



FTSE ADS Custom Saudi Minimum Variance Index

v1.4



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Section 1

Introduction

1.0 Introduction

- 1.1 This document sets out the Ground Rules for the construction and management of the FTSE ADS Custom Saudi Minimum Variance Index calculated by FTSE International Limited (FTSE). Copies of these Ground Rules are available from FTSE Russell.
- 1.2 The FTSE ADS Custom Saudi Minimum Variance Index has been designed to create an index in which the objective is to minimise the volatility of the FTSE Saudi Arabia All Cap Index, based on historical return information, thereby offering potential improvements to the risk/reward trade-off of the index.
- 1.3 These Ground Rules should be read in conjunction with the FTSE Saudi Arabia All Cap Index Ground Rules and the FTSE Russell Corporate Actions and Events Guide for Non Market Capitalisation Weighted Indexes which are available at www.ftserussell.com.
- 1.4 Price and Total Return Index will be calculated on an end of day basis.

The Total Return Index includes income based on ex dividend adjustments. All dividends are applied as declared in the FTSE Total Return Index.
- 1.5 Index values are calculated in USD and may also be published in other currencies.
- 1.6 The FTSE ADS Custom Saudi Minimum Variance Index does not take account of ESG factors in its index design.
- 1.7 **FTSE Russell**

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

1.9 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 rules-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 Russell 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.

Section 2

Management Responsibilities

2.0 Management Responsibilities

2.1 FTSE International Limited (“FTSE”)

2.1.1 FTSE is the benchmark administrator of the index.¹

2.1.2 FTSE is responsible for the daily calculation, production and operation of the FTSE ADS Custom Saudi Minimum Variance Index and will:

- maintain records of the index weightings of all constituents and reserve companies;
- make changes to the constituents and their weightings in accordance with the Ground Rules;
- carry out the periodic index reviews of the index and apply the changes resulting from the reviews as required by the Ground Rules;
- publish changes to the constituent weightings resulting from their ongoing maintenance and the periodic reviews;
- disseminate the index.

2.2 Amendments to these Ground Rules

2.2.1 These Ground Rules shall be subject to regular review (at least once a year) by FTSE Russell to ensure that they continue to meet the current and future requirements of investors and other index users. 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.

2.2.2 As provided for in the Statement of Principles for FTSE Russell Equity Indexes, 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 Ground 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

3.0 FTSE Russell Index Policies

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

3.1 Corporate Actions and Events Guide

- 3.2 Full details of changes to constituent companies due to corporate actions and events can be accessed in the Corporate Actions and Events Guide for Non Market Capitalisation Weighted Indexes using the following link:

[Corporate Actions and Events Guide for Non Market Cap Weighted Indices.pdf](#)

3.3 Statement of Principles for FTSE Russell Equity Indexes (the Statement of Principles)

Indexes 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 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 can be accessed using the following link:

[Statement of Principles](#)

3.4 Queries, Complaints and Appeals

A constituent or prospective constituent company (or professional advisor acting on behalf of the company), a national organisation or a group of no fewer than ten users of the indexes from different organisations acting in their professional capacity may appeal against decisions taken by FTSE Russell.

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

[Benchmark Determination Complaints Handling Policy.pdf](#)

FTSE Russell's Appeal Process can be accessed using the following link:

[Appeals Against Decisions.pdf](#)

3.5 **Index Policy for Trading Halts and Market Closures**

Guidance for the treatment of index changes in the event of trading halts or market closures can be found using the following link:

[Index Policy for Trading Halts and Market Closures.pdf](#)

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

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

[Index Policy in the Event Clients are Unable to Trade a Market or a Security.pdf](#)

3.7 **Recalculation Policy and Guidelines**

3.7.1 Where an inaccuracy is identified, FTSE Russell will follow the steps set out in the FTSE Russell Index Recalculation Guidelines when determining whether an index or index series should be recalculated and/or associated data products reissued. Users of the FTSE ADS Custom Saudi Minimum Variance Index will be notified through appropriate media.

For further information refer to the FTSE Russell Recalculation Policy and Guidelines document which is available from the FTSE Russell website using the link below or by contacting info@ftserussell.com.

[Recalculation Policy and Guidelines Equity Indexes.pdf](#)

3.8 **Policy for Benchmark Methodology Changes**

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

[Policy for Benchmark Methodology Changes.pdf](#)

3.9 **FTSE Russell Governance Framework**

3.9.1 To oversee its indexes, 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 Benchmarks², the European benchmark regulation³ and the UK benchmark regulation⁴. The FTSE Russell Governance Framework can be accessed using the following link:

[FTSE Russell Governance Framework.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

Eligible Securities

4.0 Eligible Securities

- 4.1 The index universe of the FTSE ADS Custom Saudi Minimum Variance Index will be the constituents of the FTSE Saudi Arabia All Cap Index.
- 4.2 All aspects of the management of index calculation, constituent review and company classification for constituents of the FTSE ADS Custom Saudi Minimum Variance Index are as described in the FTSE Saudi Arabia All Cap Index Ground Rules.

