

RBC Capital Markets Macro QIS Indices

Transparency of Methodology

Introduction

RBC Macro QIS Indices

This document provides information regarding the Royal Bank of Canada Capital Markets (“RBC”) Macro Quantitative Investment Strategy (“Macro QIS”) indices. This document does not relate to other indices produced or utilized by RBC unless otherwise noted. RBC Macro QIS indices measure the performance of systematic, non-discretionary investment strategies in commodities, rates, credit and foreign exchange.

- The **Index Administrator** for the RBC Macro QIS indices is the RBC Macro QIS Sales and Structuring team within the RBC Capital Markets, LLC (“RBCCM”) sales and trading division located at 200 Vesey Street, New York, USA.
- The **Calculation Agent** for the RBC Macro QIS indices is the Cross Asset Quantitative Analytics team within the Royal Bank of Canada’s Quantitative and Technology Services (“QTS”) division.

RBC Macro QIS indices are not benchmarks for purposes of UK or EU Benchmark regulations (“BMR”). Unless specifically noted in the Index-specific methodology documentation, RBC Macro QIS indices do not pursue ESG objectives and RBC does not provide ESG information regarding Macro QIS indices.

RBC understands the content of this document to be accurate as of the date of publication noted at the top of this page. The latest version of this notice is available at the following [link](#).

IOSCO Principles for Financial Benchmarks

On July 17, 2013, the Board of International Organization of Securities Commissions published a final report on Principles for Financial Benchmarks. The final report was published with the objective of creating an overarching framework of principles for benchmarks used in financial markets. The final report includes nineteen principles (the “IOSCO Principles”) intended to promote the reliability of Benchmark determinations, and address Benchmark governance, quality and accountability mechanisms.

The final report highlights that IOSCO does not expect a one-size-fits-all method of implementation, but instead expects Administrators to implement the Principles according to the specificities of each Benchmark. In particular, IOSCO recommends that the application and implementation of the Principles be proportional to the size and risks posed by each Benchmark and/or Administrator and the Benchmark-setting process.

Certain RBC Macro QIS indices may be considered Benchmarks within the scope of the IOSCO Principles. Accordingly, this document seeks to make available key information relating RBC Macro QIS indices, including an overview of associated control and oversight frameworks.

RBC Macro QIS's Statement of Compliance is available at this [link](#).

Index Control Framework

RBC Macro QIS maintains policies, procedures, processes, and controls (together, a "Control Framework") governing the creation and administration of Macro QIS indices. The Macro QIS Control Framework is designed to promote the adequacy and integrity of Macro QIS indices and mitigate or prevent conflicts of interest.

Macro QIS indices are subject to periodic review to consider whether indices remain adequate and effective in capturing the underlying interest of each index. The results of index reviews and any actions taken are provided to the RBC Macro QIS Governance Forum, described below, for oversight.

Macro QIS is subject to RBC's broader control framework, including but not limited to:

- RBC's policies and procedures for managing risk, including operational risk;
- RBC's Internal Audit function, which conducts internal audit reviews of business lines, including Macro QIS, based upon a risk-based approach;
- RBC's whistleblowing hotline that allows for the escalation of a variety of matters, including potential misconduct or irregularities with respect to Macro QIS indices; and
- RBC's complaint handling procedures (see [How to Make a Complaint](#))

Governance and Oversight

Oversight over the implementation and effectiveness of the control framework is carried out by the RBC Macro QIS Governance Forum ("MQGF"). MQGF is designed to provide oversight and transparency to the activities of the Index Administrator. MQGF is an independent body that reviews and provides challenge on the QIS index administration process. MQGF membership includes representation from RBC's compliance, legal, and risk departments.

Macro QIS Index Methodology & Calculation

Rationale and Underlying Interest

RBC Macro QIS indices are rules-based, investible strategies designed to measure the performance of a weighted investment strategy. For indices developed after October 2022, each RBC Macro QIS index-specific methodology document sets forth a summary of the intended underlying interest of the index.

Embedded Costs & Fees

Where outlined in the index-specific methodology, certain Macro QIS indices include embedded transactions, margin and other costs. The underlying interest of a QIS index with embedded costs is the performance of the relevant investment strategy net of costs.

Calculation of Indices

RBC Macro QIS indices are calculated by QTS. In addition to the daily calculation of indices, QTS provides broader support for Macro QIS indices, including index back-testing, data reconciliation, index publication, and data architecture. QTS is independent from RBC's sales and trading department, including the Macro QIS team. Subject to approval by the MQGF, RBC may elect to use a third party calculation agent.

Input Data

RBC Macro QIS indices are calculated using price data from the following sources:

- Transactional financial instrument data, including futures prices on regulated exchanges;
- Third-party indices and benchmarks; and
- RBC indices calculated using the above data.

RBC Macro QIS indices are additionally calculated using non-price data from the above sources, as well as from select other third-party data sources. Where RBC Macro QIS identifies that input data is not sufficient to accurately calculate an index's underlying interest in a representative manner, the index must be modified or terminated as appropriate, subject to RBC Macro QIS's control framework.

Submissions

Macro QIS indices are not calculated based upon contributors or submitters.

Third Party Data and Outsourcing

The use of third parties and outsourcing arrangements is subject to the Macro QIS control framework, including MQGF review of new, material third party relationships. Where RBC Macro QIS outsources an Index Administrator or Calculation Agent activity, RBCCM retains responsibility for the activity.

