

GROUND RULES FOR THE MANAGEMENT OF THE

FTSE MIB Leveraged Series



Borsa Italiana
London Stock Exchange Group



THE INDEX COMPANY

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1. Introduction

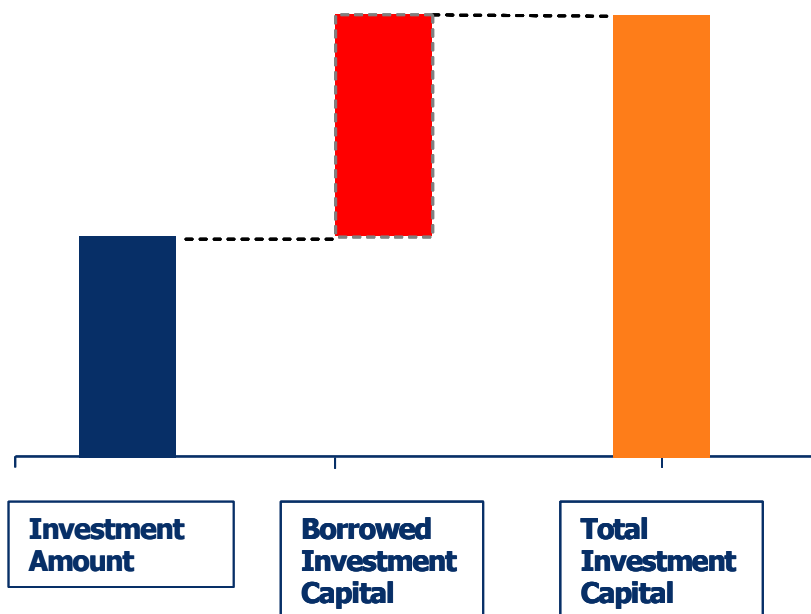
1.1 General

- 1.1.1 The FTSE MIB Leveraged Series aims 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 MIB Indices. As a result, corporate actions and dividends are reflected in the FTSE MIB Leveraged Series as they occur and as they are captured in the underlying FTSE MIB Indices.
- 1.1.2 The FTSE MIB Leveraged Series consist of the following indices:
- Leveraged with a leverage of x2
 - Super Leveraged with leverage of x3
 - Ultra Leveraged with leverage of x4
- 1.1.3 The indices are calculated on both a price and total return basis.
- 1.1.4 The FTSE MIB Leveraged Series attempts 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. This is achieved by borrowing multiples of this and additionally investing it in the 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 MIB Index. 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 on the internet at http://www.ftse.com/Indices/FTSE_All_World_Index_Series/Downloads/allworld_calculation.pdf.

