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# **FTSE World Parity Unit**

v3.9

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## Section 1

# Introduction

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### 1.0 Introduction

- 1.1 This document contains the rules for the management and calculation of the FTSE World Parity Unit. The FTSE World Parity Unit (WPU) is a currency unit comprising a basket of developed currencies and emerging currencies. FTSE WPU represents an exchange rate between the basket of currencies and the US Dollar.
- 1.2 FTSE WPU combines two distinct components: developed market currencies and developing market currencies.
- 1.3 The majority of international transactions, both trade and investment are conducted in developed market currencies. The developed market currency weights are determined by a constrained optimization that minimizes the variance of a basket of foreign currencies relative to the USD.
- 1.4 Developing market currencies are weighted in proportion to each nation's contribution to world GDP. As developing economies form a larger part of the world economy, FTSE WPU will reflect the increasing importance of maintaining the ability to purchase goods and services from the developing world.
- 1.5 There are two distinct FTSE WPU products; The FTSE WPU Reference Rate Service and the FTSE WPU Non-deliverable Forward (NDF) Service. The FTSE WPU Reference Rate Service is equivalent to a WPU spot rate. The FTSE WPU NDF Service provides a theoretical WPU term structure.
- 1.6 The base date of the FTSE WPU is 31 December 2011. The base value of the FTSE WPU Reference Rate is one, such that as of the base date the WPU/USD exchange rate is one.
- 1.7 The FTSE World Parity Unit does not take account of ESG factors in its index design.
- 1.8 **FTSE Russell**  
FTSE Russell is a trading name of FTSE International Limited, Frank Russell Company, FTSE Global Debt Capital Markets Limited (and its subsidiaries FTSE Global Debt Capital Markets Inc. and FTSE Fixed Income Europe Limited), FTSE Fixed Income LLC, The Yield Book Inc and Beyond Ratings.

- 1.9 FTSE Russell hereby notifies users of the index 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 and therefore, any financial contracts or other financial instruments that reference the index or investment funds which use the index to measure their performance should be able to withstand, or otherwise address the possibility of changes to, or cessation of, the index.
- 1.10 These Ground Rules are intended to describe the methodology underlying the FTSE WPU. Index users who choose to follow the FTSE WPU or to buy products that claim to follow this index should 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 MPG (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 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 or inaccuracies in the compilation of the Index or any constituent data.



## 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.<sup>1</sup>

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

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

### 2.2 Mountain Pacific Group (MPG)

2.2.1 MPG is acting as a consultant to FTSE, providing expertise in investment management for currency and financial risk management. The FTSE WPU was developed together with MPG.

### 2.3 Status of these Ground Rules

2.3.1 These Ground Rules are a guide to the policies and procedures applying at the date of publication to the operation and maintenance to the FTSE WPU. They have been prepared and approved by FTSE Russell and MPG. These policies and procedures, and their precise application, are subject to variation and periodic review.

### 2.4 Amendments and Exceptions

2.4.1 These Ground Rules shall be subject to regular review (at least once a year) 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

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<sup>1</sup> The term administrator is used in this document in the same sense as it is defined in [Regulation \(EU\) 2016/1011 of the European Parliament and of the Council of 8 June 2016 on indices used as benchmarks in financial instruments and financial contracts or to measure the performance of investment funds](#) (the European Benchmark Regulation) and [The Benchmarks \(Amendment and Transitional Provision\) \(EU Exit\) Regulations 2019](#) (the UK Benchmark Regulation).

feedback from these consultations will be considered by the FTSE Russell Index Governance Board before approval is granted.

2.4.2 In the event that the FTSE Russell and MPG or any of those responsible for the operation and administration of the FTSE WPU consider that an exception should be made to any of the Ground Rules, the issue must be brought to the attention of FTSE Russell.

2.4.3 Where an exception is granted to the Ground Rules under Rule 2.3.1, it shall not be deemed to create a precedent for future decisions of FTSE Russell or MPG.



