FTSE Currency FRB Index Series

Index Methodology

Developed with Record Currency Management

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1. Introduction

1.1 Overview

1.1.1 The FTSE Currency FRB Index Series is a group of investable indices that replicate the structural excess returns of the forward rate bias or "carry" experienced in global currency markets.

1.1.2 Carry trade strategies are designed to take advantage of the forward rate bias in currency markets.

1.1.3 There is widely documented empirical evidence that confirms the observed tendency for higher interest rate developed market currencies' return (the combination of the spot and currency forward returns) to outperform lower interest rate currencies' return. This can be captured by going long the higher yielding currency and short the lower yielding currency.

1.1.4 The FTSE Currency FRB Index Series comprises both Excess Return Indices and Total Return Indices.

1.2 Index construction

Details of the precise calculations used in the index series are available separately in: *FTSE Currency FRB Index Series - Index Calculation* document that should be read in conjunction with this document

1.2.1 The FTSE Currency FRB Index Series consists of indices using all the possible currency pairs that can be produced from the number of currencies in each index. The currency pairs are equally weighted within the index.

1.2.2 The constituent currency pairs will remain unchanged throughout the life of the index. However the direction (which currency is long and which is short) of each currency pair is determined at each month end for the coming month based upon the interest rate difference implied by the mid spot and forward rates of each currency pair.

1.2.3 The indices use a 1 month currency forward for each currency pair. At the end of the month each currency forward will expire giving rise to a profit or loss for each currency pair.

1.2.4 The profit or loss for each pair is calculated and the nominal NAV of the index is adjusted accordingly. Each pair is re-balanced, to maintain its equal weighting in the index. The process then repeats itself for the next month.

1.2.5 The indices are calculated on a daily basis. This is done by marking-to-market the open forward positions in the index and converting these valuations into the base currency of each index on a daily basis.

1.2.6 The total return indices are calculated by adding the overnight interest rate return of the indices' base currency to the excess return calculation.

2. Available Indices

2.1 FTSE Currency FRB5 Index Series

2.1.1 The initial index series, the FTSE Currency FRB5 Index Series, consists of 10 equally weighted currency pairs based upon the 5 most liquid developed market currencies. The 5 currencies are the US Dollar (USD), Euro (EUR)(German Deutschmark (DEM) prior to 1999), Japanese Yen (JPY), British Pound (GBP) and Swiss Franc (CHF).

2.1.2 The FTSE Currency FRB5 Index Series indices are available in the following base currencies:

USD, EUR, JPY, GBP and CHF

2.2 FTSE Currency FRB10 Index Series

2.2.1 The FTSE Currency FRB10 Index Series consists of 45 equally weighted currency pairs based upon those currencies in the FTSE Currency FRB5 Index Series plus the 5 next most liquid developed market currencies. In addition to those in the FTSE Currency FRB5 Index Series these currencies are the Australian Dollar (AUD), Canadian Dollar (CAD), New Zealand Dollar (NZD), Norwegian Krone (NOK) and Swedish Krona (SEK).

2.2.2 The FTSE Currency FRB10 Index Series indices are available in the following base currencies:

USD, EUR, JPY, GBP, CHF, AUD and CAD

3. Base dates and base values

3.1 FTSE Currency FRB5 Index Series

Index Name	Base Date	Base Value
FTSE Currency FRB5 USD Excess Return Index	30 Dec 1998	1,000
FTSE Currency FRB5 USD Total Return Index	30 Dec 1998	1,000
FTSE Currency FRB5 JPY Excess Return Index	30 Dec 1998	1,000
FTSE Currency FRB5 JPY Total Return Index	30 Dec 1998	1,000
FTSE Currency FRB5 EUR Excess Return Index	30 Dec 1998	1,000
FTSE Currency FRB5 EUR Total Return Index	30 Dec 1998	1,000
FTSE Currency FRB5 GBP Excess Return Index	30 Dec 1998	1,000
FTSE Currency FRB5 GBP Total Return Index	30 Dec 1998	1,000
FTSE Currency FRB5 CHF Excess Return Index	30 Dec 1998	1,000
FTSE Currency FRB5 CHF Total Return Index	30 Dec 1998	1,000