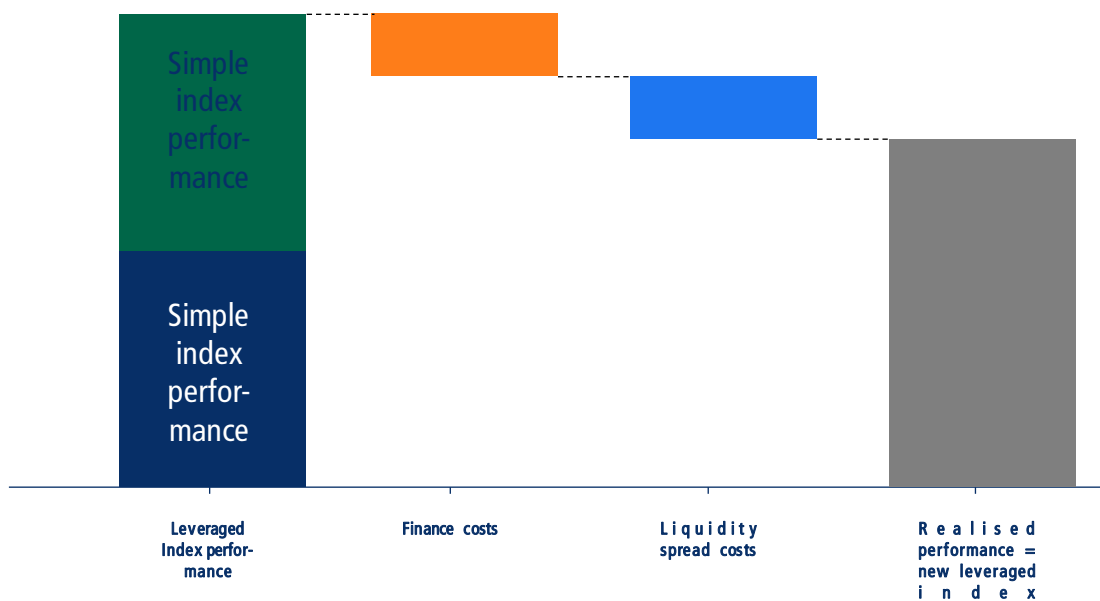
1.2 Methodology

- 1.2.1 The objective of the FTSE MIB Leveraged Series 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 (for the total return indices)
 3. The finance cost of raising capital to reinvest in the index portfolio to create the leveraged positions
 4. Liquidity spread term arising from the spread between overnight interest rates and a longer term 12m interest rate observed to have widened significantly over recent times

1.2.2 Investment Capital



1.2.3 Index performance, finance cost and liquidity spread components



2. The Index

2.1 Index calculation formula

levIndex_t = LeveragedPerformanceTerm – FinancingTerm – LiquiditySpreadTerm

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

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

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

Financing Term
dt, t0 = calendar days between t and t0

Liquidity Spread Term (optional – SPRDFlag = 0 for ignore)

Where:

- k = Multiple reflecting the leveraged ratio (2 for Leveraged, 3 for Super Leveraged, 4 for Ultra Leveraged)
- levIndex_t = Leveraged Index value at time of calculation t
- levIndex_{t₀} = Leveraged Index value at time of calculation t₀
- PI_t = Closing underlying price Index at calculation date (TRI for total return version)
- PI_{t₀} = Closing underlying price level at the previous calculation date (TRI for total return version)
- ONIntRate = Overnight Interest Rate (EONIA for EUR indices, %p.a.) (risk free rate) e.g. 230bps. Published between 6:45 and 7:00pm (CET) on Reuters page “EONIA=”
- t = Time of calculation
- t₀ = Close of last trading day prior to t
- d_{t,t₀} = Number of calendar days between day of calculation t and previous calculation day t₀
- DayCountBasis = Days in year for simple interest calculation (EUR = 360)
- SPRD_{t₀} = Spread reflecting the financing cost over the Overnight Interest Rate at the previous calculation date
- SPRDFlag = Flag set to 0 or 1 to indicate whether or not the spread term is included in the calculation. Currently set to 1

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2.2 Base date and base values

Index Name	Base Date	Base Value
FTSE MIB Leveraged	30 Dec 1999	10,000
FTSE MIB Super Leveraged	30 Dec 1999	10,000
FTSE MIB Ultra Leveraged	30 Dec 1999	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 The FTSE MIB Leveraged Series 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 and Total Return Indices compared to the previous trading day's closing level. The treatment for adverse market movements depends on whether the index is calculated EOD.
- 2.5.2 For EOD calculations the total daily loss to the index incurred from the performance term is limited to 50%. The daily adverse movement in the underlying index is capped at a multiple of 50% based on the leverage ratio, using the formula

Where:

- DailyMaxLoss = 50%
- k = Multiple reflecting the leverage ratio (2 for Leveraged; 3 for Super Leveraged; 4 for Ultra Leveraged)

2.6 Finance cost calculation

2.6.1 The finance cost is calculated on a simple basis.

2.6.2 For EUR based indices a day count of 360 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 (EONIA)
- $DayCountBasis$ = Days in year for simple interest calculation (EUR = 360)

2.6.3 The actual financing cost for d_{t,t_0} calendar days would be:

$$\left[(k - 1) \cdot \left(\frac{ONIntRate_{t_0}}{DayCountBasis} \right) \cdot d_{t,t_0} \right]$$