## 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

3.1.1 FTSE Russell's complaints procedure can be accessed using the following link:

[Benchmark Determination Complaints Handling Policy.pdf](#)

#### 3.2 Policy for Benchmark Methodology Changes

3.2.1 Details of FTSE Russell's policy for making benchmark methodology changes can be accessed using the following link:

[Policy for Benchmark Methodology Changes.pdf](#)

#### 3.3 FTSE Russell Governance Framework

3.3.1 To oversee its indices, FTSE Russell employs a governance framework that encompasses product, service and technology governance. The framework incorporates the London Stock Exchange Group's three lines of defence risk management framework and is designed to meet the requirements of the IOSCO Principles for Financial Benchmarks<sup>2</sup>, the European benchmark regulation<sup>3</sup> and the UK benchmark regulation<sup>4</sup>. The FTSE Russell Governance Framework can be accessed using the following link:

[FTSE Russell Governance Framework.pdf](#)

#### 3.4 Real Time Status Definitions

3.4.1 For indices which are calculated in real time, please refer to the following guide for details of real time status definitions:

[Real Time Status Definitions.pdf](#)

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<sup>2</sup> IOSCO Principles for Financial Benchmarks Final Report, FR07/13 July 2013

<sup>3</sup> Regulation (EU) 2016/1011 of the European Parliament and of the Council of 8 June 2016 on indices used as benchmarks in financial instruments and financial contracts or to measure the performance of investment funds

<sup>4</sup> The Benchmarks (Amendment and Transitional Provision) (EU Exit) Regulations 2019



## Section 4

# Eligible Instruments

### 4.0 Eligible Instruments

4.1 Instruments deemed appropriate by FTSE Russell will be included in the FTSE WPU.

#### 4.2 Instruments, Fixings and Tickers<sup>5</sup>

4.2.1 Instruments included in the FTSE WPU Reference are summarized in the following table.

#### FTSE WPU Reference Rate and FTSE WPU Settlement Rate

Component	Instrument	Reference Point	Calendar
Developed Component	Euro/USD	London Time	WM Refinitiv
	USD/Japanese Yen	16:00	WM Refinitiv
	UK Pound/USD	16:00	WM Refinitiv
	Australian Dollar/USD	16:00	WM Refinitiv
	USD/Swiss Franc	16:00	WM Refinitiv
	USD/Canadian Dollar	16:00	WM Refinitiv
*Developing Component <sup>6</sup>	People's Bank of China Reference Rate	09:15 Hong Kong	China
	Reserve Bank of India Reference Rate	12:00 Indian Time	India
	Central Bank of Brazil Reference Rate (PTAX)	13:00 Brazilian Time	Brazil
	USD/Mexican Peso	16:00 London Time	WM Refinitiv

4.2.2 Instruments included in the FTSE WPU NDF and FTSE WPU Creation Rates are summarized in the following table:

#### FTSE WPU NDF and FTSE WPU Creation Rate

Component	Instrument	Reference Point	Calendar
Developed Component	Euro/USD	London Time	WM Refinitiv
	USD/Japanese Yen	16:00	WM Refinitiv
	UK Pound/USD	16:00	WM Refinitiv
	Australian Dollar/USD	16:00	WM Refinitiv
	USD/Swiss Franc	16:00	WM Refinitiv
	USD/Canadian Dollar	16:00	WM Refinitiv
*Developing Component <sup>6</sup>	USD/Chinese Yuan	London Time	WM Refinitiv
	USD/Indian Rupee	16:00	WM Refinitiv
	USD/Brazilian Real	16:00	WM Refinitiv
	USD/Mexican Peso	16:00	WM Refinitiv

<sup>5</sup> Where a bid price and an ask price are available for a currency the mid-price is used, with the exception of the Central Bank of Brazil Reference Rate (PTAX), where the ask price is used.