4.3 Weighting Methodology

4.3.1 Covariance Matrix

Returns: Weekly (Wednesday to Wednesday) arithmetic total returns denominated in SAR are used to derive the covariance matrix. These are defined by:

$$r_{i,t} = \frac{e_{i,t} \times (p_{i,t} + d_{i,t})}{e_{i,t-1} \times p_{i,t-1}} - 1$$

where $e_{i,t}$ is the SAR exchange rate, $p_{i,t}$ is the adjusted price and $d_{i,t}$ is the adjusted dividend for the i^{th} stock at time t .

The volatility and correlation estimation period is defined by the number of business weeks in the two years prior to the semi-annual review date.

Volatility: $\delta_{i,T} = \sqrt{\frac{1}{T_\delta - 1} \sum_{t=T-T_\delta+1}^T (r_{i,t} - \bar{r}_i)^2}$

where T_δ = volatility estimation period (approx 100 to 104 weeks).

Correlation: $\rho_{i,j,T} = \frac{\left[\frac{1}{(T_\rho - 1)} \sum_{t=T-T_\rho+1}^T (r_{i,t} - \bar{r}_i)(r_{j,t} - \bar{r}_j) \right]}{\delta_{i,T} \delta_{j,T}}$

where T_ρ = correlation estimation period (approx 100 to 104 weeks).

Empirical covariance matrix: $\Omega_{i,j,T} = \delta_{i,T} \delta_{j,T} \rho_{i,j,T}$

Minimum Number of Observations: The minimum number of weekly returns (Wednesday to Wednesday) contained in the two year period prior to a review date is 72. Stocks not meeting this threshold have their weights set to zero and are not included in the FTSE ADS Custom Saudi Minimum Variance Index.

Minimum Number of Coincident Observations: Correlations are calculated using at least 60 coincident observations. If this is not achieved, the stock that has 60 coincident observations with the fewest other stocks in the covariance matrix is removed. If this yields more than one stock, the stock with highest volatility is removed. The removal of stocks continues until the correlation between any two remaining stocks can be calculated using least 60 coincident returns. Stocks that are removed have their weights set to zero and are not included in the FTSE ADS Custom Saudi Minimum Variance Index.

PCA Covariance Matrix: A covariance matrix based on a Principal Component Analysis (PCA) of the $N \times N$ empirical covariance matrix is used.

Covariance Matrix: A covariance matrix based on a Principal Component Analysis (PCA) of the $N \times N$ empirical covariance matrix is used.

Let $\lambda_1, \dots, \lambda_K$ be the K eigenvalues of the empirical correlation matrix $\rho_{ij,T}$ that are bigger than $1 + N/T_\delta + 2\sqrt{N/T_\delta}$ and let $\bar{A}_1, \dots, \bar{A}_K$ be their associated eigenvectors each with N elements.

Let D_{nn} be the $K \times K$ diagonal matrix with $D_{nn} = \lambda_n$ and P_{nj} be the $K \times N$ matrix whose n^{th} row is given by \bar{A}_n . One then constructs the $N \times N$ PCA correlation matrix as $\phi = P^T D P$. The diagonal elements of ϕ are additionally constrained to be equal to one.

The PCA covariance matrix is then defined by: $C_{ij,T} = \delta_{i,T} \delta_{j,T} \phi_{ij,T}$

4.3.2 Objective Function

Objective: Minimise portfolio variance $\sigma^2 = \sum_{i=1}^n \sum_{j=1}^n w_i C_{ij} w_j$

4.3.3 Constraints

Weights are determined in order to minimise the volatility of the index, subject to the following constraints:

Long Only Constraint: $w_i \geq 0 \forall i$

Fully Invested: $\sum_{i=1}^N w_i = 1$

Upper Stock Limit: $w_i \leq w_{\max} \forall i$ where $w_{\max} = 10\%$

ICB Industry Constraint: Let the weight of a given Industry be $X\%$ in the underlying index. Then that Industry's weight in the Minimum Variance Index will be bounded by:

$$\text{Max}(0.9 X - 5.0, 0.0) \text{ and } \text{Min}(1.1 X + 5.0, 100.0)$$

Where the upper stock limit/maximum weight multiple is inconsistent with the lower Industry bound, the lower Industry bound is replaced by the sum of the minimum of the upper stock limit and the weight implied by the maximum weight multiple over all eligible stocks.

Diversification Target: $\sum_{i=1}^n w_i^2 = 1/H$ where $H = 20$

Maximum Weight Multiple: The maximum weight multiple of the FTSE Saudi Arabia All Cap Index market capitalisation weight in the FTSE ADS Custom Saudi Minimum Variance Index is 20 times.

Effective Zero Weight Threshold: Any optimised stock weight that is less than 1 basis point is treated as having a zero weight in the FTSE ADS Custom Saudi Minimum Variance Index. Any resulting excess weight will be redistributed amongst the remaining stocks and may cause slight breaches of the above constraints.

