

GROUND RULES FOR THE MANAGEMENT OF THE FTSE 100 and FTSE 250 Leveraged Indices



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1. Introduction

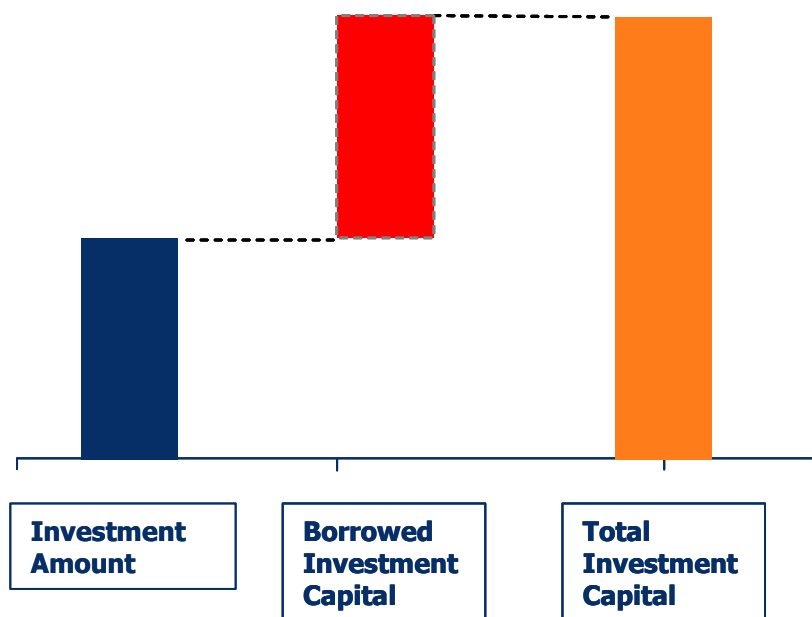
1.1 General

- 1.1.1 The FTSE 100 and FTSE 250 Leveraged Indices aim to replicate the performance of an investor attaining a multiple of the daily performance of the underlying index. They are derived from the underlying headline FTSE 100 and FTSE 250 Indices. As a result, corporate actions and dividends are reflected in the FTSE 100 and FTSE 250 Leveraged Indices as they occur and as they are captured in the underlying FTSE 100 and FTSE 250 Indices.
- 1.1.2 The series consists of Leveraged, Super and Ultra versions representing 2,3 and 4 times leverage.
- 1.1.3 Total return indices are also available
- 1.1.4 The FTSE 100 and FTSE 250 Leveraged Indices attempt to replicate the returns experienced by an investor attaining a multiple of the daily performance of the underlying headline index with a daily rebalance i.e. investing available funds in the index basket, and borrowing multiples of this and is additionally invested in the index. The cost of dividends and benefit of earning interest for the short position are taken into account in the index calculation of the short index.
- 1.1.5 These indices can serve as benchmarks for the creation of ETFs, structured products or other passive investment vehicles that enable investors to gain leveraged exposure to the market or hedge portfolio exposure without the need to leverage or use derivative instruments. The leveraged indices are derived from the existing underlying headline FTSE 100 and FTSE 250 Indices. As a result corporate actions and constituent changes are reflected in the leveraged indices as they occur. Dividends used in the index total return calculations are those declared by the company and applied on the ex-dividend date. Treatment of dividends and the calculation of the underlying total return indices can be found in the Guide to Calculation Methods of the UK Series of the FTSE Actuaries Share Indices which can be found on the internet at www.ftse.com/Indices/UK_Indices/Downloads/uk_calculation.pdf

