Ground Rules

FTSE Volatility Target Index Series
v1.5
## Contents

1.0  Introduction.......................................................................................................................... 3  
2.0  Management Responsibilities.............................................................................................. 5  
3.0  FTSE Russell Index Policies................................................................................................ 6  
4.0  Target Risk Exposure and Return on Cash......................................................................... 8  
5.0  Calculation of Index.............................................................................................................. 10  
6.0  Periodic Rebalancing ............................................................................................................ 12  
Appendix A: List of Volatility Target Indexes.......................................................................... 13  
Appendix B: Cash return for FTSE JSE Volatility Target Indexes............................................ 14  
Appendix C: Underlying Indexes and Cash Rates................................................................. 15  
Appendix D: Index Parameters.................................................................................................. 16  
Appendix E: Glossary................................................................................................................ 17  
Appendix F: Further Information............................................................................................... 18
Section 1

Introduction

1.0 Introduction

1.1 This document sets out the Ground Rules for the construction and management of the FTSE Volatility Target Index Series. Copies of the Ground Rules are available from FTSE Russell.

1.2 The FTSE Volatility Target Index Series represents the performance of an investment strategy that seeks to manage expected volatility close to a specific targeted level.

1.3 The FTSE Volatility Target Index Series deleverages (leverages) i.e. decreases (increases) the allocation to the underlying equity index and increases (decreases) exposure to a risk-free cash return component, as the volatility of the underlying index increases (decreases), in order to target a pre-specified level of volatility. The Total Return and the Excess Return Indexes include a cash return component.

1.4 The base currency of the benchmark is US Dollars. Index values may also be published in other currencies.

1.5 For more information on the underlying indexes, please refer to the relevant FTSE Russell Ground Rules at www.ftserussell.com. Details of the indexes included in the FTSE Volatility Target Index Series are shown in Appendices A-D.

1.6 FTSE Russell


1.7 FTSE Russell hereby notifies users of the index series 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 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.

1.8 Index users who choose to follow this index series or to buy products that claim to follow this index series should assess the merits of the index series’ 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 errors or 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 errors or inaccuracies in the compilation of the index series or any constituent data.

1.9 This index series is published at the end of each working day. The Total Return Indexes are based on ex dividend adjustments.
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 series.¹

2.1.2 FTSE is responsible for the daily calculation, production and operation of the FTSE Volatility Target Index Series and will:

- carry out the periodic index reviews of the index series and apply the changes resulting from the reviews as required by the Ground Rules;
- disseminate the indexes.

2.2 Status of these Ground Rules

2.2.1 These Ground Rules set out the methodology and provide information about the publication of the FTSE Volatility Target Index Series.

2.3 Amendments to these Ground Rules

2.3.1 These Ground Rules shall be subject to regular review 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 Product Governance Board before approval is granted.

2.3.2 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).
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 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 Product Governance Board.

The Statement of Principles can be accessed using the following link:

3.2 Queries, Complaints and Appeals

3.3 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

3.4 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

3.5.1 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**

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.pdf](#)

3.7 **Recalculation Policy and Guidelines**

3.7.1 The FTSE Volatility Target Index Series is recalculated whenever errors or distortions occur that are deemed to be significant, including, but not limited to, recalculation of index components. Users of the FTSE Volatility Target Index Series are notified through appropriate media.

For further information please 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](#)
Section 4

Target Risk Exposure and Return on Cash

4.0 Target Risk Exposure and Return on Cash

4.1 Target risk exposure

4.1.1 FTSE Volatility Target Index Series controls the risk exposure to the underlying index from the volatility of that index.

4.1.2 The volatility of the underlying index is calculated using an exponential weighted moving average based on daily underlying index returns.