<sup>6</sup> The Moscow Exchange Ruble FX Fixing instrument was deleted from the Developing Component list effective from 31 May 2022



- 4.3 FTSE WPU is calculated from Monday to Friday on an end of day basis only, with the exceptions of 1 January, Good Friday and 25 December each year, as well as during service alteration days specified by the WM/Refinitiv policy. National holidays in the following four financial centres are monitored by WM/Refinitiv: US, UK, Germany and Japan. WM/Refinitiv Spot Rates are produced as normal if two or more of these centres are open. If only one centre is open, the normal policy is that no fixings are produced and the rates from previous fixings are used - in which case, FTSE WPU will not be calculated. Where national holidays occur, but two or more of the financial centres monitored by WM/Refinitiv are open, FTSE WPU will be calculated as normal with any unavailable rate being replaced by the previous rate used in the FTSE WPU calculation.
- 4.4 In the event that any component price is not published (e.g. because of a public holiday), then the previously published price is used.



## Section 5

# Periodic Review of FTSE WPU Instruments

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### 5.0 Periodic Review of FTSE WPU Instruments

- 5.1 FTSE WPU applies the weighting scheme described in Section 7 to the eligible instruments of FTSE WPU described in the previous section.
- 5.2 The cut-off date for the calibration of all market and non-market data is the close of business on the last working day of October.
- 5.3 FTSE WPU instruments and weightings are reviewed annually during the first two weeks of November of each year. The rebalance quantities associated with each WPU component will be determined using the FTSE WPU component prices, as specified in Section 6, on the 15<sup>th</sup> November, or the first business day following this date if the 15<sup>th</sup> is not a business day. The rebalanced FTSE WPU quantities are fixed, but component weights will drift with subsequent price movements until the review effective date.
- 5.4 The FTSE WPU review effective date is the first business day of December.
- 5.5 Changes to the eligible instruments of FTSE WPU will be concurrent with weighting changes arising from the annual rebalance.



## Section 6

# FTSE WPU Rebalance and Data Requirements

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### **6.0 FTSE WPU Rebalance and Data Requirements**

#### **6.1 Currency Rates**

6.1.1 All currency rates are the appropriate WM/Refinitiv 16:00 London on-shore spot rates. Currency data to the end of October in the year of the rebalance will be incorporated at the November rebalance.

#### **6.2 GDP Data**

6.2.1 All GDP figures are sourced from the World Bank. Annual figures are released in July following the year to which they pertain.

#### **6.3 Currency Turnover Data**

6.3.1 Currency turnover data is derived from the BIS Triennial Survey. Data is released in September of the survey year and BIS information is used for a period of three years commencing in the year of release.

#### **6.4 FTSE WPU Rebalance**

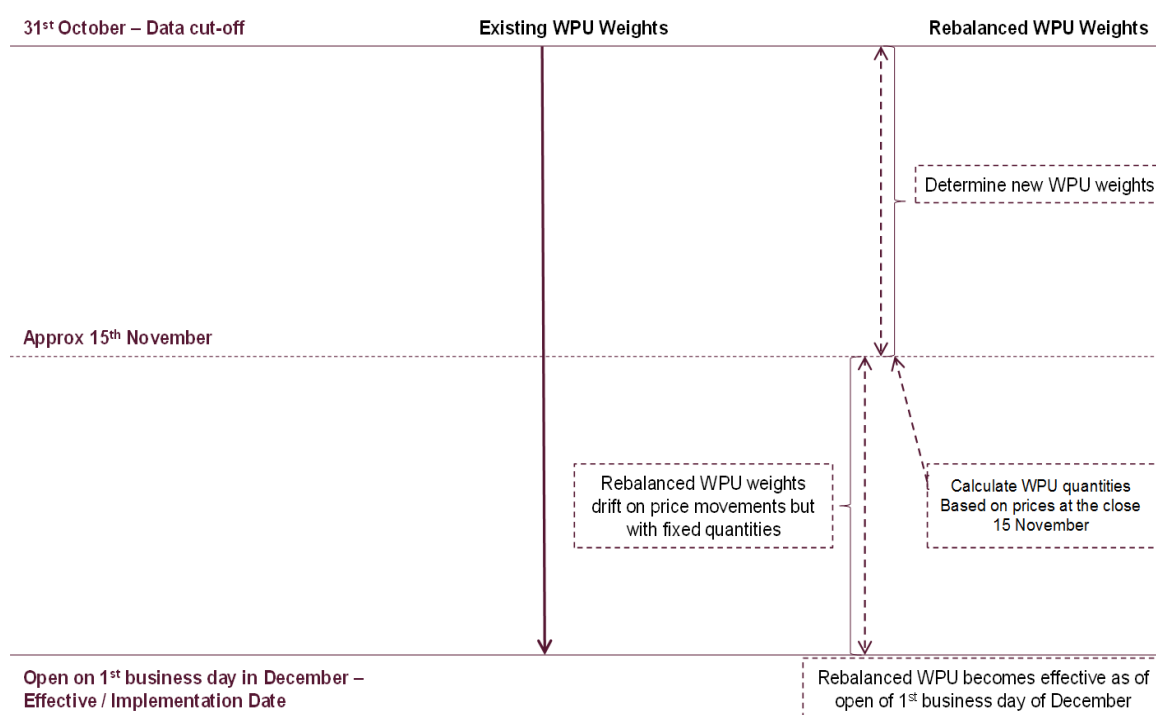
6.4.1 FTSE WPU is rebalanced annually at the close on the last business day of November and implemented at the open on the first business day of December. The cut-off date for available data is last business day of October.