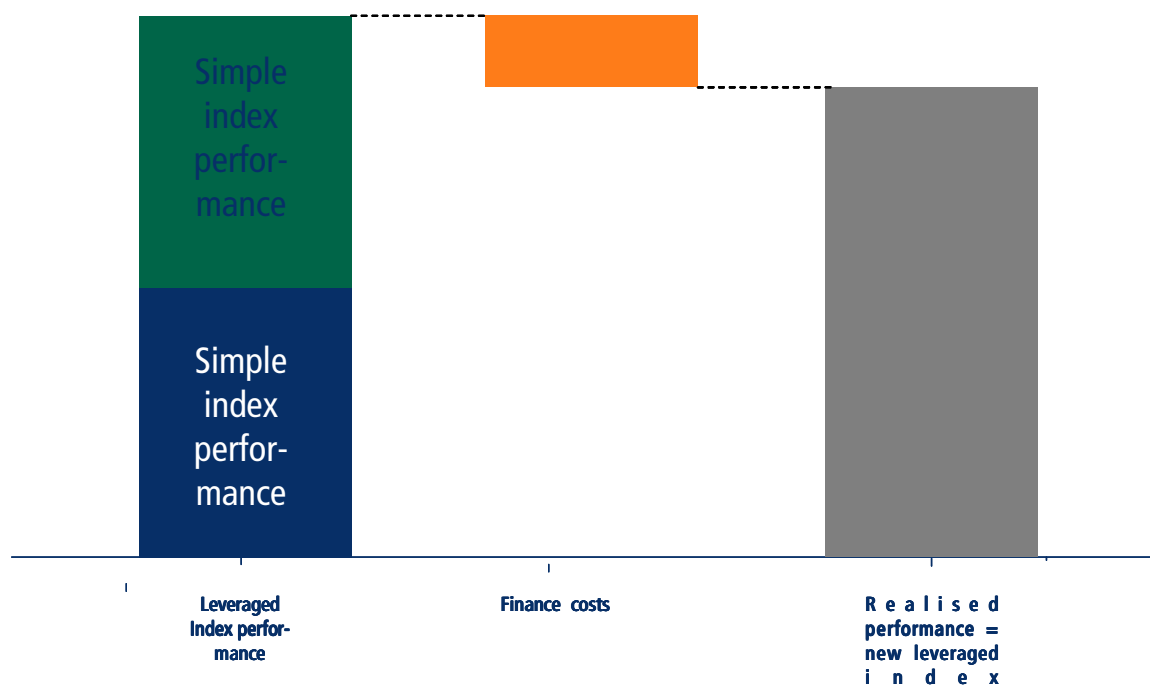
1.2 Methodology

- 1.2.1 The objective of the FTSE 100 & 250 Leveraged Indices is to replicate the payoff of an investor holding an index portfolio and financing leveraged positions to gain geared exposure to the return of the underlying index. The indices take into account the three main components of the payoff to the leveraged investment strategies.
1. Capital gains associated with the underlying equity securities
 2. Cash dividends paid by the underlying securities
 3. The finance cost of raising capital to reinvest in the index portfolio to create the leveraged positions

1.2.2 Investment Capital



1.2.3 Index performance and finance cost components



2. The Index

2.1 Index Calculation formula

$$levIndex_t = LeveragedPerformanceTerm + FinancingTerm$$

$$levIndex_t = levIndex_{t_0} \cdot (1 + r)$$

$$levIndex_t = levIndex_{t_0} \cdot \left\{ 1 + \left[\begin{array}{l} \left[k \cdot \left(\frac{PI_t}{PI_{t_0}} - 1 \right) \right] \\ - \left[(k-1) \cdot \left(\frac{ONIntRate_{t_0}}{DayCountBasis} \right) \cdot d_{t,t_0} \right] \end{array} \right] \right\}$$

Leveraged Return (k=2,3 or 4 times)

Financing cost
 d_{t,t_0} = calendar days between t and t_0

r

Where:

- k = Multiple reflecting the leveraged ratio (2 for leveraged, 3 for Super leveraged, 4 for Ultra leveraged)
- levIndex = Leveraged Index Value
- PI = Underlying Price Index
- ONIntRate = Overnight Interest Rate (SONIA for GBP indices, %p.a) (risk free rate) e.g. 230bps. Provided at around 5pm daily by the BBA
- t = Time of calculation
- t_0 = Close of last trading day prior to t
- d_{t,t_0} = Number of calendar days between day t and day t_0
- DayCountBasis = Days in year for simple interest calculation (GBP = 365)

2.2 Base date and base values

Index Name	Base Date	Base Value
FTSE 100 Leveraged Indices		
Leveraged Index	31 Dec 1992	10,000
Super Leveraged Index		10,000
Ultra Leveraged Index		10,000
FTSE 250 Leveraged Indices		
Leveraged Index	31 Dec 1992	10,000
Super Leveraged Index		10,000
Ultra Leveraged Index		10,000

Source: FTSE Group

2.3 Computational accuracy

- 2.3.1 The index will be calculated to 15 decimal figures and published to 4 decimal places.

2.4 Frequency of calculation

- 2.4.1 Initially the FTSE 100 & FTSE 250 Leveraged Indices will be calculated end-of-day (EOD); after the close of the underlying index.
- 2.4.2 It envisaged that the index will be available in real-time at some future date and will be calculated during the same period that the underlying index is being calculated.

