



FTSE UK Level Annuity Index Series

v1.5



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Section 1

Introduction

1.0 Introduction

- 1.1 This document sets out the Ground Rules for the FTSE UK Level Annuity Index Series calculated by FTSE International Limited (“FTSE”).
- 1.2 The FTSE UK Level Annuity Index Series is designed to reflect changes in annuity prices. The index allows users to compare changes in the value of a pre-retirement fund with changes in annuity prices.
- 1.3 The FTSE UK Level Annuity Index Series consists of the following indices:
- 1.3.1 FTSE UK Level Annuity Index Series
- FTSE UK Level Annuity Index Single Life – Early Retirement
 - FTSE UK Level Annuity Index Single Life – Standard Retirement
 - FTSE UK Level Annuity Index Single Life – Late Retirement
 - FTSE UK Level Annuity Index Joint Life – Early Retirement
 - FTSE UK Level Annuity Index Joint Life – Standard Retirement
 - FTSE UK Level Annuity Index Joint Life – Late Retirement
- 1.3.2 FTSE UK Level Adjusted Annuity Index Series
- FTSE UK Level Adjusted Annuity Index Single Life – Early Retirement
 - FTSE UK Level Adjusted Annuity Index Single Life – Standard Retirement
 - FTSE UK Level Adjusted Annuity Index Single Life – Late Retirement
 - FTSE UK Level Adjusted Annuity Index Joint Life – Early Retirement
 - FTSE UK Level Adjusted Annuity Index Joint Life – Standard Retirement
 - FTSE UK Level Adjusted Annuity Index Joint Life – Late Retirement
- 1.4 These Ground Rules should be read in conjunction with the Ground Rules of FTSE Actuaries UK Gilt Index Series, which are available at www.ftserussell.com.
- The FTSE UK Level Annuity Index Series is calculated on an end of day basis in GBP.

1.5 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 MTSNext Limited), Mergent, Inc., FTSE Fixed Income LLC and The Yield Book Inc.

- 1.6** 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.
- 1.7** 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 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 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 series.¹

2.1.2 FTSE is responsible for the daily calculation, production and operation of the FTSE UK Level Annuity Index Series and will:

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

2.2 Status of Ground Rules

2.2.1 These Ground Rules are a guide to the policies and procedures applying at the date of publication to the operation and maintenance of the FTSE UK Level Annuity Index Series.

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. 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.

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 Queries and Complaints

FTSE Russell's complaints procedure can be accessed using the following link:
[FTSE Russell Benchmark Determination Complaints Handling Policy.pdf](#)

3.2 Index Policy for Trading Halts and Market Closures

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

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

3.3 Index Policy in the Event Clients are Unable to Trade a Market

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

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

3.4 FTSE Russell Policy for Benchmark Methodology Changes

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

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

Section 4

Index Construction

4.0 Index Construction

4.1 Retirement Profiles

- 4.1.1 The FTSE UK Level Annuity Index Series is calculated daily using the average of the highest three annuity provider rates for each retirement profile.
- 4.1.2 Missing annuity rates are replaced by the previous day's annuity rate for a given provider for a maximum of ten consecutive business days. If a provider fails to provide an annuity rate for a period of more than ten consecutive business days, the provider will be removed from the calculation of the average annuity rate.
- 4.1.3 The annuity rates are sourced from The Annuity Exchange Ltd (www.annuityexchange.co.uk).
- 4.1.4 The FTSE UK Level Annuity Index Series is calculated using annuity rates associated with a £50,000 lump sum and the following retirement profiles:
- Ages: 60 years, 65 years, 70 years
 - Cases: Single Life and Joint Life
 - Escalation: Level
 - Guarantee period: 5 years
 - Postcode: PE1 1XS (median life expectancy)
- 4.1.5 Each FTSE UK Level Annuity Index measures the change in annuity prices of a specific retirement age profile for the Single and Joint Life cases:
- Single Life – Early Retirement: 60 years
 - Single Life – Standard Retirement: 65 years
 - Single Life – Late Retirement : 70 years
 - Joint Life – Early Retirement: 65/60 years
 - Joint Life – Standard Retirement: 70/65 years
 - Joint Life – Late Retirement: 70/70 years
- 4.1.6 The FTSE UK Level Annuity Indices measure the change in annuity prices adjusted for the return on cash.
- 4.1.7 The FTSE UK Level Adjusted Annuity Index measures the change in annuity prices adjusted for the return on cash and expected changes in annuity prices.

4.2 Cash Return Adjustment

- 4.2.1 A pre-retirement fund has the opportunity to earn a cash return. The FTSE UK Level Annuity Index aims to measure the change in annuity price including the cash return.
- 4.2.2 The Sterling overnight interbank average (SONIA) rate is used to determine the cash return. Please refer to Rules 6.1 and 6.2 for details.