4.1.3 Two volatility estimates; a short period and a long period estimate, $\sigma_S$ and $\sigma_L$ respectively, are calculated over the volatility calculation period of $K$ days at time $t$:

$$\sigma_S(t) = \sqrt{252 \sum_{k=t-K+1}^{t-1} \frac{\alpha_S(t-k+1)}{\sum_{j=t-k}^{t-1} \alpha_S(j)} \times \left( \ln \frac{S(k)}{S(k-1)} \right)^2}$$

$$\sigma_L(t) = \sqrt{252 \sum_{k=t-K+1}^{t-1} \frac{\alpha_L(t-k+1)}{\sum_{j=t-k}^{t-1} \alpha_L(j)} \times \left( \ln \frac{S(k)}{S(k-1)} \right)^2}$$

where,

- $S(k)$ is the underlying index value at time $k$
- $K$ is the number of days over which volatility is calculated
- $\alpha_L(k)=(1-\lambda_L)\lambda_L^{k-1}$ is the long period exponential weighting factor at time $k$ where $\lambda_L \leq 1$ is the long period decay factor
- $\alpha_S(k)=(1-\lambda_S)\lambda_S^{k-1}$ is the short period exponential weighting factor at time $k$ where $\lambda_S \leq 1$, $\lambda_S < \lambda_L$ is the short period decay factor

4.1.4 $\sigma_S(t)$ and $\sigma_L(t)$ are calculated each day for $T$ days. The larger of the short and long horizon volatility estimates over the $T$ days, $\sigma_{\text{MAX}}(t)$, is used to determine the target level of risk exposure.

4.1.5 On any business day $t$, the target level of risk exposure of FTSE Volatility Target Indexes to the underlying index is calculated as:

$$E(t) = \min \left( L_M - \frac{T}{\sigma_{\text{MAX}}(t-1)} \right)$$

(3)
where:

- \( L_m \) is maximum leverage
- \( \alpha_T \) is the volatility target

4.1.6 The parameters used in 4.1.3 to 4.1.5 are detailed in Appendix D for each index of FTSE Volatility Target Index Series.

4.2 Cash Return

4.2.1 FTSE Volatility Target Index Series uses the relevant overnight interbank rate as the return on cash.

\[
\left. r_c(t) \right| = r(t-1) \times \frac{d(t-1)}{\text{DayCount}}
\]  

(4)

where,

- \( r(t-1) \) is the overnight interbank rate. The rate applicable to each index is detailed in Appendix C.
- \( d(t,t-1) \) is the number of calendar days between \( t-1 \) and \( t \)
- DayCount is the number of days in a year used in the convention of the corresponding interest rate.
Section 5

Calculation of Index

5.0 Calculation of Index

5.1 Price Return Indexes

5.1.1 The FTSE Volatility Target Price Return Indexes are calculated as follows:

\[ PI(t) = PI(t-1) \times (1 + E(t) \times r_u(t)) \]  \hspace{1cm} (5)

where:
- \( PI(t) \) is the Price Return Index
- \( E(t) \) is the target level of risk exposure
- \( r_u(t) \) is the underlying index return

5.2 Total Return Indexes

5.2.1 The FTSE Volatility Target Total Return Indexes are calculated as follows:

\[ TRI(t) = TRI(t-1) \times [E(t) \times r_u(t) + (1 - E(t)) \times r_c(t) + 1] \]  \hspace{1cm} (6)

where:
- \( TRI(t) \) is the Total Return Index
- \( E(t) \) is the target level of risk exposure
- \( r_u(t) \) is the underlying index return
- \( r_c(t) \) is the return on cash on day \( t \)

5.3 Excess Return Indexes

5.3.1 The FTSE Volatility Target Excess Return Indexes are calculated as follows:

\[ EI(t) = EI(t-1) \times [1 + E(t) \times (r_u(t) - r_c(t))] \]  \hspace{1cm} (7)

where,
- \( EI(t) \) is the Excess Return Index
- \( E(t) \) is the target level of risk exposure
- \( r_u(t) \) is the underlying index return
- \( r_c(t) \) is the return on cash on day \( t \)
5.4 **Calculation Frequency**

5.4.1 The FTSE Volatility Target Index Series is calculated end-of-day (EOD) after the close of the underlying index.
Section 6

