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Refinitiv Benchmark Services (UK) Limited

WMR Closing and Intraday Spot, Forward and NDF Rates WMR FX Benchmark Statement

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Section 1

Introduction

The WMR London 4pm Closing Spot Rate service was introduced in 1994 to provide a standard set of currency benchmark rates so that portfolio valuations could be compared with each other and their performance measured against benchmarks without having any differences caused by exchange rates. These rates were adopted by index compilers, the Financial Times and other users and became the de facto standard for Closing Spot Rates on a global basis. To complement the Closing Spot rates, in 1997 the Closing Forward rates (as at 4.00pm London time) were launched. Extending the spot rate service to provide more frequent benchmark rates the WMR Intraday (hourly) Spot rate service was introduced in 2001 and further enhanced in 2012 to provide spot benchmark rates every ½ hour. Similarly, the WMR Forward rate service was expanded to provide the WMR Intraday Forward rates in 2004, providing forward rates at specific times during the day which has continued to expand to 22 times a day. A further addition to the service has been the launch of the WMR Closing (4pm London time) and Intraday Non-Deliverable Forward (NDF) rates in 2009.

The foreign exchange markets represented by the benchmarks are global in nature. The Bank for International Settlements reported that trading in foreign exchange markets had reached US\$6.6 trillion per day in April 2019. Participants in the wider FX markets include dealers, institutional investors, central banks, hedge funds and non-financial customers.

Refinitiv Benchmark Services Limited (“RBSL” or “the Administrator”) is the administrator of all of the WMR Spot, Forward and NDF foreign exchange benchmarks based on readily available data and subject to the Benchmark Regulation (“BMR”). RBSL administers the WMR London 4pm Closing Spot Rate in accordance with Article 20 (“Critical benchmarks”) of the BMR. RBSL has adopted policies and procedures to comply with the Regulation.

All the WMR FX benchmarks are intended to cover the currencies for those countries that are included in a global or regional stock market index or where there is sufficient liquidity in the currency market to provide accurate benchmark rates. The addition of currencies not meeting these criteria will be at the discretion of RBSL. Currently the Spot rate benchmark comprises 157 currencies, the Forward rate benchmark comprises 80 currencies and the NDF rate benchmark covers 12 currencies all as listed in the Benchmark Methodology

The primary infrastructure used to source spot, forward and NDF foreign exchange (FX) rates used in the determination of the benchmarks is the LSEG Market Data System. Other systems may be used by exception where the appropriate rates are not available on the LSEG architecture.

Section 2

WMR spot rate benchmarks

All currencies within the spot rate benchmarks are referred to as “Trade Currencies” or “Non-trade Currencies”.

For Trade Currencies, the data source (“Data Source”) to be used is determined by RBSL on a per currency basis and based primarily on the liquidity available on the trading platform in said currencies.

Such Data Sources are reviewed periodically with respect to their quality and the representativeness of the FX rates with respect to the wider market. Data Sources for the determination of the benchmarks are the following highly liquid order matching platforms: LSEG Matching, EBS and Currenex. The benchmarks are not based on the contribution of input data. Readily available input data for determination of the benchmarks from these platforms are either traded rates or order rates, with traded rates taking precedence where available subject to the RBSL’s expert judgment.

All other currencies are referred to as “Non-Trade Currencies”. The Data Source for Non-Trade Currencies is LSEG indicative quote data from multi contributor instrument codes. See the WMR FX Benchmarks Methodology for a full list of currencies

Determination of the spot rate benchmarks includes a validation process whereby, among other steps, RBSL reviews input data and the calculated benchmark pursuant to certain pre-determined tolerance checks. When applying tolerance checks, an authorised LSEG analyst has discretion (subject to internal policies and procedures) to include or reject certain input data in the determination of the benchmark rates.

The benchmarks are considered to be a reliable reference rate for the FX currencies it comprises provided that the input data are both reliable and observable market data that reflect the economic realities of the market for each FX currency.