Source: FTSE Group

3.2 FTSE Currency FRB10 Index Series

Index Name	Base Date	Base Value
FTSE Currency FRB10 USD Excess Return Index	30 Dec 1998	1,000
FTSE Currency FRB10 USD Total Return Index	30 Dec 1998	1,000
FTSE Currency FRB10 JPY Excess Return Index	30 Dec 1998	1,000
FTSE Currency FRB10 JPY Total Return Index	30 Dec 1998	1,000
FTSE Currency FRB10 EUR Excess Return Index	30 Dec 1998	1,000
FTSE Currency FRB10 EUR Total Return Index	30 Dec 1998	1,000
FTSE Currency FRB10 GBP Excess Return Index	30 Dec 1998	1,000
FTSE Currency FRB10 GBP Total Return Index	30 Dec 1998	1,000
FTSE Currency FRB10 CHF Excess Return Index	30 Dec 1998	1,000
FTSE Currency FRB10 CHF Total Return Index	30 Dec 1998	1,000
FTSE Currency FRB10 AUD Excess Return Index	30 Dec 1998	1,000
FTSE Currency FRB10 AUD Total Return Index	30 Dec 1998	1,000
FTSE Currency FRB10 CAD Excess Return Index	30 Dec 1998	1,000
FTSE Currency FRB10 CAD Total Return Index	30 Dec 1998	1,000

Source: FTSE Group

4. Index Calculation

4.1 Computational accuracy

4.1.1 The index will be calculated to 15 decimal figures and published to 3 decimal places.

4.2 Frequency of calculation

4.2.1 FTSE Currency FRB Index Series are calculated on an end-of-day (EOD) basis at approximately 5:30 p.m. London time, as soon as WM/Reuters data is made available. The index will be calculated at some point later than 5.30pm if the WM/Reuters data files have not been received by this time.

4.3 Closing spot rates

4.3.1 The FTSE Currency FRB Index Series use the WM/Reuters Closing Spot Rates (closing bid and offer rates) normally collated at 4:00 p.m. UK time.

4.3.2 The WM/Reuters Closing Spot Rates are quoted against three base currencies: Euro, Pound Sterling and U.S. Dollar. Convention dictates which currency is quoted against which base currency and which rates file is used.

4.3.3 Spot mid rates are calculated as the arithmetic mean of the spot bid and spot offer rates using the following formula:

$$MidRate = \left(\frac{Bid + Offer}{2} \right)$$

4.3.4 For inverted exchange rates the spot mid rate is calculated as the arithmetic mean of the inverted spot bid rate and inverted spot offer rate. By inverting the rates the spot bid rate now becomes the new spot offer rate and likewise the inverted spot offer rate becomes the new spot bid rate.

4.3.5 Crossed spot rates: where there are no directly quoted rates available the crossed spot rates are calculated via the U.S. Dollar. For example the crossed spot rate for CHF/JPY is calculated as:

CHF/JPY Bid = (USD/JPY Bid) / (USD/CHF Offer)

CHF/JPY Offer = (USD/JPY Offer) / (USD/CHF Bid)

4.3.6 WM/Reuters Closing Spot Rates are available on all normal business days *except* on WM market holidays which can be found at:

http://www.wmcompany.com/wmr/Publications/ServiceHolidayCalendar/index.htm

4.4 Closing forward rates

4.4.1 The FTSE Currency FRB Index Series use the WM/Reuters Closing 1M Forward Rates (closing LHS and RHS rates) normally collated at 4:00 p.m. UK time consistent with the Closing Spot Rates.

4.4.2 Closing Forward Rates are taken from the WM/Reuters Closing Forward Rates files. *They are not derived from the WM/Reuters Closing Spot Rates and WM/Reuters Closing Forward Premium product files.* This is due to rounding differences arising from constructing forward rates from the spot and premium data.

4.4.3 The premium/discount is calculated as the difference between the Closing Forward Rates and Closing Spot Rates of a given currency pair.

4.4.4 By market convention the bid for a Forward Contract is referred to as the LHS (left hand side) and conversely, the offer is referred to as the RHS (right hand side).

