



FTSE Daily Short Indexes

v2.0



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Section 1

Introduction

1.0 Introduction

1.1 General

The FTSE Daily Short Indexes (Daily Short indexes) aim to reflect the performance of a multiple of the inverse daily performance of an underlying index.

1.2 Objective

The objective of the Daily Short indexes is to reflect the inverse leveraged performance of the underlying index, where inverse leverage levels are reset daily. The indexes take into account the five components of the performance of short indexes.

1. Capital gains associated with the underlying index
2. Cash dividends paid by securities in the underlying index
3. The interest income on capital associated with the short sale of the underlying index.
4. Stock borrowing costs associated with short stock positions.
5. Index rebalancing costs

1.3 Index features, terms, base dates and base values

The features of each index, including base dates, base values, index terms, index calculation times and vendor codes can be found at:

[Real Time Short and Leveraged Index Features.xlsx](#)

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

1.5 Computational accuracy

The index will be calculated to 13 decimal figures and published rounded to 2 decimal places.

1.6 Frequency and time of calculation

The Daily Short indexes will be calculated intra-day on a 15 second pulsed basis.

1.7 Trading suspension

The Daily Short indexes are calculated on the same days as the underlying reference indexes are calculated. If there is a suspension of a relevant underlying reference index the Daily Short index will be calculated using the latest value available and will then itself be suspended.

1.8 FTSE Russell

FTSE Russell is a trading name of FTSE International Limited (FTSE), Frank Russell Company (Russell), FTSE TMX Global Debt Capital Markets Inc. and FTSE TMX Global Debt Capital Markets Limited (together, "FTSE TMX") and MTSNext Limited. FTSE, Russell and FTSE TMX are each benchmark administrators of indexes. References to FTSE Russell should be interpreted as a reference to the relevant benchmark administrator for the relevant index.

1.9 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.

1.10 Index users who choose to follow these indexes or to buy products that claim to follow this index series 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 or its licensors (or any person concerned with the preparation or publication of these Ground Rules) 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.

1.11 These Ground Rules

These Ground Rules provide information about the publication of the FTSE Daily Short Indexes and set out the methodology underlying them.

1.12 Status of the indexes

The status of the calculated indexes is determined both by the calculation status and with reference to status of the underlying reference index

A table of possible index status codes arising is shown below:

Index status codes	
Underlying Reference Index Status	Short Index Status
N (normal)	N (normal)
N (normal, during intraday reset)	X (exception, during intraday reset)
N (normal, post intraday reset)	R (index reset, post intraday reset)
K (part calculated)	N (normal)
I (indicative)	H (hold, calculate but don't publish and do not apply intraday resets)
H (hold)	H (hold)
C (closed)	C (closed)



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.

2.1.2 FTSE is responsible for the daily calculation, production and operation of the indexes and will:

- will maintain records of the index weightings of all constituents;
- make changes to the constituents and their weightings in accordance with the Ground Rules;
- carry out the periodic index reviews of the indexes 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 indexes.

2.2 Amendments to These Ground Rules

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



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:

[Queries_and_Complaints_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

The Index

4.0 The Index

4.1 Index calculation

The Daily Short Index Value is calculated as 1 plus the return (r) since the start of the current calculation session multiplied by the previous session's inverse leveraged index closing value.

$$SIDX_t = SIDX_s \times (1+r)$$

4.2 Return calculation (r)

The return r consists of the inverse leveraged performance of the underlying index plus the interest income from the short sales less stock borrowing and any rebalancing costs.

$$r = (LIP_t + II_{t,t-1} - SB_{t,t-1} - RB_t)$$

4.3 Inverse leveraged index performance (LIP_t)

The inverse leveraged performance arises as a result of selling the index multiple (K) times.

The inverse leveraged performance is calculated relative to the previous day's closing value on days where no intra-day reset occurs. If an intra-day reset occurs the leveraged index return is calculated relative to the previous session's final index value.

$$LIP_t = \left[-K \times \left(\frac{IDX_t}{IDX_s} - 1 \right) \right]$$

4.4 Interest income (II_{t,t-1})

The interest income arises on the cash proceeds received from selling short the underlying index. It is assumed that cash earns the overnight interest rate.

The interest income for D_{t,t-1} calendar days is:

$$II_{t,t-1} = \left[(K+1) \times \left(\frac{R_{t-1}}{\text{DayCountBasis}} \right) \times D_{t,t-1} \right]$$

In the event of interest rate (R_{t-1}) turning negative the interest income (II_{t,t-1}) will also be negative.

If an intra-day rebalance is triggered, no additional interest income is earned and thus no additional interest income is applied after an intra-day reset.

