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# FTSE Daily Leveraged Indexes

v2.0

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## Section 1

# Introduction

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### 1.0 Introduction

#### 1.1 General

FTSE Daily Leveraged Indexes (Daily Leveraged indexes) aim to reflect a multiple of the daily performance of an underlying reference index.

#### 1.2 Objective

The objective of the Daily Leveraged indexes is to reflect the leveraged performance of an underlying index, after incorporating leverage financing costs. The Daily Leveraged indexes reflect five aspects of the performance of leveraged indexes.

- 1 Capital gains associated with the underlying index.
- 2 Cash dividends paid by the underlying securities net of withholding tax.
- 3 The financing costs of leverage.
- 4 The spread between overnight interest rates and the longer term 12 month interest rate.
- 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](#)

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

#### 1.4 Computational accuracy

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

#### 1.5 Frequency and time of calculation

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

## 1.6 Trading suspension

The Daily Leveraged 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 Leveraged index will be calculated using the latest value available and will then itself be suspended.

## 1.7 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.

1.8 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.

1.9 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.

## 1.10 These Ground Rules

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

## 1.11 Status of the Indexes

The status of the indexes is determined by the calculation status and by the status of the underlying reference index.

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

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



## Section 2

# Management Responsibilities

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### **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 index 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

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### 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

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### 4.0 The Index

#### 4.1 Index calculation

The Leveraged Index value is calculated as 1 plus the leveraged index return since the start of the current calculation session multiplied by the previous session leveraged index closing value.

$$LIDX_t = LIDX_s \times (1+r)$$

#### 4.2 Return calculation (r)

The return r consists of the leveraged return of the underlying index less the financing costs, liquidity spread and any rebalancing costs.

$$r = (LIR_t - FC_{t,t-1} - LS_{t,t-1} - RB_t)$$

#### 4.3 Leveraged index return calculation (LIRt)

The leveraged index return is a multiple (K) of the underlying index return.

The leveraged index return 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.

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

#### 4.4 Finance cost calculation (FC)

The finance cost arises as a result of raising capital to undertake the required levels of leverage.

The leveraged financing cost for  $D_{t,t-1}$  calendar days is:

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

In the event of interest rate ( $R_{t-1}$ ) turning negative the finance cost ( $FC_{t,t-1}$ ) is set to 0 (zero)

No additional financing cost is applied after an intra-day reset occurs.

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

#### 4.5 Liquidity spread cost (LS)

In order to reflect the reality of wider spreads between the interbank and the swap market rates post June 2007, a liquidity spread term was introduced.

The liquidity spread is the difference between the twelve month interbank interest rate and the 12 month overnight indexed swap rate.

$$\text{SPRD} = \text{IR} - \text{Swap}$$

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

$$\text{LS}_{t,t-1} = (K-1) \times \left( \frac{\text{SPRD}}{\text{DayCountBasis}} \right) \times D_{t,t-1}$$

The liquidity spread is set to zero if the spread becomes negative.

To obtain a representative number for the liquidity spread an average spread is calculated over the five business days prior to the notification date each month.

The liquidity spread is updated monthly and implemented after the close on the third Friday of the month and is effective from the next business day.

A technical notice is issued at the close, two business days prior to the effective date of the third Friday of each month giving notice of the applicable value for the next month. This is typically the Wednesday before the third Friday and is known as the notification date.

No additional liquidity spread cost is applied after an intra-day reset occurs.

Long-term interest and swap reference data used in the calculation of the liquidity spread can be found in the Appendix.

Historic liquidity spread values can be found on [www.ftserussell.com](http://www.ftserussell.com).

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

#### 4.6 **Leveraged Index rebalancing cost (RBt)**

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 a default value of zero. Applicable indexes are listed in the Appendix.

$$\text{RB}_t = \left[ K \times (K-1) \times \left( \left| \frac{\text{IDX}_t}{\text{IDX}_s} - 1 \right| \right) \right] \times \text{TC}$$

where

$$\text{TC} = \text{StampDuty} + \text{Execution Cost}$$

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. The intra-day reset is triggered by movements in the underlying index that are greater than the predefined 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 decline 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 minimum underlying index value observed during the 15 minute observation period.

Leverage factors		
Index Name	Leverage Factor	Intra-day Reset Trigger Levels
FTSE Daily Leveraged Index	2	25%
FTSE Daily Super Leveraged Index	3	20%
FTSE Daily Ultra Leveraged Index	4	15%

#### 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 minimum value of the underlying index recorded during the observation period determines the session’s closing value, denoted as TRNs.
- v. The closing session value of the underlying index i.e. TRNs 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 TRNs.

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

From the reset point onwards, the return on the leveraged index is the leveraged return on the underlying index less any rebalance costs associated with index transaction costs.

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

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 leveraged 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 observation period procedure will come into effect as outlined in 2.8 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 leveraged 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 leveraged 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 leveraged 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 results in an opening value of the leveraged index of zero (or below), the leveraged index value will be set to zero and its calculation/publication discontinued.