4.4.5 Mid rates are calculated using the arithmetic mean of the Closing Forward LHS and RHS Rates.

4.4.6 Crossed Closing Forward Rates are calculated on the same basis as the Crossed Closing Spot Rates (see 4.3.5).

4.5 Index availability

4.5.1 The index will be calculated on all days except WM/Reuters holidays (see 4.3.6).

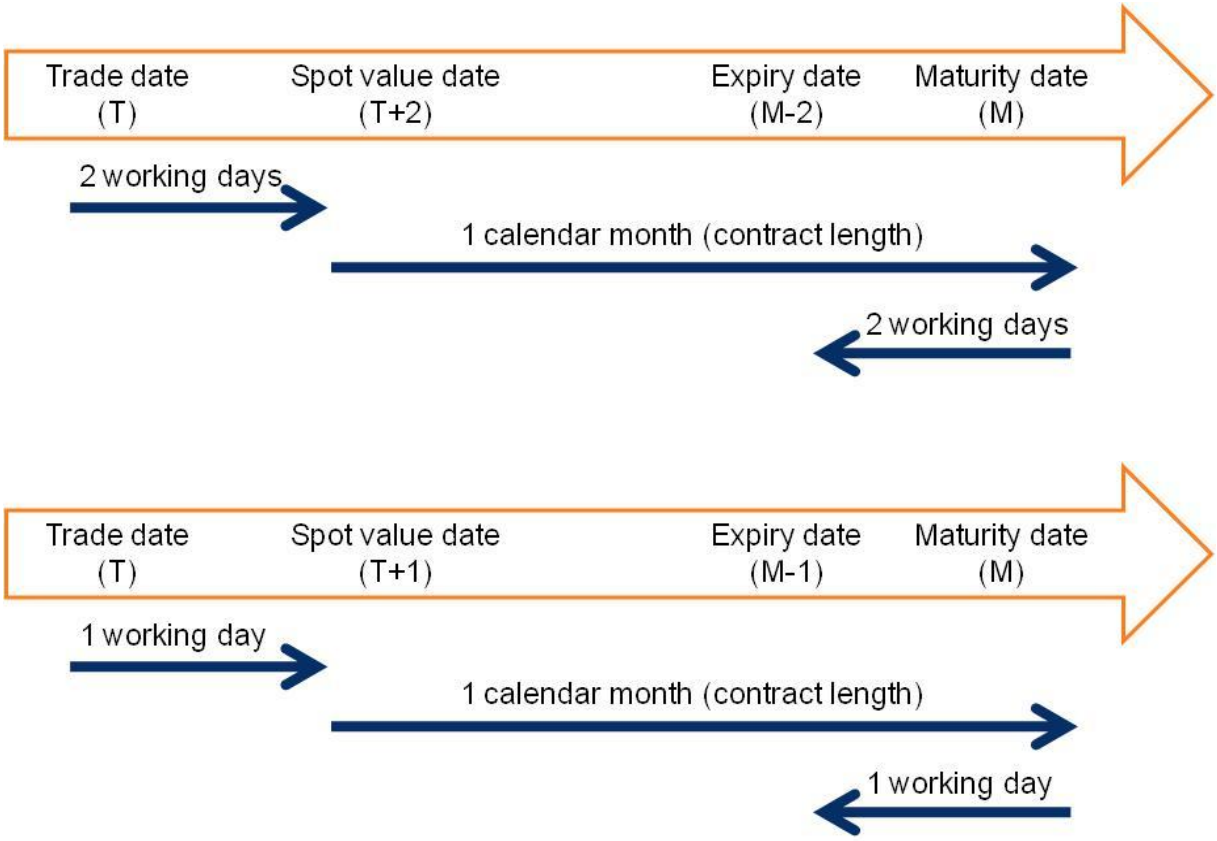
5. Index Maintenance

5.1 Rebalancing

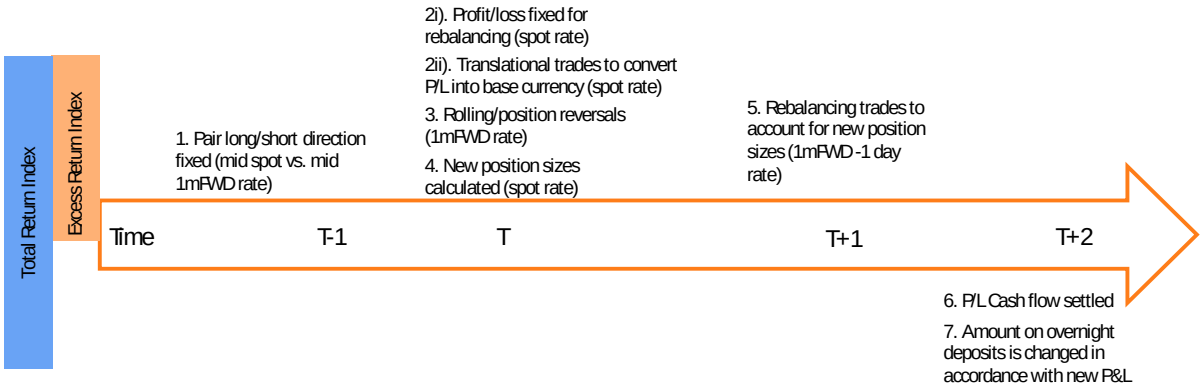
5.1.1 The index will be rebalanced monthly to maintain equal weightings across all the constituent currency pairs after taking into account the performance of each currency pair and of the index itself as at each month end.