Section 5

Periodic Review of Constituent Companies

5.0 Periodic Review of Constituent Companies

5.1 Review Dates

- 5.1.1 The semi-annual review will be implemented in line with the FTSE Saudi Arabia All Cap Index and will be implemented after the close of trading on the third Friday of March and September.

5.2 Review Procedure

- 5.2.1 The FTSE ADS Custom Saudi Minimum Variance Index applies an optimisation algorithm to determine the weighting scheme applied to the constituents of the underlying the FTSE Saudi Arabia All Cap Index. The algorithm will be applied at the security level. Closing price data on the Wednesday before the first Friday of March and September are used to determine the weighting scheme in the FTSE ADS Custom Saudi Minimum Variance Index, based on the FTSE Saudi Arabia All Cap Index constituents effective from the Monday following the third Friday of the same month.

Section 6

Changes to Constituent Companies

6.0 Changes to Constituent Companies

6.1 Intra-review Additions

- 6.1.1 Additions into the FTSE ADS Custom Saudi Minimum Variance Index will be considered for inclusion at the next semi-annual review.

6.2 Intra-review Deletions

- 6.2.1 A constituent will be removed from the FTSE ADS Custom Saudi Minimum Variance Index if it is also removed from the underlying the FTSE Saudi Arabia All Cap Index. The deletion will be concurrent with its deletion from the FTSE Saudi Arabia All Cap Index and its weight will be distributed pro-rata amongst the remaining constituents in the FTSE ADS Custom Saudi Minimum Variance Index.

Section 7

Corporate Actions and Events

7.0 Corporate Actions and Events

- 7.1 If a constituent in the FTSE Saudi Arabia All Cap Index has a stock split, stock consolidation, rights issue, bonus issue, a change in the number of shares in issue or a change in free-float (with the exception of tender offers), the constituent's weighting in the FTSE ADS Custom Saudi Minimum Variance Index remains unchanged pre and post such an event.
- 7.2 Full details of changes to constituent companies due to corporate actions and events can be accessed in the Corporate Actions and Events Guide for Non Market Capitalisation Weighted Indexes using the following link:

[Corporate Actions and Events Guide for Non Market Cap Weighted Indices.pdf](#)

A Corporate 'Action' is an action on shareholders with a prescribed ex date. The share price will be subject to an adjustment on the ex date. These include the following:

- Capital Repayments
- Rights Issues/Entitlement Offers
- Stock Conversion
- Splits (sub-division) / Reverse splits (consolidation)
- Scrip issues (Capitalisation or Bonus Issue)

A Corporate 'Event' is a reaction to company news (event) that may impact the index depending on the index rules. For example, a company announces a strategic shareholder is offering to sell their shares (secondary share offer) – this could result in a free float weighting change in the index. Where an index adjustment is required FTSE Russell will provide notice advising of the timing of the change.

7.3 Takeovers, Mergers and Demergers

The treatment of takeovers, mergers and demergers can be found within the Corporate Actions and Events Guide for Non Market Capitalisation Weighted Indexes.

Section 8

Index Calculation

8.0 Index Calculation

8.1 Prices

- 8.1.1 The FTSE ADS Custom Saudi Minimum Variance Index uses actual closing mid-market or last trade prices, where available, for securities with local market quotations. Further details can be accessed using the following link:

[Closing Prices Used For Index Calculation.pdf](#)

8.1.2 Calculation Frequency

- 8.1.3 The FTSE ADS Custom Saudi Minimum Variance Index will be calculated on an end of day basis.

8.2 Index Calculation

- 8.2.1 The FTSE ADS Custom Saudi Minimum Variance Index is calculated using the following formula:

$$\sum_{i=1}^N \frac{(p_i \times e_i \times s_i \times f_i \times c_i)}{d}$$

Where,

- $i=1,2,\dots,N$
- N is the number of securities in the index.
- p_i is the latest trade price of the component security (or the price at the close of the index on the previous day).
- e_i is the exchange rate required to convert the security's currency into the index's base currency.
- s_i is the number of shares in issue used by FTSE Russell for the security, as defined in these Ground Rules.
- f_i is the Investability Weighting Factor to be applied to a security to allow amendments to its weighting, expressed as a number between 0 and 1, where 1 represents a 100% free float. This factor is published by FTSE Russell for each security in the underlying index.
- c_i is the Weight Adjustment Factor to be applied to a security to correctly weight that security in the index. This factor maps the investable market capitalisation of each stock to a notional market capitalisation for inclusion in the index.

- d is the divisor, a figure that represents the total issued share capital of the index at the base date. The divisor can be adjusted to allow changes in the issued share capital of individual securities to be made without distorting the index.



Appendix A: Further Information

A Glossary of Terms used in FTSE Russell's Ground Rule documents can be found using the following link:

[Glossary.pdf](#)

Further information on the FTSE ADS Custom Saudi Minimum Variance Index is available from FTSE Russell.

For contact details please visit the FTSE Russell website or contact FTSE Russell client services at info@ftserussell.com.

Website: www.ftserussell.com

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