Section 3

Overview of spots methodology

The Data Source for the determination of Non-Trade Currencies is LSEG indicative quote data. Over a five-minute period starting 2 minutes and 30 seconds before the hour and/or ½ hour to 2 minutes and 30 seconds after the hour and/or ½ hour, snapshots of quoted rates are taken every 15 seconds. The median bid and offer rates are calculated from the individual snapshots for each currency. These bid and offer rates are validated prior to publication against currency specific thresholds and this may result in expert judgment being applied.

The Data Source for the determination of Trade Currencies are the order matching platforms listed in Section 1. Over a five-minute period, traded rates and bid and offer order rates from the platforms are captured every second from 2 minutes 30 seconds before to 2 minutes 30 seconds after 4pm UK time. All traded rates are subjected to validation checks which may result in some input data being excluded from the benchmark determination.

Valid traded rates from all Data Sources will be combined and, subject to a minimum number of traded rates being present using a threshold determined by RBSL using expert judgment, the traded rates are used as input data in the determination of the benchmarks. A median bid and offer traded rate are calculated independently, using data from the combined pool of trades across Data Sources. The mid-rate is calculated from the median bid and offer traded rates. A minimum standard spread is applied to the mid-rate to calculate a new bid and offer. These bid, offer and mid rates are the benchmark rates for these currencies and will be validated prior to publication using currency specific tolerance thresholds and this may result in expert judgment being applied.

If the minimum number of traded rates is not reached, then order rates are used to determine the benchmark in respect of such currencies. Best bid and offer order rates are captured simultaneously to the capture of traded rates but are not combined across the different Data Sources. All order rates are subjected to validation checks which may result in some input data being excluded from the benchmark determination.

A median bid and offer order rate is calculated for each Data Source. The mid-rate is calculated from the median bid and offer order rates. A minimum standard spread is applied to the mid-rate to calculate a new bid and offer. The bid offer and mid rates from the Data Source with the highest number of valid orders over the five-minute period will be selected as the benchmark rates for publication. The benchmark calculations will be validated prior to publication using currency specific tolerance thresholds and this may result in expert judgment being applied.

No models or method of extrapolation or interpolation are used by RBSL when determining the benchmarks. Further, the benchmarks are not determined by means of a portfolio of constituents.

RBSL determines the benchmark in respect of the following steps:

- the Data Source to use for each currency comprised in the benchmark;
- setting the threshold for determining when to use order rates rather than traded rates; and
- validation of rates taken from Data Sources for Trade Currencies and Non-Trade Currencies.

Section 4

WMR forward and NDF rate benchmarks

The Data Source for all Forward and NDF currencies is LSEG indicative quote data from multi contributor instrument codes.

Determination of the benchmarks includes a validation process whereby, among other steps, RBSL reviews input data and the benchmark pursuant to certain pre-determined tolerance checks. When applying tolerance checks, an authorised LSEG analyst has discretion (subject to internal policies and procedures) to include or reject certain input data in the determination of the benchmark.

The benchmarks are considered to be a reliable reference rate for the FX currencies it comprises provided that the input data are both reliable and observable market data that reflect the economic realities of the market for each FX currency. The NDF rates are intended to cover the currencies that do not allow offshore entities to trade with the local market.

The normal calculation times are hourly from 06:00 to 21:00 UK time Monday to Friday and at 17:00 hours New York time, 10:00 hours Sydney time, 14:00 hours New Zealand time, 10:00 Tokyo time, 11:00 hours Singapore time, 11:00 Bangkok time and 16:00 hours Sydney time.