Macro QIS Index Lifecycle Events

New Indices

The Index Administrator develops new indices by identifying a set of rules to accurately measure the desired underlying interest without distortion. The Index Administrator works with QTS to backtest the index and consider data sufficiency. Structuring works with Macro QIS trading to consider any hedging or market considerations that would impact the integrity of the index.

Materially new indices are reviewed by the MQGF. Indices are not considered materially new if they represent a modification or customization of an existing index, such as different constituent weights or roll methodology.

Market Disruption Events (“MDEs”)

Macro QIS Indices rely on systematic rule-based methodologies in order to be evaluated on a daily basis. From time to time there are certain anticipated events that disrupt the orderly calculation and publication of an Index. Examples of anticipated events include (1) delayed publication of settlement or index input; (2) prices settling limit up or limit down; and (3) exchange holidays. These events are addressed in the normal course of business by calculating the index value once reference/settlement prices are available for all index components without MDE distortion (e.g. following business day or the first business day that a non-limit up/limit down price is available).

Certain unforeseen disruption events (for example, the termination of a futures contract) cannot be addressed through pre-determined fallback procedures. Where Macro QIS identifies a significant market disruption event, Macro QIS escalates this to the MQGF. Refer to “Modifications and Termination” below for details on how Macro QIS determines whether and how to socialize changes relating to market disruption events with stakeholders.

Discretion & Expert Judgement

Macro QIS indices do not rely on expert judgement or discretionary assessments in the normal course of business. Nevertheless, RBCCM reserves the right to exercise discretion in the event of a market disruption event or in the event of an error. Discretion may be utilized if each of the following criteria are satisfied:

- Discretion is exercised by an individual or individuals with sufficient skills and expertise;
- The use of discretion is appropriate to promote the integrity of the index in capturing the Underlying Interest; and
- The application of discretion is subject to the Macro QIS control framework and is overseen by the MQGF.

Modifications and Termination

In the event that Macro QIS is required to terminate an active index or modify an active index in a manner that it affects the calculated level of the index, Macro QIS raises this to the MQGF. Where the MQGF and Macro QIS determine that stakeholders must be made aware of the change, Macro QIS will (1) provide advance notice and clear timeframes regarding any proposed changes; (2) seek stakeholder comments on such changes; and (3) provide summary response(s) to the collected stakeholder feedback when communicating final changes.

Index modification or termination may affect products (including financial instruments and investment funds) referencing the relevant index. Stakeholders should check that the contractual terms of such products have adequate fallback provisions.

Errors & Corrections

Where Macro QIS determines that an index value must be restated, Macro QIS will communicate updated index values to stakeholders through its usual publication methods (e.g. Bloomberg) as well as bilaterally communicate with stakeholders as appropriate.

Risks and Conflicts of Interest

While RBC maintains policies and procedures to mitigate or eliminate conflicts of interest, conflicts of interest may still exist as a consequence of RBC's Macro QIS Index business. Please note the following in relation to Macro QIS indices:

- RBC may act in multiple capacities with respect to a particular Macro QIS index, including, but not limited to, functioning as index administrator, index calculation agent, licensor, and counterparty to an index-linked trade.
- Macro QIS Trading and other RBC trading desks may enter into transactions involving the underlying index components, whether to hedge QIS products, or otherwise to transact on behalf of clients, as market maker, or for a principal risk position where permitted. These trades may not be for the benefit of the customers holding positions in financial products linked to the index and may have a positive or negative effect on the index level.
- Additionally, the Macro QIS Trading group and other RBC trading desks may issue derivative instruments that reference the underlying index components. The use of such derivatives may affect the value of the underlying index components.

- Where RBCCM exercises discretion in relation to an index, this discretion may have an adverse impact on the index level and any financial product linked to the index.
- RBC calculates index values using an internal calculation agent, QTS. QTS could influence index determinations, but several factors limit this risk: (1) RBC Macro QIS indices are systematic and generally reproducible in nature, (2) QTS is not remunerated based upon the specific levels of any index, and (3) QTS does not report into RBC's sales and trading division.

In addition, please review the RBC [Global Client Notice](#) for additional conflict of interest disclosures.

Glossary

The following key terms apply to this document.

Term	Explanation
Administrator	An organization or legal person that controls the creation and operation of the Benchmark Administration process, whether or not it owns the intellectual property relating to the Benchmark. In particular, it has responsibility for all stages of the Benchmark Administration process, including: (a) The calculation of the Benchmark; (b) Determining and applying the Benchmark Methodology; and (c) Disseminating the Benchmark.
Benchmark	Prices, estimates, rates, indices or values that are: (a) Made available to users, whether free of charge or for payment; (b) Calculated periodically, entirely or partially by the application of a formula or another method of calculation to, or an assessment of, the value of one or more underlying Interests; and (c) Used for reference for purposes relating to financial instruments.
Calculation Agent	A legal entity with delegated responsibility for determining a Benchmark through the application of a formula or other method of calculating the information or expressions of opinions provided for that purpose, in accordance with the Methodology set out by the Administrator.
Index	A figure which is available to the public and regularly determined entirely or partially using a formula or other calculation or assessment, on the basis of the value of one or more underlying assets or prices.
Input Data	The data in respect of the value of one or more underlying assets, or prices, including estimated prices, quotes, committed quotes or other values, used to calculate an index.
Methodology	The rules and procedures according to which input data is collected and used, and an index is determined.
Stakeholder	Entities which use an index or who own contracts or financial instruments that reference an index.
Underlying Interest	The market or economic reality of any assets, goods, services, commodities, currencies, contracts, securities or strategies, including derivatives using as an underlying any of the foregoing, as measured by any source or type or style of return or performance (including volatility) which is intended to be measured by an index