5.2 Timeline of events for rebalancing

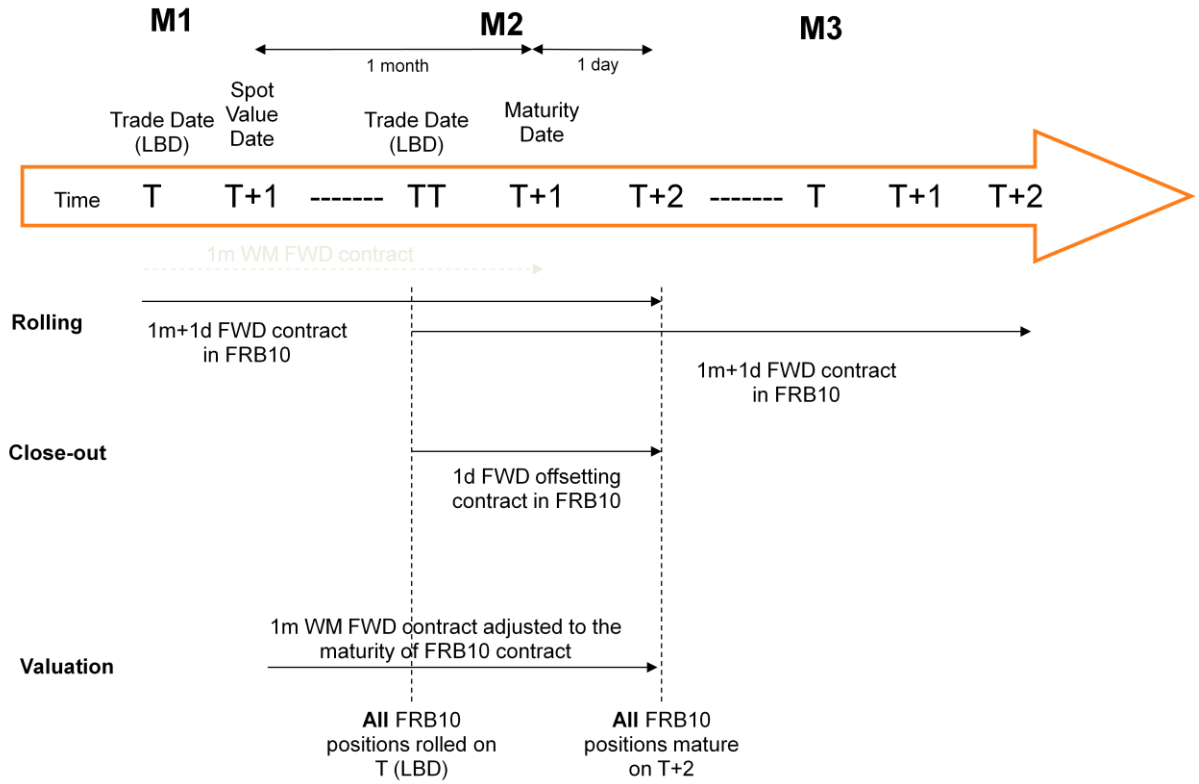
5.2.1 The timelines for forward rates are subject to normal market convention. This can add a level of complexity to trading of the currency forwards within the index. The diagrams below illustrate the determination of expiry dates for all currency pairs that settle on a T+2 basis and CADUSD which settles on a T+1 basis.



5.2.2 The timeline for the index is always expressed in working days and is pivoted around the last working day (T) of each month.



5.2.3 Treatment of the CADUSD currency pair in order to match the cash flows of the other currency pairs based on T+2 settlement in FRB10.



5.3 Determination of currency pair direction

5.3.1 The differential between the mid spot rate and mid 1-month forward rate is assessed for each currency pair to determine which currency in each pair has the higher, and which the lower, nominal interest rate.

5.3.2 If the direction of the nominal interest rate differential for a currency pair is unchanged (or if the nominal interest rate differential becomes zero i.e. mid spot rate equals mid 1-month forward rate), then the position is rolled forward for another month at the then prevailing forward rates.

5.3.3 If the direction of the nominal interest rate differential has reversed, then the forward contract will be closed out, and a new forward contract entered into, in which the former long currency, now with the lower nominal interest rate, is sold, and the former short currency, now with the higher nominal interest rate, is bought.

6. Index Eligibility

6.1 Eligible currencies

6.1.1 At any given time, the FTSE Currency FRB5 Index consists of all 10 equally weighted currency pairs that can be derived from the 5 most liquid developed currencies, namely: US Dollar, Euro (German Deutschmark prior to 1999), Japanese Yen, British Pound and Swiss Franc.

6.1.2 At any given time, the FTSE Currency FRB10 Index consists of all 45 equally weighted currency pairs that can be derived from the currencies in the FTSE Currency FRB5 Index plus Australian Dollar, Canadian Dollar, New Zealand Dollar, Norwegian Krona and Swedish Krone

6.1.3 Further FRB indices will be added to the FTSE FRB Currency Index Series in future that will be comprised of additional currencies.

