 The index uses the full proceeds from the sale of the old Bill for to purchase the new T-Bill. There are thus no cash flows in or out of the index due to the switch to the new security. The index recognises capital gains or losses on the new T-Bill between the time of the auction and the close of business on the day of the auction. It continues to recognise capital gains and losses on the new T-Bill up to and including the auction settlement date, which in most cases will be Thursday given a Tuesday auction, or Wednesday effective June 3, 2024. The index does not recognise any income on the new T-Bill prior to settlement.

4.1.3 The index recognises income accrual on the old T-Bill between the time it is sold on the day of the auction, and the auction settlement date (typically from Tuesday to Thursday, or Wednesday effective June 3, 2024). However, the index no longer recognises capital gains or losses on the old T-Bill once it is sold on the day of the auction.

4.1.4 Effective May 7, 2024, the Government of Canada introduced a temporary one-month treasury bill that follow the existing bi-weekly auction schedules on alternating Tuedays[6]. In line with this change, the 1-month T-Bill Index will roll over the current T-Bill based on the auction schedule of 1-month T-Bills.

4.2 Rolling of the 2-month T-Bill Indices

4.2.1 There is no auction for two-month T-Bills. When there is no auction for the relevant term, the market convention is to switch to new benchmarks at the same time as the 3-month T-Bill auction settles. The index is therefore assumed to sell the old 2-month T-Bill on the auction settlement date (i.e. Thursday, or Wednesday effective June 3, 2024) for same-day settlement, and to buy the new 2-month T-Bill for same day settlement.

[5] Move to T+1 settlement for Government of Canada securities auctions - Bank of Canada
[6] Introduction of one-month treasury bill - Bank of Canada

4.2.2 In order to be eligible for the indices, bonds must have a price assigned from a price source as specified in Section 5 of these Ground Rules. The T-Bill indices use bid prices for index calculations with a 3:00pm EST snapshot.

Section 5

Price sources

5. Price sources

5.1 Constituents prices are provided by CanDeal Data and Analytics ("CanDeal DNA") in accordance with its Composite pricing methodology[7].

5.2 Prices in the FTSE Canada Bond Index Series represent a mid-side price as of 4:00pm (Toronto time), unless otherwise stated in published index methodologies.

5.3 Verification and price challenges

5.3.1 Statistical techniques are used to identify pricing anomalies based on day-over-day changes and comparisons across peer groups by maturity, asset type, etc.

5.3.2 Any price challenges from index users and possible outliers from the verification process are reviewed with our third-party pricing provider.

5.3.3 In the event that an issue is not able to be resolved in a timely manner, FTSE Russell may exercise expert judgement and roll prices from the previous day. Any exercise of expert judgement is recorded.

[7] The change from the use of the FTSE Canada Multi Dealer Pricing Methodology to use the CanDeal DNA composite pricing methodology was announced on 22 January 2022 and effective from 17 May 2022.

Section 6

Periodic changes to the Index

6. Periodic changes to the index

6.1 Rebalancing the indices

6.1.1 Each of the FTSE Canada Treasury Bill Index Series is assumed to always own the current on the run T-Bill for the relevant term to maturity. The index is rolled over based on the auction schedules.

Appendix A

Index calculations

The following formulas are used to calculate total return indices for 1-month, 3-month, 6-month, and 1-year T-Bills during standard auction periods, when the auction occurs on a Tuesday and settles on Thursday[8]. Effective June 3, 2024, treasury bill auctions will continue to occur on alternating Tuesdays, but their settlement dates will be Wednesday. This move follows the Canadian secondary market's own transition to (T+1) settlement, expected to occur on May 27, 2024.[9] Because the index consists of a single security, we do not need to follow the usual practice of including the par holdings in the index formulas, since they would just cancel out of the equations. We can therefore assume par holdings to $1 without affecting the resulting index return calculation. During auction periods, the amount of the new T-Bill that is bought can be expressed in terms of the old security and the relative prices of the two securities, so again we can simply assume $1 par holding of the old T-Bill.