4.3 Expected Changes in Annuity Prices

- 4.3.1 The FTSE UK Level Adjusted Annuity Indices aim to measure the performance of annuity prices relative to expected annuity price changes.
- 4.3.2 Annuity rates are largely driven by the expected present value of the annuity cash flows. Annuity cash flows may be evaluated using the current (spot) or expected (3 month forward) interest rate curve.
- 4.3.3 The resulting valuation difference represents the expected (annuity rates will increase or annuity prices will fall if the forward curve is above the spot curve) change in annuity rates / prices if the interest rate expectations are fulfilled.
- 4.3.4 However, a pre-retirement fund that is benchmarked against an annuity benchmark will not behave in the same way.
- 4.3.5 If interest expectations materialise, a pre-retirement fund earning a (small) interest rate carry would appear to perform well compared to potentially large increases in annuity rates that are the consequence of a steeply upward sloping interest rate curve.
- 4.3.6 Hence, the FTSE UK Level Adjusted Annuity Indices are adjusted for expected changes in annuity rates.
- 4.3.7 Expected changes in annuity prices are calculated using the zero coupon interest rate curve and the assumed duration of the expected annuity liability cash flow profile. Please refer to Rules 6.2.3 and 6.2.4 for details.
- 4.3.8 The duration of the expected annuity liability cash flow profile is set to 11 years for the purposes of the FTSE UK Level Adjusted Annuity Indices.



Section 5

Periodic Review

5.0 Periodic Review

- 5.1** The FTSE UK Annuity Index is reviewed in June to validate the continuing relevance of the assumed retirement profiles and the duration of the expected annuity liability cash flow profile.
- 5.2** Changes arising from the periodic review will be published after the close of business on the second Friday of June and are effective on the first business day of July.
- 5.3** The review will involve market consultation.

Section 6

Index Calculation Methodology

6.0 Index Calculation Methodology

6.1 FTSE UK Level Annuity Index

$$\hat{I}_t = \hat{I}_{t-1} \times (1 + \Delta p_t)$$

where,

\hat{I}_t = Unadjusted annuity index for day t

Δp_t = Change in annuity price for day t plus cash return

6.1.1 Change in annuity price plus cash return

$$\Delta p_t = \frac{a_t}{a_{t-1}} \times \left(1 + \frac{r_{t-1}}{\text{DayCount}} \times d \right) - 1$$

where,

Δp_t = Change in annuity price plus cash return for day t

a_t = Annuity price for day t

r_t = Annualised overnight unsecured lending rate (SONIA) at t

d = Number of calendar days between current calculation date t and previous calculation date t-1

DayCount = SONIA day count convention (365)

where

$$a_t = \frac{1}{\text{annuity rate (t)}}$$

6.2 FTSE UK Level Adjusted Annuity Index

$$I_t = I_{t-1} \times (1 + \Delta p_t^{\#})$$

where,

I_t = Adjusted annuity index for day t

$\Delta p_t^{\#}$ = Adjusted change in annuity price for day t

6.2.1 Adjusted change in annuity price

$$\Delta p_t^{\#} = \frac{(1 + \Delta p_t)}{(1 + \Delta p_t')} - 1$$

where,

$\Delta p_t^{\#}$ = Adjusted change in annuity price for day t

Δp_t = Change in annuity price plus cash return for day t

$\Delta p_t'$ = Expected change in annuity price for day t

6.2.2 Change in annuity price plus cash return

$$\Delta p_t = \frac{a_t}{a_{t-1}} \times \left(1 + \frac{r_t}{\text{DayCount}} \times d \right) - 1$$

where,

Δp_t = Change in annuity price plus cash return for day t

a_t = Annuity price for day t

r_t = Annualised overnight unsecured lending rate (SONIA) at t

d = Number of calendar days between current calculation date t and previous calculation date t-1

DayCount = SONIA day count convention (365)

where

$$a_t = \frac{1}{\text{annuity rate (t)}}$$

6.2.3 The expected change in annuity price

$$\Delta p_t' = (-D \times \Delta z_t')$$

where,

$\Delta p_t'$ = Expected change in annuity price for day t

$\Delta z_t'$ = Implied change in zero coupon rate for day t

D = Duration = 11

6.2.4 The implied change in zero coupon rate

$$\Delta z_t' = f_{d,D} - z_t$$

where,

$\Delta z_t'$ = Implied change in zero coupon rate for day t

$f_{d,D}$ = Forward rate between d and (D + d)

z_t = Zero coupon rate at D

6.2.5 The forward rate

$$f_{d,D,t-1} = \left[\frac{(1 + z_{d,D})^{(d+D)}}{(1 + z_d)^d} \right]^{\frac{1}{D}} - 1$$

where,

$f_{d,D-t-1}$ = Forward rate between d and (D+d)

$z_{d,D}$ = Zero coupon rate at (D+d)

z_d = Zero coupon rate at d

6.2.6 Zero coupon rate

The zero coupon rate is calculated using the FTSE UK Gilts Fitted Conventional Yield Indices methodology. Please refer to the FTSE Actuaries UK Gilts Index Series Ground Rules for details, which are available at www.ftserussell.com.

Given the set of parameters, $(b_0, b_1, b_2, b_3, b_4)$, a zero coupon rate can be calculated for a given maturity:

$$z_t = b_0 + \sum_{i=1}^4 b_i \times \frac{1 - e^{-c_i \times t}}{c_i \times t}$$

Note (c_1, c_2, c_3, c_4) are parameters fixed at $(0.04, 0.12, 0.20, 0.28)$ respectively.

The parameters $(b_0, b_1, b_2, b_3, b_4)$ are derived by minimising the weighted sum of the squared price differences (WSS):

$$WSS(b_0, b_1, b_2, b_3, b_4) = \sum_1^K N_K \times (P_K - \hat{P}_K)^2$$

where

N_K = is the amount in issue for gilt K

P_K = is the gross price for gilt K

\hat{P}_K = is the gross price for gilt K derived from z_t



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 UK Level Annuity Index Series is available from FTSE Russell.

For contact details please visit the FTSE Russell website or contact FTSE Russell client services at
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Website: www.ftserussell.com

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