6.1.4 The number of currency pairs used in the index is given by the formula:

$$Currency\,Pairs \;=\; \frac{(No\ of\ Currencies) \bullet (No\ of\ Currencies - 1))}{2}$$

Example: a 5 currency index will consist of 10 currency pairs [= (5 x 4)/2]

7. Glossary of Terms and Abbreviations

- Bid - The rate to buy the variable currency per unit of base currency in a spot contract
- CORRA – Canadian Overnight Repo Rate
- EONIA – EURO OverNight Index Average
- ER - Excess Return
- Expiry Date – The agreed date on which a forward contract expires, and determined as the Maturity Date (see below) less the same number of working days as the spot trade date is from the spot value date
- Forward contract – An over-the-counter contract between parties in the forex market that locks in the price at which a party can buy or sell a currency on a future date. Also known as an "outright forward currency transaction", "forward outright" or "FX forward". Usually available in standard periods to maturity, known as "tenors"
- FRB – Forward Rate Bias
- FTSE – FTSE International
- Index Base Date – The date on which the arbitrary number used as the starting value of the index is set before the launch of an index. In the case of the FTSE FRB Index Series the base date is 30 December 1998 and the base value 1,000
- LHS – (Left-hand side) - The rate to buy the variable currency per unit of base currency in a forward contract. Market convention is to refer to this as the LHS rather than the "bid" as is the case for a spot exchange rate
- LIBOR – London InterBank Offered Rate (bbalibor™)
- Maturity Date – Of a forward contract is the date on which the set period for a forward transaction matures, equal to the Spot Value Date plus the forward tenor (subject to various conventions), and is the value (i.e. settlement) date for the forward contract. Maturity dates can be standard (e.g. 1 month) or non-standard (see odd-days contract below)
- Mid – the arithmetic mean of the Bid/LHS and Offer/RHS
- NRA – (Non-round amount). The NRA is an amount in the currency in any pair that is not the RA (see below) currency (this is called the NRA currency and by index convention is always the left-hand named currency) which is equal to the RA converted by the traded rate. Since any position is closed (or offset for valuation purposes) by buying or selling exactly the same amount of the RA currency, the net cash flow (whether positive or negative) arising on closing a position will always be generated in the NRA currency
- Odd-days Contract – A forward contract with a non-standard maturity date

- Offer – The rate to sell the variable currency per unit of base currency in a spot contract

- RA – (Round amount) The RA is an amount in the right-hand named currency (by index convention this is always the RA currency) in any pair which, when an open position is closed (or offset for valuation purposes), is bought or sold in exactly the same amount as the original position was short or long (respectively)

- RCM – Record Currency Management

- RHS – (Right-hand side) - The rate to sell the variable currency per unit of base currency in a forward contract. Market convention is to refer to this as the RHS rather than the "offer" as is the case for a spot exchange rate

- SONIA - Sterling Overnight Interbank Average Rate

- Spot Value Date – Settlement date for the spot FX trade

- TOIS – CHF TOM Next Index Swaps

- TONAR - Tokyo Overnight Average Rate

- TR - Total Return

- TOM Next – Tomorrow Next

- Trade Date – The date on which a security trade occurs

- Value/Settlement Date – Date on which an executed security trade must be settled. That is, the date by which a buyer must pay for the securities delivered by the seller. In the case of foreign exchange it is the date that the cash flows occur. Usually done on a T+2 basis except for USDCAD which is carried out on a T+1 basis

- WM/Reuters – Source for Closing Spot and Forward Exchange Rates. Owned by the WM Company, part of SSgA, and calculated by Reuters

8. Data Sources and Historic Data

The FTSE Currency FRB5 Indices have been back-calculated to 1978; the FTSE Currency FRB10 Indices have been back-calculated to 1988. Over that time a variety of sources of data have been used for Closing Spot and 1-Month Forward Rates to calculate the excess returns and interest rates for the total return calculation.

8.1 Current interest rates used in the calculations

Currency	RIC	Description	Source	Day Count Basis
Australian Dollar	RBA30/ RBA36	Interbank Overnight Cash Rate	Reserve Bank of Australia	a/365
British Pound	SONIAORS=	SONIA – Sterling Overnight Average	WMBA	a/365
Canadian Dollar	CORRA=	CORRA – Canadian Overnight Repo Rate Average	Bank of Canada	a/365
Euro	EONIA=	EONIA® - Euro OverNight Index Average	Euribor EBF	a/360
Japanese Yen	JPONMU=RR	TONAR - Tokyo Overnight Average Rate	Bank of Japan	a/365
Swiss Franc	CHFTOIS=	TOIS - CHF Tom/Next Index Swaps	Cosmorex	a/360
US Dollar	USONFFE	Fed Funds Effective Rate	New York Fed	a/360