Where:

- d_{t,t_0} = number of calendar days between t and t_0
- k = Leveraged ratio (2 for Leveraged, 3 for Super Leveraged, 4 for Ultra Leveraged)

2.7 Liquidity spread term

2.7.1 A pre-requisite for implementing a leveraged strategy is sourcing liquidity to finance the leveraged position. This means sourcing long term liquidity (i.e. paying long term rates). Prior to June 2006, liquidity was cheap and stable, but after that date there was a steep rise in the spread between 12m interest rates and the overnight interest rate due to credit drying up.

2.7.2 The liquidity spread can be observed as the long term interest rate less the overnight rate swap price.

$$SPRD_{t_0} = IR_{12m} - Swap_{12m}$$

where:

- $SPRD_{t_0}$ = Liquidity spread for previous calculation date t_0
- IR_{12m} = 12m interest rate e.g. Euribor 12m
- $Swap_{12m}$ = Swap 12m vs. O/N

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2.7.3 In order to accurately reflect the reality of wider liquidity spreads than historically available, an addition term has been introduced into the model to represent the liquidity spread between 12m interest rates and the overnight interest rate used for the financing cost term.

2.7.4 The liquidity spread term for $d_{t,t0}$ calendar days is given by:

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

where:

- $SPRD_{t0}$ = Liquidity spread for previous calculation date $t0$
- $d_{t,t0}$ = number of calendar days between t and $t0$.
- k = Leveraged ratio (2 for Leveraged, 3 for Super Leveraged, 4 for Ultra Leveraged)
- $SPRDFlag$ = A flag set to 0 or 1 to include or exclude the term; currently set to 1
- $DayCountBasis$ = Days in year for simple interest calculation (EUR = 360)

2.7.5 The flag to include or exclude the liquidity spread term has, historically, been set at 0. It was set to 1 from 01 July 2007 when the spread between overnight interest rates and 12m rates started to widen and become significant. Notice will be given to the market when this is reset to zero if spreads narrow so that they are insignificant..

2.8 Trading suspension

2.8.1 The FTSE MIB Leveraged Series is calculated on the same days as the underlying FTSE MIB Indexes. If there is suspension of the underlying FTSE MIB Indexes the FTSE MIB Leveraged Series will be calculated using the latest prices available.

3. Data accreditation

3.1 EONIA – Euro OverNight Index Average

3.1.1 Eonia® (Euro OverNight Index Average) is the effective overnight reference interest rate for the euro. It is computed as a weighted average of all overnight unsecured lending transactions undertaken in the interbank market, initiated within the euro area by the contributing banks.

Eonia® is computed with the help of the European Central Bank.

3.1.2 The banks contributing to Eonia® are the same as the Panel Banks contributing to Euribor®.

The contributors to Euribor® are the banks with the highest volume of business in the euro zone money markets. The panel of banks contributing to Euribor® consists of:

- Banks from EU countries participating in the euro from the outset.
- Banks from EU countries not participating in the euro from the outset.
- Large international banks from non-EU countries but with important euro zone operations.

3.1.3 Historical data back to 1999 can be found at http://www.euribor.org/html/content/eonia_data.html

3.1.4 The ECB shall aim to make the computed rate available to Telerate (now Reuters) for publication as soon as possible so that Eonia® can be published between 6.45 p.m. and 7.00 p.m. (CET) on the same evening.

3.1.5 Reuters publishes the Eonia® reference rate on Reuters page "EONIA=", which is made available to all its subscribers and to other data vendors.

3.1.6 Euribor® and Eonia® are worldwide registered trademarks of Euribor FBE. All rights reserved

Source: Euribor FBE

3.2 EURIBOR – 12m Interest Rate

3.2.1 European banks considered that the introduction, in 1999, of the single currency made it necessary to establish a new interbank reference rate within the Economic and Monetary Union: Euribor® (Euro Interbank Offered Rate). Euribor® is the benchmark rate of the large euro money market that has emerged since 1999. It is sponsored by the European Banking Federation (EBF), which represents the interests of some 5,000 European banks, and by the Financial Markets Association (ACI). Euribor® was first published on 30 December 1998 for value 4 January 1999.