**Table 5.6 GDP and BIS Data Source Calendar**

GDP Data			BIS Survey	
Rebalance	Released	Period	Released	Period
Nov-11	Jul-11	2010	Sep-10	2010
Nov-12	Jul-12	2011	Sep-10	2010
Nov-13	Jul-13	2012	Sep-13	2013
Nov-14	Jul-14	2013	Sep-13	2013
Nov-15	Jul-15	2014	Sep-13	2013
Nov-16	Jul-16	2015	Sep-16	2016
Nov-17	Jul-17	2016	Sep-16	2016
Nov-18	Jul-18	2017	Sep-16	2016

6.4.2 The annual rebalance and weight determination will take place during the two weeks between the data cut-off date (end October) and the 15th November (or the first business day following this date if the 15<sup>th</sup> is not a business day). The new WPU structure will be disseminated in an indicative review file seven business days prior to the review effective date.

**6.5 Rebalance Schedule Timings**





## Section 7

# FTSE WPU Construction Methodology

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## 7.0 FTSE WPU Construction Methodology

### 7.1 Introduction

7.1.1 FTSE WPU is designed to act as both a unit of account and a store of value. FTSE WPU represents the exchange rate based on market sources between a basket of currencies and the US Dollar.

7.1.2 FTSE WPU is an aggregate of two distinct components: developing market currencies and developed market currencies.

### 7.2 Developed Market Component

7.2.1 International transactions from both a trade and investment perspective are dominated by the Developed market currencies; currency turnover is concentrated in the US Dollar, Euro, Japanese Yen, Sterling, Australian Dollar, Swiss Franc, and Canadian Dollar.

7.2.2 The Developed market currency component, weightings minimize the variance of the basket of developed market currencies relative to the US Dollar, subject to diversification and share in global currency turnover constraints.

7.2.3 The monthly currency return from a US Dollar perspective,  $cr_{i,t}$  for each Developed Market currency is the monthly change in the natural log of each currency:

$$\ln\_cr_{CCY,t} = (\log_n(CCYUSD)_t - \log_n(CCYUSD)_{t-1})$$

where  $\ln\_cr_{CCY,t}$  is the natural log of the monthly return of currency CCY. Note the return of currencies quoted as USDCCY must be multiplied by -1.

7.2.4 The relevant currency return is determined using the WM/Refinitiv 16:00 London rate. The annual rebalance in November incorporates the 60 months of monthly currency return data to the end of October in the year of the rebalance.