The interest income will be set to 0 (zero) for indexes where it is not be applicable

4.5 Stock borrowing cost (SB_{t,t-1})

The short positions require stock borrowing of K times from a stock lender. Stock lenders require collateral against the stock that they have lent. It is assumed that the lending is fully collateralised. The collateral is equal to K times the original cash proceeds from selling the underlying index.

The weighted average cost of borrowing is denoted by:

$$CB = \sum_{i=1}^n w_i \times c_i$$

Individual stock borrowing cost c_i , are provided by Markit Data Explorers.

The stock borrowing cost for $D_{t,t-1}$ calendar days is given by:

$$SB_{t,t-1} = K \times \left(\frac{CB}{\text{DayCountBasis}} \right) \times D_{t,t-1}$$

If an intra-day rebalance is triggered there is no additional stock borrowing cost and so no additional stock borrowing cost is applied after an intra-day reset.

A technical notice is issued at the close of the third Wednesday of each month providing notice of the new borrowing cost effective for the next month.

The new stock borrowing cost is effective after the close on the third Friday of the month.

The stock borrowing cost will be set to 0 (zero) for indexes where it is not be applicable

4.6 Inverse leveraged index rebalancing cost (RB_t)

This arises where stamp duty or other costs are applicable to changes in the underlying reference index. An additional rebalancing cost is applied after an intra-day reset occurs.

This term is only applicable to certain indexes. Other indexes use the default value of zero.

Applicable indexes are listed in the Appendix

$$RB_t = \left[K \times (K+1) \times \left(\left| \frac{IDX_t}{IDX_s} - 1 \right| \right) \times TC \right]$$

where

TC = StampDuty+Execution Cost

The rebalancing cost will be set to 0 (zero) for indexes where it is not be applicable

4.7 Extreme market movements

In order to mitigate the risk of total loss due to extreme market movements, an intra-day reset mechanism is employed. An intra-day reset is triggered by movements in the underlying index that are greater than specific limits shown in the table below.

To determine whether an intra-day reset is triggered, the most recent value of the underlying index is compared to the previous session's final level. If the gain in the underlying index is greater than or equal to the trigger level for the relevant level of leverage, the intra-day reset process is initiated.

The previous session's final level is normally the previous trading day's closing level, but in the case of an intra-day reset being triggered, it is the maximum underlying index value observed during the 15 minute observation period.

Leverage factors		
Index Name	Leverage Factor	Intra-day Reset Trigger Levels
FTSE Daily Short Index	1	25%
FTSE Daily Super Short Index	2	25%
FTSE Daily Ultra Short Index	3	20%

4.8 Intra-day reset procedure

The intra-day reset procedure is invoked if a predefined movement in the underlying index is exceeded, unless the time to the end of the calculation day is less than 17 minutes. In this situation the index will continue to be calculated normally.

If the time to the end of the day is greater than 17 minutes the following process is followed:

- i. The calculated index status is set to “X” and held for the duration of the 15 minute observation period.
- ii. The value of the underlying index at the beginning of the observation period is recorded.
- iii. All values of the underlying index during the 15 minute observation period are recorded.
- iv. The maximum value of the underlying index recorded during the observation period determines the session’s closing value, denoted as TRGs.
- v. The closing session value of the underlying index i.e. TRGs is published.
- vi. The index is held for a further 2 minutes to allow the reset process to complete. The index status is set to “R” and the index continues to publish values based on the TRGs.

The intra-day reset is carried out by simulating the beginning of a new business day. However no additional Interest income or Stock borrowing costs are included.

From the reset point onwards the return on the Daily Short index is simply the inverse leveraged return on the underlying index less any rebalancing costs associated with transaction costs on the portfolio where applicable

$$\frac{SIDX_t}{SIDX_s} - 1 = \left[K \times \left(\frac{IDX_t}{IDX_s} - 1 \right) \right] - \left[K \times (K+1) \times \left(\left| \frac{IDX_t}{IDX_s} - 1 \right| \right) \times TC \right]$$

In the event that subsequent movements of the underlying index after an intra-day reset result in an additional breach of the trigger levels, an additional intra-day reset will be invoked.

4.9 Reverse split

If the short index closes below the level of 100 a reverse split (consolidation) in the ratio of 100:1 will be implemented.

A technical notice will be issued to the market giving two business days’ notice of the implementation of the reverse split.

During the two day period the index will calculate normally and if an intra-day reset is triggered the intra-day reset procedure will come into effect as outlined in Rule 4.8 above.

The reverse split will be effective from the open on the third business day after the reverse split was triggered.

The rebased index level resulting from the reverse split is determined by the closing leveraged index level two business days after the trigger event scaled by 100.