Source: FTSE Group

8.2 Historic interest rates and sources

Currency	Rate	Period	Source
Australian Dollar	Interbank Overnight Cash Rate	1998 - now	Reserve Bank of Australia
British Pound	SONIA	Mar ‘97 - now	WMBA
	1m GBP Libor*	Jan ’86 – Mar ‘97	bbalibor
	1m interest rate*	Pre Jan ‘86	Record Currency Management
Canadian Dollar	CORRA	Jul ’97 - now	Bank of Canada
	1m CAD LIBOR*	Oct ’90 – Jul ‘97	bbalibor
	1m interest rate*	Jan ’88 – Oct-90	Record Currency Management
Euro	EONIA®	Jan ’99 - now	Euribor EBF
Deutschemark	1m DEM LIBOR*	Jan ‘87 to Jan ‘99	bbalibor
	1m interest rate*	Pre Jan ‘87	Record Currency Management
Japanese Yen	TONAR	Feb ’89 - now	Bank of Japan
	1m JPY LIBOR*	Jan ’86 –Feb ‘89	bbalibor
	1m interest rate*	Pre Jan ‘86	Record Currency Management
Swiss Franc	TOIS	Aug ’97 - now	Cosmorex
	1m CHF LIBOR*	Jan ’89 to Aug ‘97	bbalibor
	1m interest rate*	Pre Jan ‘89	Record Currency Management
US Dollar	Fed Funds Effective Rate	Continuous	Federal Bank of New York

Source: FTSE Group

* All of the 1-month interest rates used in the calculations as a proxy for the overnight rates in the early years have been reduced by 10 basis points.

8.3 Current forex data

All Closing Spot and Forward Exchange Rates are sourced from WM/Reuters.

8.4 Historic forex data

Forex Rate	Period	Source	Data
Spot	Aug '98 - Jun '78 – Aug '98	WM/Reuters Record Currency Management	Bid/Offer Calculated Mid USD pairs - Bid/Off calculated by applying 6bps around the Mid Spot price Non-USD pairs have 12bps spread around MID Spot price
1-Month Forward	Aug '98 - Jun '78 – Aug '98	WM/Reuters Record Currency Management	LHS/RHS Calculated Mid USD pairs – LHS/RHS calculated by applying 8 bps spread around Mid 1-month Fwd price Non-USD pairs have 16 bps spread over Mid 1-month Fwd price

Source: FTSE Group

8.5 Historic data availability

8.5.1 Historic data for both the FTSE Currency FRB5 Excess Return Index Series and the FTSE Currency FRB5 Total Return Index Series is available from 30 December 1998 onwards, and simulated history can be requested from 1978 to 1998.

8.5.2 Historic data for both the FTSE Currency FRB10 Excess Return Index Series and the FTSE Currency FRB10 Total Return Index Series is available from 30 December 1998 onwards, and simulated history can be requested from 1988 to 1998.

9. Data Source Attribution

9.1 CORRA – Canadian Overnight Repo Rate Average

9.1.1 A weighted average of rates on overnight general collateral repo transactions conducted through designated interdealer brokers between 06:00 and 16:00.

9.1.2 NOTE: The Bank of Canada uses two measures of the collateralized overnight rate as proxies for the overall average cost of overnight funding: the CORRA and the overnight money market financing rate. The CORRA is limited to transactions performed in the general collateral repo market and provides a transparent intraday and end-of-day measure of the level of the overnight rate.

9.1.3 Day count basis: Act/365.

Source: Bank of Canada

9.2 EONIA® – EURO OverNight Index Average

9.2.1 Eonia® (Euro OverNight Index Average) is the effective overnight reference 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.

9.2.2 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.

9.2.3 Historical data back to 1999 can be found at

http://www.euribor.org/html/content/eonia_data.html

9.2.4 The ECB aims to make the computed rate available to Reuters for publication as soon as possible. Eonia® is normally be published between 6.45 p.m. and 7.00 p.m. (CET) on the same evening.

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

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9.2.7 Day count basis: Act/360.

Source: Euribor EBF

9.3 Federal Funds Effective Rate

9.3.1 The daily effective federal funds rate is a volume-weighted average of rates on trades arranged by major brokers.

9.3.2 Open market operation at the Domestic Trading Desk of the New York Fed dealing primarily in domestic securities (U.S. Treasury and federal agencies' securities).

9.3.3 The effective rate is calculated by the Federal Reserve Bank of New York using data provided by the brokers and is subject to revision.

9.3.4 Day count basis: Act/360.

Source: Federal Reserve Bank of New York

9.4 InterBank Overnight Cash Rate

9.4.1 The Reserve Bank collects data on the amount and weighted average rate at which a sample of banks transact in the domestic interbank market for overnight funds. These data are used to calculate the Bank's measure of the overnight interbank cash rate (the cash rate), which is the operational target for the Bank's open market operations. This measure is published daily by the Bank.