7.2.5 The BIS release the Triennial Survey for the three years to April in September of the same year. Data is applied over a three year period and is used from September onwards in the year of release. The share of each Developed Market currency in terms of aggregate currency turnover, excluding the US, is obtained from the BIS Triennial Survey data:

$$\text{share}_{i,t} = \frac{\text{turnover}_{i,t}}{\sum_{i=1}^n \text{turnover}_{i,t}}$$

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- 7.2.6 The Developed Market currency weights,  $x_t = \{x_{1,t}, x_{2,t}, \dots, x_{n,t}\}$ , are determined by minimizing the variance,  $g(x_t) = \text{Var}(c r_t \cdot x_t')$  of the basket of Developed Market Currencies relative to the USD over a rolling window of 60 months, subject to diversification and a share of turnover constraints:

$$\min_{x_t} g(x_t) \text{ S.T. } \begin{cases} c - \frac{1}{x_t \cdot x_t'} \leq 0 \\ \sum_{i=1}^n x_{i,t} = 1 \\ 0 \leq x_{i,t} \leq \text{share}_{i,t} \times 1.5, i \in \{1, 2, \dots, n\} \end{cases}$$

The diversification parameter  $c$  is set to five and ensures a minimum of five Developed Market currencies are represented in the minimum volatility basket.

The currency turnover constraint ensures weights lie in the range zero to 1.5 times each currency's share of the total Developed Market currency (ex the US) turnover.

The long only constraint ensures that Developed Market currency weights to sum to one.

### 7.3 Developing Market Component

- 7.3.1 The Developing economies are proxied by four currencies: the Indian Rupee, Chinese Yuan, Brazilian Real and Mexican Peso relative to the US Dollar.

FTSE WPU weights each Developing Market currency in proportion to each nation's share of World GDP,  $(GDP_t)$ , where  $\text{Average}(GDP_i, t \neq i)$  is the average GDP of the remaining Developing countries and weight is defined as:

$$z_t = \text{Min}(GDP_t, 1.5 \times \text{Average}(GDP_i, t \neq i))$$

- 7.3.2 The Developing Market currency weights are calculated annually in November as each countries constrained percentage share of global GDP,  $z_t$ . Global GDP data is sourced from the World Bank's World Development Indicators (WDI) service. The World Bank GDP data is available in July of each year for the prior year. For example, 2010 data is released in July 2011.

### 7.4 US Component

- 7.4.1 The share of the US in global GDP determines the weight applied to the US Dollar,  $u_t$ . The weight of the US is determined in November of each year from data sourced from the World Bank.

### 7.5 Instrument Weights in the FTSE WPU

- 7.5.1 The Developed Market model component weight:

$$d_t = 1 - u_t - \sum_i^k z_{i,t}$$

where  $z_{i,t}$  are the Developing Market instrument weights respectively.

### 7.6 Minimum Instrument Weighting

- 7.6.1 The minimum weight of any instrument is 25 basis points. The weight of any instrument that is less than 25 basis points is set to zero. The weight of the instrument set to zero will be reallocated pro-rata to the remaining instruments drawn from the same component (Developed or Developing).
- 7.6.2 Where multiple instruments from the same component have a weight of less than 25 basis points, the procedure outlined in Rule 7.6.1 is applied sequentially commencing with the instrument that has the smallest weight, until all instruments satisfy the minimum weight condition of 25 basis points.

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## 7.7 FTSE WPU Notional Scale and Component Quantities

The notional scale of FTSE WPU is determined by the weight of USD in the index:

$$\text{Notional Scale} = \left( \frac{\$10000}{w_{\text{USD},t}} \right)$$

where  $w_{\text{USD},t}$  is the weight of USD on the rebalance date  $t$ . For example, if the USD component has a 12.5% weighting in FTSE WPU Reference Rate at the rebalance date the notional scale of WPU is  $(\$10000/0.125 = \$80000)$ .

7.7.1 FTSE WPU component quantities are derived from the component weights, prices and notional scale:

$$Q_{i,t} = \text{Notional Scale} \times \left( \frac{w_{i,t}}{P_{i,t}} \right)$$

where  $Q_{i,t}$ ,  $w_{i,t}$  and  $P_{i,t}$  are the quantities, weight and price in USD of component  $i$  respectively on the rebalance date.

7.7.2 Component quantities are quoted to two decimal places with the exception of Yen, which is rounded to the nearest Yen.