For example if the closing short index level on the trigger day was 99.55 and the closing level two business days later was 87.50 the new rebased index level will be 8,750.

If during the two day period between the trigger event and the index rebasing, the leveraged index level recovers to a level above the trigger level the reverse split will still be applied.

If during the two day period between the trigger event and the index rebasing, the index continues to fall and becomes negative the short index will be set to zero and its calculation/publication discontinued. No reverse split will be applied.

4.10 **Cessation of index calculation**

In the event of the Daily Short index value becoming negative, the index value will be set to zero and its calculation/publication discontinued.

If an overnight change of the underlying index leads to an opening value for the calculated short index of zero (or below), the Daily Short index value will be set to zero and its calculation/publication discontinued.

If an overnight change causes an adverse movement that breaches a stop-loss level but does not lead to the short index going to zero or negative a regular intraday rebalancing will be triggered and the observation period procedure will come into effect.

Section 5

Formula Symbols

5.0 Formula Symbols

5.1 Subscripts

- s = Previous session
- t = Current session
- $t-1$ = Previous calculation day

5.2 Main Terms

- CB = Cost of borrowing at the data cut date.
- c_i = Cost of borrowing of the constituent i on the data cut date.
- $DayCountBasis$ = Day count convention for the interest rates
- $D_{t,t-1}$ = Number of calendar days between current session and previous calculation date $t-1$
- $I_{t,t-1}$ = Interest income
- K = Leverage factor.
- LIP_t = Inverse leveraged performance at time t .
- n = Number of constituents in the underlying index.
- r = Session return
- RB_t = Current session Leveraged Index Rebalance cost
- R_{t-1} = Annualised overnight unsecured lending rate at $t-1$
- $SB_{t,t-1}$ = Stock Borrowing Fee based on the closing constituents on the second Friday of month, announced the third Wednesday on the month and updated after the close of the third Friday in the month.
- SD = Stamp duty rate on stock traded for portfolio rebalancing (only applicable to some markets. Default is zero).
- $SIDX_s$ = Previous session Daily Short Index value
- $SIDX_t$ = Current session Daily Short Index value

- IDX_s = Previous session underlying Index level
- IDX_t = Most recent underlying Index level
- w_i = Free-float adjusted weight of constituent i in the underlying index on the data cut date.

Section 6

Glossary

6.0 Glossary

6.1 EONIA – Euro Overnight Index Average

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.

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

6.2 HIBOR – Hong Kong Interbank Offered Rate

HIBOR is the annualised rate charged for interbank lending on Hong Kong Dollar (HKD) denominated instruments, for a specified period ranging from overnight to 12 months. It is calculated each business day at 11:00 am local time based on quotations from 20 banks designated by the Hong Kong Association of Banks (HKAB)

6.3 SONIA – Sterling Overnight Interbank Average Rate

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 5:00 pm London time each day.

6.4 TIBOR – Tokyo Interbank Offered Rate

TIBOR is the daily reference rate based on the interest rates at which banks offer to lend unsecured funds to other banks in the Japan wholesale money market. The quotes are provided at about 11:00 am JST.



Section 7

Example Calculation

7.0 Example Calculation

7.1 Example calculation

7.1.1 Calculate the FTSE 100 Daily Super Short RT Gross RT Index value for Tuesday 03 January 2012

Model Inputs:

SONIA	= 45.78bps
Day count basis	= 365
Stock Borrowing Fee	= 15bps
Leverage factor	= 2
SIDXs (UKXI2X)	= 10000
IDXs (UKXDUK)	= 3771.10
IDXt (UKXDUK)	= 3857.48
Previous trading day (t-1)	= 30 Dec 2011

Model Outputs

Number of actual calendar days (Dt,t-1)	= 4
Inverse Return on Underlying Index	= -0.022906
Leveraged Inverse Return	= -0.045812
Interest Income	= 0.000151
Stock Borrowing Cost	= 0.000033
Return (r)	= -0.045694
1+r	= 0.954306
SIDXt (UKXI2X)	= 9543.06