2.5 Adjustment due to extreme market movements

- 2.5.1 In order to alleviate the risk of total loss due to extreme market movements, a test is carried out on the last received price for the underlying Price Index compared to the previous trading day's closing level. If the change is greater than or equal to a 25% downwards movement in the underlying index, the performance will be adjusted intraday. This is achieved by effectively stopping the index calculation at that point and reapplying the leveraged position as though starting a new day. No additional financing costs are incurred. This applies to the real-time index only.

$$t = t_0 \quad \text{i.e.} (PI_t = PI_{t_0}, \text{levIndex}_t = \text{levIndex}_{t_0})$$

$$d_{t,t_0} = 0$$

2.6 Finance cost calculation

- 2.6.1 The finance cost is calculated on a simple basis.
- 2.6.2 For GBP based indices a day count of 365 days will be used, in line with market convention. Hence, interest income per day would be

$$\left(\frac{ONIntRate_{t_0}}{DayCountBasis} \right)$$

Where:

- $ONIntRate_{t_0}$ = Interest rate per annum (SONIA)
- $DayCountBasis$ = Days in year for simple interest calculation (GBP = 365)

2.6.3 The actual financing cost for $d_{t,t0}$ calendar days would be:

$$\left[(k - 1) \cdot \left(\frac{ONIntRate_{t0}}{DayCountBasis} \right) \cdot d_{t,t0} \right]$$

Where:

- $d_{t,t0}$ = number of calendar days between t and t0.
- k = Leveraged ratio (2 for leveraged, 3 for Super leveraged, 4 for Ultra leveraged)

2.7 Trading suspension

2.7.1 The FTSE 100 & FTSE 250 Leveraged Indices are calculated on the same days as the underlying FTSE 100 and FTSE 250 Indices, and in the case of real-time indices, during the same time. If there is suspension of the underlying FTSE 100 and FTSE 250 Indices the FTSE 100 and 250 Leveraged Indices will be calculated using the latest prices available.

3. Glossary

3.1 SONIA – Sterling Overnight Interbank Average Rate

- 3.1.1 SONIA is the weighted average rate of all unsecured sterling overnight cash transactions brokered in London between midnight and 4.15pm with all counterparties in a minimum deal size of £25m. It is the weighted average overnight deposit rates for each business day and the index is published at 1700hrs each day.

It was established in 1997 by the Wholesale Markets Brokers' Association (WMBA) in Great Britain. Prior to the SONIA the WMBA had no Sterling overnight funding rate. This void created volatility in England's overnight interest rates. When the SONIA was created, it gave stability to overnight rates and also encouraged the creation of the Overnight Index Swaps markets and the Sterling Money Markets in Great Britain.

Details of daily SONIA rates can be found at <http://www.wmba.org.uk/indices.php>.

4. Appendix

4.1 Example Calculation

- 4.1.1 Calculate the FTSE 100 Ultra Leveraged Index value for Tuesday 18 September 2008

Model Inputs:

SONIA	= 497.72 bps
Day count basis	= 365
Prev FTSE 100 Ultra Leveraged Index Value (levIndex_{t_0}) (for simplicity)	= 10,000
Prev Closing FTSE 100 Index (PI_{t_0})	= 4912.359481
Current Closing FTSE 100 Index (PI_t)	= 4879.99358
Prev Trading Day (t_0)	= 17 Sep 2008

Model Outputs

Number of Days Interest (d_{t,t_0})	= 1
Leveraged Performance Term	= 9736.453
Financing Cost Term	= 4.090849
New Leveraged Index Value (levIndex_t)	= 9732.3624

4.2 Contacting FTSE

Further information on the FTSE 100 and FTSE 250 Leveraged Indices is available from FTSE, who will also welcome comments on these Ground Rules.

Enquiries should be addressed in the first instance to:

UK

Client Services
FTSE Group
12th Floor,
10 Upper Bank Street,
Canary Wharf,
London,
E14 5NP

Tel: +44 (0)20 7866 1810
Fax: +44 (0)20 7866 1804
e-mail: info@ftse.com

USA

FTSE Americas Inc.,
1330 Avenue of the Americas
10th Floor
New York 10019
USA

New York: (Domestic) + 1 888 747 FTSE (3873); International: +1 212 641 6124

Web site: www.ftse.com

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