If an overnight change of the underlying index results in a breaches of the intra-day trigger limits but does not result in the leveraged index becoming zero or negative a standard intra-day reset will be triggered and the observation period procedure will come into effect.



## Section 5

# Formula Symbols

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### 5.0 Formula Symbols

#### 5.1 Subscripts

12m	=	12 month
s	=	Previous session
t	=	Current session
t-1	=	Previous calculation day

#### 5.2 Main Terms

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
FC	=	Finance cost
IR	=	12 month interbank interest rate
$R_{t-1}$	=	Annualised overnight unsecured lending rate at t-1
K	=	Leverage factor
$LIDX_s$	=	Previous session Leveraged Index value
$LIDX_t$	=	Current session Leveraged Index value
$LIR_t$	=	Current session Leveraged Index return
LS	=	Liquidity spread cost
r	=	Session return
$RB_t$	=	Current session Leveraged Index Rebalance cost
SD	=	Stamp duty as a percentage of the value of stock traded.
SPRD	=	Spread reflecting difference between the 12 month interbank rate and the 12 month overnight indexed swap rate.
Swap	=	12 month Capitalised Overnight Rate
$IDX_s$	=	Previous session underlying Index level
$IDX_t$	=	Most recent underlying Index level

## Section 6

# Glossary

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### 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 EONIA Swap Index

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.

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.

EONIA SWAP INDEX is published by REUTERS on page "EONIAINDEX" and Bloomberg (EBF <GO>).

#### 6.3 EURIBOR – 12m Interest Rate

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).

#### 6.4 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.

#### 6.5 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.

## 6.6 **TONAR – Tokyo Overnight Average Rate**

TONAR is the weighted average rate of all unsecured overnight cash transactions between financial institutions. The rate is published by the Bank of Japan (BOJ). The rate is published at 10:00 am JST, the next business day.



## Section 7

# Example Calculation

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### 7.0 Example Calculation

#### 7.1 Example calculation

Calculate the FTSE MIB Daily Ultra Leveraged Index value (LIDX) for Monday 02 January 2012 (t). The reference underlying index is FTSE MIB Net-of-Tax (Lux) TR Index.

#### Model Inputs:

EONIA (30 Dec 2011)	= 62.9 bps
Day count basis	= 360
Leverage factor	= 4
12m EURIBOR	= 194.7 bps
EONIA 1Yr Swap	= 38.2 bps
SPRD	= 156.5 bps
IDX <sub>s</sub> (FTSEMIBN)	= 20707.62
IDX <sub>t</sub> (FTSEMIBN)	= 21208.35
LIDX <sub>s</sub> (FMIBL4X)	= 10000
Previous trading day (t-1)	= 30 Dec 2011

#### Model Outputs

Number of calendar days ( $D_{t,t-1}$ )	= 3
Return on Underlying Index	= 0.024181
Leveraged Return	= 0.096724
Finance Cost	= 0.000157
Liquidity Spread Cost	= 0.000391
Return (r)	= 0.09618
1+r	= 1.096175
LIDX <sub>t</sub> (FMIBL4X)	= 10961.75