7.2 List of Short Indexes

7.2.1 Total return index is used as underlying index for the indices listed in the Rule 7.2.1.1

7.2.1.1. With Finance Cost and Liquidity Spread

Index Code	Index name	Leverage Factor
1. FCNACS1X	FTSE N Share Daily Short Index	1
2. FCNACS2X	FTSE N Share 2x Daily Short Index	2
3. FCNACS3X	FTSE N Share 3x Daily Short Index	3
4. FMIBI1X	FTSE MIB Daily Short Strategy RT Gross TR Index	1
5. FMIBI2X	FTSE MIB Daily Super Short Strategy RT Gross TR Index	2
6. FMIBI3X	FTSE MIB Daily Ultra Short Strategy RT Gross TR Index	3
7. FMIBI5X	x5 Daily Short Strategy FTSE MIB RT Gross TR Index	5
8. FMIBI1	FTSE MIB Daily Short Index	1
9. FMIBI2	FTSE MIB Daily Super Short Index	2
10. FTGMIL1X	FTSE Gold Mines Daily Short Index	1
11. FTGMIL2X	FTSE Gold Mines 2x Daily Short Index	2
12. FTGMIL3X	FTSE Gold Mines 3x Daily Short Index	3
13. FTSTIS1X	FTSE STI Daily Short Index	1
14. FTSTIS2X	FTSE STI 2x Daily Short Index	2
15. FTSTIS3X	FTSE STI 3x Daily Short Index	3
16. UKXI1X	FTSE 100 Daily Short Strategy RT Gross TR Index	1
17. UKXI2X	FTSE 100 Daily Super Short Strategy RT Gross TR Index	2
18. UKXI3X	FTSE 100 Daily Ultra Short Strategy RT Gross TR Index	3
19. UKXI5X	x5 Daily Short Strategy FTSE 100 RT Gross TR Index	5
20. UKXI2	FTSE 100 Daily Super Short Index	2
21. UKXS	FTSE 100 Daily Short Index	1
22. MCXI1X	FTSE 250 Daily Short Strategy RT Gross TR Index	1
23. MCXI2X	FTSE 250 Daily Super Short Strategy RT Gross TR Index	2
24. MCXI3X	FTSE 250 Daily Ultra Short Strategy RT Gross TR Index	3
25. SLQUSS1	FTSE USA Large Cap Super Liquid Daily Short Index	1
26. SLQUSS2	FTSE USA Large Cap Super Liquid 2x Daily Short Index	2
27. SLQUSS3	FTSE USA Large Cap Super Liquid 3x Daily Short Index	3
28. SLQUKMS1	FTSE UK Mid Cap Super Liquid Daily Short Index	1
29. SLQUKMS2	FTSE UK Mid Cap Super Liquid 2x Daily Short Index	2
30. SLQUKMS3	FTSE UK Mid Cap Super Liquid 3x Daily Short Index	3
31. SLQJPLS1	FTSE Japan Large Cap Super Liquid Daily Short Index	1
32. SLQJPLS2	FTSE Japan Large Cap Super Liquid 2x Daily Short Index	2
33. SLQJPLS3	FTSE Japan Large Cap Super Liquid 3x Daily Short Index	3
34. SLQSPS1X	FTSE Spain Super Liquid Daily Short Index	1
35. SLQSPS2X	FTSE Spain Super Liquid 2x Daily Short Index	2
36. SLQSPS3X	FTSE Spain Super Liquid 3x Daily Short Index	3

Index Code	Index name	Leverage Factor
37. USCCLS1X	FTSE USA Small Cap Super Liquid Daily Short Index	1
38. USCCLS2X	FTSE USA Small Cap Super Liquid 2x Daily Short Index	2
39. USCCLS3X	FTSE USA Small Cap Super Liquid 3x Daily Short Index	3
40. XINUS1X	FTSE China 50 Daily Short Index	1
41. XINUS2X	FTSE China 50 2x Daily Short Index	2
42. XINUS3X	FTSE China 50 3x Daily Short Index	3
43. WIJPNS1X	FTSE Japan Daily Short Index	1
44. WIJPNS2X	FTSE Japan 2x Daily Short Index	2
45. WIJPNS3X	FTSE Japan 3x Daily Short Index	3

7.3 Stamp duty and execution cost

7.3.1 The table below contains the Stamp Duty and Execution Cost

STAMP DUTY AND EXECUTION COST			
Index Code	Index Name	Stamp Duty (%)	Execution Cost (%)
XIN0US1X	FTSE China 50 Daily Short Index	0.1	0.05
XIN0US2X	FTSE China 50 2x Daily Short Index	0.1	0.05
XIN0US3X	FTSE China 50 3x Daily Short Index	0.1	0.05

7.4 Historic stock borrowing fees

7.4.1 Stock Borrowing data is updated monthly and effective after the close of business on the third Friday of the month using data cut after the close on the second Friday of the month.

7.4.2 Stock Borrowing data is sourced from Markit Data Explorers, the aggregator of stock lending data.

7.4.3 Monthly updates are used from December 2008; prior to this an assumption was made about the level of stock lending fees.

7.5 A note on calculation of the back history

5 years of back history is available. Where available they have been calculated using a gross total return index on the underlying 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](#)

For further information on the FTSE Daily Short Indexes Ground Rules visit www.ftserussell.com or e-mail info@ftserussell.com. Contact details can also be found on this website.

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