Periodic Rebalancing

6.0 Periodic Rebalancing

6.1 Periodic Rebalancing

6.1.1 The target level risk exposure is re-estimated at a fixed frequency detailed in Appendix A for each index comprising the FTSE Volatility Target Index Series.
Appendix A: List of Volatility Target Indexes

<table>
<thead>
<tr>
<th>Index Name</th>
<th>Index Code</th>
<th>Volatility Target</th>
<th>Rebalancing</th>
</tr>
</thead>
<tbody>
<tr>
<td>FTSE/JSE Top 40 10% Risk Target Price Return Index</td>
<td>J10P</td>
<td>10%</td>
<td>Daily</td>
</tr>
<tr>
<td>FTSE/JSE Top 40 15% Risk Target Price Return Index</td>
<td>J15P</td>
<td>15%</td>
<td>Daily</td>
</tr>
<tr>
<td>FTSE/JSE Top 40 20% Risk Target Price Return Index</td>
<td>J20P</td>
<td>20%</td>
<td>Daily</td>
</tr>
<tr>
<td>FTSE/JSE Top 40 Net 10% Volatility Target Total Return Index</td>
<td>J10T</td>
<td>10%</td>
<td>Daily</td>
</tr>
<tr>
<td>FTSE/JSE Top 40 Net 15% Volatility Target Total Return Index</td>
<td>J15T</td>
<td>15%</td>
<td>Daily</td>
</tr>
<tr>
<td>FTSE/JSE Top 40 Net 20% Volatility Target Total Return Index</td>
<td>J20T</td>
<td>20%</td>
<td>Daily</td>
</tr>
<tr>
<td>FTSE/JSE Top 40 Net 10% Volatility Target Excess Return Index</td>
<td>J10E</td>
<td>10%</td>
<td>Daily</td>
</tr>
<tr>
<td>FTSE/JSE Top 40 Net 15% Volatility Target Excess Return Index</td>
<td>J15E</td>
<td>15%</td>
<td>Daily</td>
</tr>
<tr>
<td>FTSE/JSE Top 40 Net 20% Volatility Target Excess Return Index</td>
<td>J20E</td>
<td>20%</td>
<td>Daily</td>
</tr>
</tbody>
</table>

Back History

Back history for the FTSE/JSE Top 40 Total Return Index is available from 31 December 2002. Prior to 30 March 2012 the back history was calculated using the FTSE/JSE Top 40 Total Return Index. The /JSE Top 40 Net Total Return Index started calculation on 30 March 2012 and has been used in the calculation from that date forwards.
Appendix B: Cash return for FTSE JSE Volatility Target Indexes

There is no overnight interbank rate available for FTSE JSE Volatility Target Indexes. The FTSE JSE Volatility Target indexes estimate the cash return by interpolating a discount rate from the 1-month and 3-month interbank rates - South Africa Johannesburg Interbank Agreed Rate (ZAR JIBAR).

The annualized discount rate on day \( t \) is interpolated from 1-month and 3-month interbank rates as follows:

\[
IR(t) = \left[ r_{1m}(t) + \frac{r_{3m}(t) + r_{1m}(t)}{D_{3m}(t) - D_{1m}(t)} \times (D_{3m}(t-1) - D_{1m}(t)) \right]
\]  

(8)

where:

- \( IR(t) \) is the interpolated rate on business day \( t \)
- \( r_{1m}(t) \) is the 1-month rate on business day \( t \)
- \( r_{3m}(t) \) is the 3-month rate on business day \( t \)
- \( D_{1m}(t) \) is the 1-month maturity date from business day \( t \)
- \( D_{3m}(t) \) is the 3-month maturity date from business day \( t \)

Maturity dates \( D_{1m}(t) \) and \( D_{3m}(t) \) are calculated on a calendar basis. For example, if today is the 29th of November and next year is a leap year, the maturity date for the three-month rate is calculated to fall on the 29th of February next year. However, if next year is not a leap year, the maturity date for the three-month rate will fall on the 1st of March next year. A similar logic applies to the determination of maturity dates for the one-month rates.