## 7.2 List of Leveraged Indexes

7.2.1 Total return index is used as underlying index for the indices listed in the Rules 7.2.1.1 and 7.2.1.2

7.2.1.1 With Finance Cost and Liquidity Spread

Index Code	Index name	Leverage Factor
1. FCNACL2X	FTSE N Share 2x Daily Leveraged Index	2
2. FCNACL3X	FTSE N Share 3x Daily Leveraged Index	3
3. FMIBL2X	FTSE MIB Daily Leveraged RT Net-of-Tax (Lux) TR Index	2
4. FMIBL3X	FTSE MIB Daily Super Leveraged RT Net-of-Tax (Lux) TR Index	3
5. FMIBL4X	FTSE MIB Daily Ultra Leveraged RT Net-of-Tax (Lux) TR Index	4
6. FMIBL5X	x5 Daily Leveraged FTSE MIB Daily RT Net-of-Tax (Lux) TR Index	5
7. FMIBL2	FTSE MIB Daily Leveraged Index	2
8. FTGMIL2X	FTSE Gold Mines 2x Daily Leverage Index	2
9. FTGMIL3X	FTSE Gold Mines 3x Daily Leverage Index	3
10. FTSTIL2X	FTSE STI 2x Daily Leverage Index	2
11. FTSTIL3X	FTSE STI 3x Daily Leverage Index	3
12. UKXL2X	FTSE 100 Daily Leveraged RT TR Index	2
13. UKXL3X	FTSE 100 Daily Super Leveraged RT TR Index	3
14. UKXL4X	FTSE 100 Daily Ultra Leveraged RT TR Index	4
15. UKXL5X	x5 Daily Leveraged FTSE 100 RT TR Index	5
16. UKXL2	FTSE 100 Daily Leveraged Index	2
17. MCXL2X	FTSE 250 Daily Leveraged RT TR Index	2
18. MCXL3X	FTSE 250 Daily Super Leveraged RT TR Index	3
19. MCXL4X	FTSE 250 Daily Ultra Leveraged RT TR Index	4
20. SLQUSL2	FTSE USA Large Cap Super Liquid 2x Daily Leveraged Index	2
21. SLQUSL3	FTSE USA Large Cap Super Liquid 3x Daily Leveraged Index	3
22. SLQUSL4	FTSE USA Large Cap Super Liquid 4x Daily Leveraged Index	4
23. SLQUKML2	FTSE UK Mid Cap Super Liquid 2x Daily Leveraged Index	2
24. SLQUKML3	FTSE UK Mid Cap Super Liquid 3x Daily Leveraged Index	3
25. SLQUKML4	FTSE UK Mid Cap Super Liquid 4x Daily Leveraged Index	4
26. SLQJPLL2	FTSE Japan Large Cap Super Liquid 2x Daily Leveraged Index	2
27. SLQJPLL3	FTSE Japan Large Cap Super Liquid 3x Daily Leveraged Index	3
28. SLQSPL2X	FTSE Spain Super Liquid 2x Daily Leveraged Index	2
29. SLQSPL3X	FTSE Spain Super Liquid 3x Daily Leveraged Index	3
30. USCSLL2X	FTSE USA Small Cap Super Liquid 2x Daily Leveraged Index	2
31. USCSLL3X	FTSE USA Small Cap Super Liquid 3x Daily Leveraged Index	3
32. XIN0UL2X	FTSE China 50 2x Daily Leveraged Index	2
33. XIN0UL3X	FTSE China 50 3x Daily Leveraged Index	3
34. WIJPNL2X	FTSE Japan 2x Daily Leveraged Index	2
35. WIJPNL3X	FTSE Japan 3x Daily Leveraged Index	3

### 7.2.1.2 With no Finance Cost or Liquidity Spread

Index Code	Index name	Leverage Factor
36. DXNAL1QX	FTSE Developed Ex NA 1.25x Daily Leveraged No Spread Index	1.25
37. FTEML1QX	FTSE Emerging 1.25x Daily Leveraged No Spread Index	1.25
38. R1GLEV125	Russell 1000 Growth 1.25x Daily Leveraged Index	1.25
39. R1VLEV125	Russell 1000 Value 1.25x Daily Leveraged Index	1.25
40. R2LEV125	Russell 2000 Daily Leveraged Index	1.25

### 7.3 Overnight, 12m and Swap Rates

7.3.1 The table below contains the overnight, 12m and swap rates used for the corresponding base currency and their Bloomberg Tickers .

Overnight, 12m and Swap Rates			
	O/N	12M	Swap 12m vs. O/N
Ccy	Name	Name	Name
EUR	EONIA	EURIBOR 12M	EUR Swap (EONIA) 1YR
USD	Fed Fund Eff Rate	LIBOR USD 12M	USD Swap OIS 1YR
GBP	SONIA	LIBOR GBP 12M	GBP Swap vs. SONIA 1YR
CHF	SARON	LIBOR CHF 12M	CHF Swap Fix 1YR vs. 6M
JPY	TONAR	TIBOR Fixing Rate 1 Year	JPY Swap vs TONAR 1Yr
HKD	HIBOR	HKD 12M HIBOR	HKD Swap 1Y

### 7.4 Stamp Duty and Execution Cost

7.4.1 The table below contains the Stamp Duty and Execution Cost

STAMP DUTY AND EXECUTION COST			
Index Code	Index Name	Stamp Duty (%)	Execution Cost (%)
XIN0UL2X	FTSE China 50 2x Daily Leveraged Index	0.1	0.05
XIN0UL3X	FTSE China 50 3x Daily Leveraged Index	0.1	0.05

### 7.5 Historic liquidity spread values

7.5.1 Liquidity spread values are updated monthly and effective after the close of business on the third Friday of the month.

7.5.2 Prior to June 2007 obtaining liquidity in the market to finance the leveraged positions used the spread between a 1 year interest rate and overnight rate used to fund the capital needed for the leveraged position was negligible.

7.5.3 Post 2007 the spread between a 1 year interest rate and overnight rate widened due to the credit crisis. From July 2007 onwards the change in liquidity spread is taken into account in the index calculation model.

7.5.4 This is reflected as the difference between a long term rate (1Y) and 1Y Capitalised Overnight Rate (swap price).

### 7.6 A note on calculating back histories

5 years of back history is available for the Daily Leveraged indexes. Where available they have been calculated using a net of withholding tax total return index on the underlying index.

Prior to July 2007, the Liquidity Spread was set at zero, as liquidity was plentiful. After the financial crisis of 2007, a calculated spread has been used.



## Appendix A: Further Information

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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 Leveraged Indexes Ground Rules visit [www.ftserussell.com](http://www.ftserussell.com) or e-mail [info@ftserussell.com](mailto:info@ftserussell.com). Contact details can also be found on this website.

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