1. Index calculations for days except auction period

$$I_t = I_{t-1} \times \frac{P_{t,t}}{P_{t-1,t-1}} \qquad [1]$$

Where I_t is the total return index level at the close on day *t*, and $P_{I,j}$ is the mark-to-market price given the yield known at time *i*, for settlement on day *j*. In most cases, i = j and the yield is as of the close of business. Thus, $P_{t,t}$ is the mark-to-market price on day t for same day settlement.

2. Auction (Tuesday)

At the close on the day of the auction (Tuesday), the index recognises the capital gain or loss from selling the old T-Bill, but only recognises income earned up to Tuesday. We therefore recalculate the price of the old T-Bill for same day settlement rather than Thursday settlement, holding the yield fixed. We recognise gains or losses on the new T-Bill due to changes in yield between the 12:45 auction result and the close at the end of the day. In order to reinvest the full proceeds from the sale in the new Bill, we buy a par amount Q of the new T-Bill for each dollar par amount of the old T-Bill. The capital gains or losses on the new T-Bill are therefore calculated with respect to this par amount Q.

$$I_{Tues} = I_{Mon} \times (\frac{P^{Old}_{Auction,Tues} + Q \times (P^{New}_{Tues,Thurs} - P^{New}_{Auction,Thurs})}{P^{Old}_{Mon,Mon}} \qquad [2]$$

where:

$$Q = \frac{P^{Old}_{Auction,Thurs}}{P^{New}_{Auction,Thurs}} = \text{Par holdings of new T-Bill per \$1 par holdings of old T-Bill} \qquad [3]$$

$P^{Old}_{Auction,Thurs}$ = Price of old T-Bill established before auction for settlement Thursday

$P^{New}_{Auction,Thurs}$ = Price of new T-Bill at Tuesday's auction for settlement Thursday

Other prices are defined similarly. For example, $P^{Old}_{Auction,Tues}$ is the price of the old T-Bill at the yield established prior to Tuesday's auction, calculated for same day settlement.

[8] There are times when the auction may not be held on Tuesday, and settlement may not be on Thursday, such as a holiday-shortened week like the first week of January. The subscripts Tues and Thurs have been used to make the notation easier to read, but should be understood in more general terms as the auction date and the auction settlement date, respectively.

[9] Move to T+1 settlement for Government of Canada securities auctions - Bank of Canada

3. Auction + 1 (Wednesday)

The index return calculation on Wednesday, one day after the auction, follows a similar method. We recognise capital gains or losses but no income on the new T-Bill, and we recognise one more day of income on the old T-Bill.

$$I_{Wed}=I_{Mon}\times(\frac{P^{Old}_{Auction,Wed}+Q\times(P^{New}_{Wed,Thurs}-P^{New}_{Auction,Thurs})}{P^{Old}_{Mon,Mon}} \qquad [4]$$

Note that Wednesday’s index return is measured relative to Monday’s index level and prices established at the auction on Tuesday. In particular, the dollars invested in the index do not yet include the dollar gains or losses on the new T-Bill, since the forward purchase is in effect a levered position prior to the settlement date (by contrast, the return calculation outside of the auction period would be measured with respect to the previous day’s index level, and would include the previous day’s closing valuations in the denominator).

4. Auction settlement (Thursday)

The index calculation for Thursday is similar. Now, we recognise the full proceeds from the sale of the old T-Bill. We continue to recognise only capital gains or losses on the new T-Bill, with respect to its original purchase price. As well, the index return is again measured with respect to Monday’s index level and the transaction prices from Tuesday’s

$$I_{Thurs}=I_{Mon}\times(\frac{P^{Old}_{Auction,Thurs}+Q\times(P^{New}_{Thurs,Thurs}-P^{New}_{Auction,Thurs})}{P^{Old}_{Mon,Mon}}$$

The index calculations for auction settlement + 1 onward use the regular formula [1]

Effective June 3, 2024, the treasury bill auctions will continue to occur on alternating Tuesdays, but their settlement dates will be Wednesdays. Therefore, the settlement date formula will be applied on Wednesdays and Thursdays onward will use the regular formula [1].

Appendix B

Further information

A glossary of terms used in FTSE Russell's Ground Rule documents can be found through the following link:

Glossary.pdf

For further information on the FTSE Canada Treasury Bill Index Series Ground Rules please visit www.lseg.com/en/ftse-russell/ or e-mail fi.index@lseg.com. Contact details can also be found on this website.

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