9.4.2 The Reserve Bank does not survey all banks. Typically around 25 of the most active banks are surveyed. This provides a very high level of coverage.

9.4.3 The Interbank Overnight Cash Rate calculated from the survey is published on electronic media services (Reuters RBA30/RBA36; Bloomberg RBAO9/RBAO11) at the conclusion of each trading day and the history of this data series is available in Bulletin Table F1

9.4.4 Day count basis: Act/365.

Source: Reserve Bank of Australia

9.5 LIBOR – London InterBank Offered Rate (bbalibor™)

9.5.1 bbalibor is produced for ten currencies with 15 maturities quoted for each, ranging from overnight to 12 Months producing 150 rates each business day.

9.5.2 It is a benchmark; giving an indication of the average rate a leading bank, for a given currency, can obtain unsecured funding for a given period for a given currency.

9.5.3 It represents the lowest real-world cost of unsecured funding in the London market.

9.5.4 bbalibor is based on the offered rate.

9.5.5 Every contributor bank is asked to base their bbalibor submissions on the following question; *"At what rate could you borrow funds, were you to do so by asking for and then accepting inter-bank offers in a reasonable market size just prior to 11 am London time?"*

9.5.6 bbalibor is the primary benchmark for short term interest rates globally.

9.5.7 Contributor banks are selected for the currency panels. Each panel for the 10 currencies consists of 8 to 16 contributors chosen by the independent Foreign Exchange and Money Markets Committee (FX & MM Committee) to give the best representation of activity within the London market for a particular currency.

9.5.8 Thomson Reuters, as the calculation agent, receives rates from each bank each morning between 11:00 and 11:20 a.m. and are validated before being passed to the calculation engine.

9.5.9 The calculation is performed using a trimmed arithmetic mean method, whereby the rates are ranked in descending order and the top and bottom quartiles are dropped. The middle two quartiles, representing 50% of the quotes, are then averaged to create a bbalibor quote.

9.5.10 This is repeated for every maturity for every currency resulting in 150 rates produced every business day.

9.5.11 Day count basis: dependent on currency.

9.6 SONIA – Sterling Overnight Interbank Average Rate

9.6.1 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.

9.6.2 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.

9.6.3 Day count basis: Act/365.

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

9.7 TOIS – CHF TOM Next Index Swaps

9.7.1 TOIS is based on quotations from approximately 30 reference banks for its Tom/Next unsecured lending rate to prime banks on each Zurich Business Day supplied to Cosmorex AG.

9.7.2 The rates are to be supplied to Cosmorex AG at 10:45 a.m., Zurich Time

9.7.3 Cosmorex AG calculates the Tom/Next unsecured lending rate based on the arithmetic mean of the remaining rate quotations, after eliminating the three lowest and three highest quotations in order to avoid any distortion of the final rate

9.7.4 Resultant rate is published on Reuters page TOISFIX1= at approximately 11:00 a.m., Zurich time on each business day.

9.7.5 Day count basis: Act/360

9.8 TONAR – Tokyo Overnight Average Rate

9.8.1 TONAR is based on uncollateralised overnight average call rates for lending among financial institutions.

9.8.2 TONAR is published by the Bank of Japan (BOJ) every business day.

9.8.3 Provisional results are published every business day around 17:15 local time and 18:15 local time on the last business day of the month

9.8.4 Final results are published around 10:00 the next day

9.8.5 The BOJ affects TONAR using open market operations to keep it in line with its policy rate (Mutan)

9.8.6 Day count basis: Act/365

9.8.7 Interest is calculated on a compound basis

9.9 WM/Reuters

9.9.1 The WM/Reuters service is a joint venture between The WM Company and Thomson Reuters. The WM/Reuters Closing Spot Rate Service was launched in 1994 to provide a better standard for the valuation of global portfolios. This need was a direct consequence of the globalisation of trade and investments which took place in the early 1990's. They have been adopted by major stock market indices, the Financial Times and investment organisations globally.

9.9.2 In the original service, 40 Closing Spot currencies were provided on a daily basis; today 158 Closing Spot currencies are covered on an hourly basis.

9.9.3 The original service has been developed over the years to meet the demands of the market. Now, as well as providing global coverage of all the major currencies, the service currently collects, validates and publishes Closing Forward Rates, hourly Intraday Spot rates, hourly Intraday Forward rates, and Historical Data as well as the Closing Spot Rates.