3.2.2 Euribor® is the rate at which Euro interbank term deposits are offered by one prime bank to another prime bank within the EMU zone, and is published at 11:00 a.m. (CET) for spot value (T+2).

3.2.3 The choice of banks quoting for Euribor® is based on market criteria. These banks are of first class market standing and they have been selected to

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ensure that the diversity of the euro money market is adequately reflected, thereby making Euribor® an efficient and representative benchmark.

- 3.2.4 A strict Code of Conduct sets out rules covering, amongst other things:
- ▶ the criteria used to determine which banks may belong to the panel of banks
 - ▶ the obligations of the Panel Banks
 - ▶ the tasks and the composition of the Steering Committee, which is responsible for overseeing **Euribor®**.
- 3.2.5 Thomson-Reuters has been chosen as the screen service provider responsible for computing and also publishing Euribor®.
- 3.2.6 Since its launch, Euribor® has become a reality on the derivatives markets and is the underlying rate of many derivatives transactions, both OTC and exchange-traded.

Source: Euribor FBE

3.3 EONIA Swap Index

- 3.3.1 EONIA SWAP INDEX is the new derivatives market reference rate for the Euro sponsored by EURIBOR FBE.
- 3.3.2 EONIA SWAP INDEX is the average rate at which, at 11:00 Brussels time, a representative panel of prime banks provide daily quotes, rounded to three decimal places, that each Panel Bank believes is the Mid Market rate of EONIA swap quotations between prime banks. It is quoted on an actual/360 day basis.
- 3.3.3 An "EONIA swap" is an interest rate swap transaction, where one party agrees to receive/pay a fixed rate to another party, against paying/receiving a floating rate named EONIA.
- 3.3.4 EONIA SWAP INDEX is published by REUTERS on page "EONIAINDEX". REUTERS is the sole official screen service provider for EONIA SWAP INDEX.
- 3.3.5 EURIBOR FBE has been notified that EONIA SWAP INDEX would also be displayed on the screens of Bloomberg (EBF <GO>).
- 3.3.6 Historical data for EONIA SWAP INDEX can be found on REUTERS (this is for a period going back one month) and this website.
- 3.3.7 EONIA SWAP INDEX was launched on 20 June 2005.

Source: Euribor FBE

4. Glossary of terms

4.1 EONIA – Euro OverNight Index Average

4.2 EURIBOR – Euro Interbank Offered Rate

5. Appendix

5.1 Example calculation

- 5.1.1 Calculate the FTSE MIB Ultra Leveraged value for Friday 02 January 2009 (t).

Model Inputs:

EONIA (30 Dec 2008)	= 226.5 bps
Day count basis	= 360
Leverage ratio	= 4
SPRDFlag	= 1
12m Euribor	= 308.5 bps
EONIA 1Yr Swap	= 155.4 bps
SPRD	= 153.1 bps
FTSE MIB Index (PI_{t_0})	= 19459.53
FTSE MIB Index (PI_t)	= 19952.75
FTSE MIB Index (TRI_{t_0})	= 27061.78
FTSE MIB Index (TRI_t)	= 27747.69
FTSE MIB Ultra Leveraged value ($levIndex_PI_{t_0}$)	= 10.9380
FTSE MIB Ultra Leveraged value ($levIndex_TRI_{t_0}$)	= 37.4622
Previous trading day (t_0)	= 30 Dec 2008

Model Outputs

Number of days interest (d_{t,t_0})	= 3
Ultra Leveraged value ($levIndex_PI_t$)	= 12.0366
Ultra Leveraged value ($levIndex_TRI_t$)	= 41.2248

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5.2 Contacting FTSE

Further information on the FTSE MIB Leveraged Series is available from FTSE, who will also welcome comments on these Ground Rules.

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