## Section 8

# FTSE WPU Reference and Settlement Rates

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### 8.0 FTSE WPU Reference Rate

#### 8.1 FTSE WPU Reference Rate Calculation

8.1.1 The WPUUSD Reference Rate is calculated as:

$$WPUUSD_t = \sum_{i=1}^{p+n} \frac{P_{i,t} \times Q_{i,t}}{Divisor_t}$$

where the summation is over all components in the index (p developing currencies and n developed currencies).  $P_{i,t}$  are the input exchange rates and  $Q_{i,t}$  are the WPU component quantities defined in Rule 7.8.

8.1.2 Eligible instruments are quoted to four decimal places, with the exception of the Yen are quoted to two decimal places. Component weights are calculated to four decimal places.

8.1.3 The value of each component ( $P_{i,t} \times Q_{i,t}$ ) is calculated to two decimal places.

8.1.4 The WPU/USD exchange rate  $WPUUSD_t$  is quoted to four decimal places.

8.1.5 Each annual review requires the index divisor to be adjusted to ensure continuity in the WPUUSD rate:

$$Divisor_t = Divisor_{t-1} \times (1 + Adj_t)$$

where

$$Adj_t = \frac{\sum_{i=1}^{m+p+n} P_{i,t-1}^{post} \times Q_{i,t-1}^{post}}{\sum_{i=1}^{m+p+n} P_{i,t-1}^{pre} \times Q_{i,t-1}^{pre}} - 1$$

is the adjustment made to the divisor between the closing prices/quantities of the pre-rollover/review index ( $P_{i,t-1}^{pre}, Q_{i,t-1}^{pre}$ ) and the closing prices/quantities of the post-rollover/review index ( $P_{i,t-1}^{post}, Q_{i,t-1}^{post}$ ). The adjustment is effective on day t.



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## 8.2 FTSE WPU Settlement Rate

- 8.2.1 The FTSE WPU Settlement Rate may be used to settle an open position on the FTSE WPU Creation Rate (see Section 9) on its expiration day T.
- 8.2.2 The FTSE WPU one, two and three Month Settlement Rates are calculated using the FTSE WPU Reference Rate market value on expiration day T and the respective FTSE WPU Creation rate divisor on day t, one, two and three months previously:

$$WPUUSD_T^{SR} = \sum_{i=1}^{m+p+n} \frac{P_{i,T} \times Q_{i,t}}{Divisor_t}$$

where  $Q_{i,t}$  are the component quantities used in the Creation Rate on  $t=T-1,2,3M$ ,  $P_{i,T}$  are the input exchange rates on expiration day T,  $Divisor_t$  is the divisor used on  $t=T-1,2,3M$  and  $WPUUSD_T^{SR}$  is the FTSE WPU Settlement Rate, quoted to 4 decimal places.

- 8.2.3 Calendar conventions mean that it is possible for more than one FTSE Creation Rate of the same tenor to expire on the same day. In these circumstances the quantities and divisor of the oldest expiring FTSE Creation Rate of the given tenor are used, and a single FTSE Settlement Rate for the tenor is published.

## 8.3 Spot Conventions and Calendar

- 8.3.1 The FTSE WPU Reference Rate uses a t+2 spot convention and a modified following business day convention for determining the expiration date. This is detailed in Rule 9.4.

## 8.4 FTSE WPU Reference and Settlement Cross Rates Cross Rates

- 8.4.1 Since  $WPUUSD_t$  is the effective WPU/USD exchange rate, other relevant cross rates may be calculated, for example:

$$WPUEUR_t = WPUUSD_t \times \frac{USD}{EUR}, \quad WPUJPY_t = WPUUSD_t \times \frac{USD}{JPY}$$

Careful interpretation of the cross rates is required as the FTSE WPU Reference, FTSE Settlement Rate and FTSE WPU component exchange rates may be taken at different time points.

## Section 9

# FTSE WPU Non-Deliverable Forward and Creation Rate

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### 9.0 FTSE WPU Non-Deliverable Forward

#### 9.1 Definition

9.1.1 The FTSE WPU Non-Deliverable Forward (NDF) is a rolling one, two or three month forward on the FTSE WPU Reference Rate with USD settlement. The forward is rolled every FTSE WPU trading day such that a contract always has a life of one, two or three months from the calculation day.