The return on cash for FTSE JSE Volatility Target indexes are:

\[
r_C(t) = \frac{FV(t-1)}{1 + \frac{1}{365} \times (D_{3m}(t-1) - D_{3m}(t-1)) \times IR(t)} - 1
\]  

(9)

where

- \( FV(t-1) = 1 + \frac{1}{365} \times (D_{3m}(t-1) - t + 1) \times r_{3m}(t-1) \) is the future value of the 3-month deposit
- \( D_{3m}(t-1) - t \) is the number of calendar days between previous business day’s 3-month maturity date and today

\( IR(t) \) is the discount rate on day \( t \)
## Appendix C: Underlying Indexes and Cash Rates

<table>
<thead>
<tr>
<th>Index Name</th>
<th>Underlying</th>
<th>Cash Rate</th>
<th>Day Count Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>FTSE/JSE Top 40 10% Risk Target Price Return Index</td>
<td>FTSE/JSE Top 40 Price Return Index</td>
<td>Not applicable</td>
<td>Not applicable</td>
</tr>
<tr>
<td>FTSE/JSE Top 40 15% Risk Target Price Return Index</td>
<td>FTSE/JSE Top 40 Price Return Index</td>
<td>Not applicable</td>
<td>Not applicable</td>
</tr>
<tr>
<td>FTSE/JSE Top 40 20% Risk Target Price Return Index</td>
<td>FTSE/JSE Top 40 Price Return Index</td>
<td>Not applicable</td>
<td>Not applicable</td>
</tr>
<tr>
<td>FTSE/JSE Top 40 Net 10% Volatility Target Total Return Index</td>
<td>FTSE/JSE TOP 40 Net Total Return Index</td>
<td>ZAR 1M JIBAR</td>
<td>365</td>
</tr>
<tr>
<td>FTSE/JSE Top 40 Net 15% Volatility Target Total Return Index</td>
<td>FTSE/JSE TOP 40 Net Total Return Index</td>
<td>ZAR 3M JIBAR</td>
<td>365</td>
</tr>
<tr>
<td>FTSE/JSE Top 40 Net 20% Volatility Target Total Return Index</td>
<td>FTSE/JSE TOP 40 Net Total Return Index</td>
<td>ZAR 3M JIBAR</td>
<td>365</td>
</tr>
<tr>
<td>FTSE/JSE Top 40 Net 10% Volatility Target Excess Return Index</td>
<td>FTSE/JSE Top 40 Net Total Return Index</td>
<td>ZAR 1M JIBAR</td>
<td>365</td>
</tr>
<tr>
<td>FTSE/JSE Top 40 Net 15% Volatility Target Excess Return Index</td>
<td>FTSE/JSE Top 40 Net Total Return Index</td>
<td>ZAR 3M JIBAR</td>
<td>365</td>
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<td>FTSE/JSE Top 40 Net Total Return Index</td>
<td>ZAR 3M JIBAR</td>
<td>365</td>
</tr>
</tbody>
</table>
## Appendix D: Index Parameters

<table>
<thead>
<tr>
<th>Index Name</th>
<th>Short Period Decay</th>
<th>Half life of the short decay</th>
<th>Long Period Decay</th>
<th>Half life of the long decay</th>
<th>Volatility period (Days)</th>
<th>Max Volatility Window (Days)</th>
<th>Max Risk Exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>FTSE/JSE Top 40 10% Risk Target Price Return Index</td>
<td>0.95</td>
<td>13.51</td>
<td>0.98</td>
<td>34.31</td>
<td>120</td>
<td>5</td>
<td>1.5</td>
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<td>5</td>
<td>1.5</td>
</tr>
</tbody>
</table>
Appendix E: Glossary

Zar Jibar

Official name: South Africa Johannesburg Interbank Agreed Rate
Source: South African Futures Exchange (SAFEX)
Quote type: Yield/Ask
Currency: South African Rand (ZAR)
Day count basis: Act/365
Fix time: 10:30am Johannesburg time
Appendix F: 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 Volatility Target Indexes 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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