10. Appendix

10.1 Explaining the daily index calculation

10.1.1 Marking to market the Forward Contract on a daily basis

The daily FTSE Currency FRB Indices are derived by marking to market the 1-month forward contracts on a daily basis. Although linear interpolation of the initial 1-month forward contract could be used this would not take into account any movements in the interest rate differential that may occur between each of the currencies through the month leading to a change in the premium/discount of the Spot Rate to the 1 month-forward rate. In order to be more precise in marking to market, an equal and offsetting forward position is used based on quoted 1-month forward contract rates in force on each valuation day, rather than the initial forward contract rate for that month. As the calculation date moves through the month the number of calendar days in the offsetting forward contract diminishes. For example, if we assume there are 31 days in an existing 1-month forward contract and 7 days have transpired in the month, the forward would be marked to market using an offsetting 24-day forward contract (i.e. 31 – 7 = 24).

10.1.2 Pricing the Offsetting Forward

Ideally the price of the offsetting forward contract could be obtained directly from the market or calculated using linear interpolation. However, there are only a limited number of standard duration forward contracts available in the market. These durations are 1-week, 1-month, 1-year, etc. This means that forward contracts for other durations are not generally available and so must be calculated by interpolation using the existing standard market contracts. These non-standard duration contracts are known as odd-day forward contracts. Odd-day forward contracts are calculated by using the spot rate and the premium/discount between the spot rate and 1-month forward rate, prorated for the number of days in the odd-days forward contract.

10.1.3 Calculation of Odd-Days Forwards Using a Linear Interpolation

In the calculation of the daily FTSE Currency FRB Indices FTSE uses a linear interpolation formula to compute odd-days forward rates. The maturity date for the odd-days contract is two days after the expiry of the forward contract in the index and therefore is the same date for the 1m-forward contract taken out at the end of the previous month (the main forward) as for the shorter tenor contract subsequently taken out for rebalancing (the balance forward).

The general formula is as follows:

$$FFRate_{i,odd-day_{t=}} = FXRate_{i,t} + \left(FFRate_{i,t} - FXRate_{i,t}\right) \bullet \left(\frac{d_{sv,md_{odd-days}}}{d_{sv,1md}} \right)$$

where:

$FFRate_{i,odd-dayt}$	=	*Odd-days forward FX rate on day t for currency pair i*
$FXRate_{i,t}$	=	*Spot FX rate, in currency per unit in the NRA on day t*
$FFRate_{i,t}$	=	*1-month forward FX rate on day t for currency pair i on day t*
sv	=	*Spot value date*
$md_{odd-days}$	=	*Maturity date for odd-days forward contract*
1md	=	*Maturity date for 1m-forward contract*
$d_{sv,md_{odd-days}}$	=	*Number of calendar days between spot value date and maturity date for odd-days contract*
$d_{sv,1md}$	=	*Number of calendar days between spot value date and maturity date for 1m-forward contract*

11. Contacting FTSE

Contact information

Further information on the FTSE Currency FRB Index Series is available from FTSE, who will also welcome comments on this Index Methodology document.

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

+44 (0) 20 7866 1810
+44 (0) 20 7866 1804 (fax)

e-mail: info@ftse.com

France

Client Services
FTSE Group
40 rue de la Boéte
75008 Paris
France

+33 (0) 1 53 76 82 88
+33 (0) 1 53 76 82 71 (fax)

e-mail: info@ftse.com

Italy

Client Services
FTSE Group
Via G. Mazzini 9/11
20123 Milano
Italy

+39 02 7242 6641

e-mail: info@ftse.com

USA – East Coast

Client Services
FTSE Americas Inc.,
1270 Avenue of the Americas
New York 10020
USA

+(1) 888 747 FTSE (domestic)
+(1) 212 314 1100
+(1) 212 314 1240 (fax)

e-mail: info@ftse.com

USA – West Coast

Client Services
FTSE Americas Inc.,
Suite 200, 251 Post Street
San Francisco
CA 94108
USA

+(1) 415 445 5660
+(1) 415 445 5666 (fax)

e-mail: info@ftse.com

Hong Kong

Client Services
FTSE
59th Floor
The Center
99 Queen's Road Central
Hong Kong SAR

+852 2230 5800
+852 2230 5804 (fax)
+65 223 3738 (in Singapore)

e-mail: info@ftse.com

Japan

Client Services
FTSE
Yamato Seimei Building 10F
1-1-7 Uchisaiwaicho
Chiyoda-Ku
Tokyo 100-0011
Japan

+81 (3) 3581 2811
+81 (3) 3592 8590 (fax)

e-mail: info@ftse.com

Australia

Client Services
FTSE
Level 25, Chifley Tower
2 Chifley Square
Sydney NSW 2000
Australia

+61 2 9293 2866
+61 2 9293 2828 (fax)

e-mail: info@ftse.com

Website: www.ftse.com

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