#### 9.2 FTSE WPU NDF

9.2.1 The calculation of the FTSE WPU NDF is identical in form to the FTSE WPU Reference Rate:

$$\text{WPUUSD}_t^M = \frac{\sum_i Q_{i,t} \times P_{i,t}^M}{\text{divisor}_t};$$

where  $Q_{i,t}$  is the quantity of component  $i$  on day  $t$ ,  $\text{divisor}_t$  is the divisor of FTSE WPU Reference Rate  $t$  and  $P_{i,t}^M$  is the  $M$  month currency forward rate on day  $t$ . Quantities,  $Q_{i,t}$  are those used in the FTSE WPU Reference Rate and the same divisor is used for the FTSE WPU NDF.

#### 9.3 FTSE WPU Creation Rate

9.3.1 The FTSE WPU NDF is also published under the name FTSE WPU Creation Rate. The FTSE WPU Creation Rate is identical in form, construction and value to the FTSE WPU NDF described in the subsection above.

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#### 9.4 Annual Rebalance

- 9.4.1 At each annual review a new divisor is determined for the year when the new quantities  $Q_{i,new}$ , determined for the FTSE WPU Reference Rate become effective. The new divisor calculation is outlined in Section 8.1.5,
- 9.4.2 A divisor file is published on the last business day of November each year, containing the new and old divisors.

#### 9.5 Spot Conventions and Calendar

- 9.5.1 The FTSE WPU NDF uses a t+2 spot convention and a modified following business day convention for determining the expiration date. The FTSE WPU NDF calendar is the same as that used by the FTSE WPU Reference Rate product.
- 9.5.2 The Canadian Dollar (CAD) has a spot convention of t+1 compared to the general t+2 rule. A one day forward is added to CAD such that the expiration of currency forwards coincide. The M month+1 day contract is calculated as:

$$FWD_t^{M+1} = FWD_t^M + \frac{FWD_t^M - SPOT_t}{N_t}$$

where  $FWD_t^M$  is the M month currency forward rate on day t,  $SPOT_t$  is the currency spot rate on day t, and  $N_t$  are the number of days between spot settlement (t+2) and the forward expiration day.

#### 9.6 WPU Interest Rate

- 9.6.1 The FTSE WPU M month interest rate is obtained from the interest rate parity relationship:

$$r_t^{WPU} = \frac{1}{n_t^{WPU}} \log_n \left( \frac{WPUUSD_t^{Ref}}{WPUUSD_t^M} \exp(r_t^{USD} \times n_t^{USD}) \right)$$

where  $n_t^{USD}$  is the time to expiry between spot settlement and the M month forward expiration, t under a USD calendar;  $n_t^{WPU}$  is the fraction of the year between spot settlement and the M month NDF, t under WPU calendar and  $r_t^{USD}$  is the M month OIS term rate on day t. Both the USD and FTSE WPU calendar use an actual / 360 day count convention.

- 9.6.2 The M month OIS term rates are:

Instrument	Settlement Day Convention	Time
1 Month OIS	2	17:00 London
2 Month OIS	2	17:00 London
3 Month OIS	2	17:00 London

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## 9.7 FTSE WPU NDF Cross Rates

9.7.1 Since  $WPUUSD^M$  is the effective WPU/USD M month forward exchange rate, other relevant forward cross rates may be defined, for example:

$$WPUEUR^M = WPUUSD^M \times USDEUR^M$$

Careful interpretation of such cross rates is required as the FTSE WPU NDF consists of forward rates taken at different points in time.



## Appendix A: Further Information

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### FTSE International Limited (FTSE)

For further information on FTSE WPU, please visit [www.ftserussell.com](http://www.ftserussell.com) or contact FTSE Russell via e-mail at [info@ftserussell.com](mailto:info@ftserussell.com).

### Mountain Pacific Group

Further Information on Mountain Pacific Group is available on [www.mountainpacificgroup.com](http://www.mountainpacificgroup.com). Contact details can also be found on this website.

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