The tenors covered for the forward rates are:

- ON Overnight
- TN Tomorrow Next
- SW Spot Week (One Week)
- 1M One Month
- 2M Two Months
- 3M Three Months
- 6M Six Months
- 9M Nine Months
- 1Y One Year
- 2Y Two Years (Some Currencies Only)
- 5Y Five Years (Some Currencies Only)

The tenors covered for the NDF rates are:

- SW Spot Week (One Week)
- 1M One Month
- 2M Two Months
- 3M Three Months
- 6M Six Months
- 9M Nine Months
- 1Y One Year
- 2Y Two Years (Some Currencies Only)
- 5Y Five Years (Some Currencies Only)

However not every tenor is provided for every forward and NDF currency. The determination of what tenors are offered for each currency is dependent on the availability, sufficiency and quality of the data source.

Section 5

Overview of forwards and NDFs methodology

The FX Forward and NDF market is constantly monitored by capturing bid and offer rates every 2 minutes and all captured rates are subjected to validation checks which may result in some rates being removed from the calculation process. On the hour a snapshot of quoted rates is taken for each tenor, and considered the benchmark rate, subject to further validation checks prior to publication. These bid and offer rates are validated prior to publication against currency specific thresholds and this may result in expert judgment being applied.

All forward rates are published as premiums/discounts and/or outright forward rates; NDF rates are provided in outright format.

Section 6

Expert judgement

Expert judgment is subject to RBSL's internal guidelines and quality control procedures and is exercised with the intent of ensuring the quality and integrity of the benchmarks. In particular, RBSL may rely on its own judgement more frequently in an active albeit low liquidity market where transactions may not be consistently available.

RBSL's internal guidelines and quality control procedures governing the application of expert judgment are intended to provide consistency and oversight to this process. Analysts receive initial and on-going training in how to comply with these guidelines and procedures.

Section 7

Potential limitations of the benchmarks

The ability of RBSL to determine and publish the WMR FX benchmarks in accordance with this Methodology depends on

- activity in each currency on a case by case basis, and
- the quality and representativeness of the rates available to RBSL for the calculation of the benchmark.

Use of Data Sources including order matching platforms and quotes available on the LSEG Market Data System, both of which represent the trading and quote activity of a range of market participants, maintains the representativeness of the rates available to RBSL and mitigates the risk of a concentration of input data.

If any reduction of quality in the rates or fragmentation of activity is identified or foreseen, RBSL shall review the Benchmark Methodologies and their effectiveness in determining suitable benchmarks given conditions in the underlying markets. Such reviews shall be in accordance with the RBSL Benchmark Internal Review Procedures.

The design of the benchmarks are resilient against disruptions and periods of low liquidity. However, technical problems or extreme market events may lead to unusually illiquid or fragmented markets, resulting in inadequate input data. Expert judgment is used to determine such circumstances. In such cases, RBSL will endeavour to re-publish the most recent benchmark rates for the affected currency or currencies until the disruption has ended or changes have been implemented.

Section 8

Republication of a benchmark

Under exceptional circumstances and in accordance with the WMR Republication Rates Policy, it may be necessary to amend the benchmark rates for one or more currencies after publication. This will be determined by RBSL, after consultation with key users, if appropriate. Under no circumstances will a benchmark for one day be amended after the publication of the following weekday's benchmark.

In the event that there is a disruption to the publication of the benchmark, or it is necessary to amend a published benchmark, RBSL will notify clients as early as possible.

Section 9

Methodology changes and benchmark cessation

The Spot, Forward and NDF benchmark Methodologies have been adopted as being a reliable and resilient means for providing a benchmark that accurately represents market rates for the FX currencies it comprises.

The benchmark methodologies are subject to a review in order to assess their ongoing fitness for purpose on at least an annual basis. In the event that the review leads RBSL to believe that a change to the Methodology is required and that the change is material in its effect on the benchmark, a market consultation will be conducted in accordance with the RBSL Benchmark Methodology Change Procedures in order to seek feedback from a representative range of stakeholders. RBSL will review all feedback and, if following such review, it resolves to proceed with the proposed change or changes, will provide sufficient notice to users of a benchmark before implementing such change or changes.

Circumstances beyond the control of RBSL may necessitate an immediate change to or the cessation of a benchmark. Such circumstances include without limitation (i) a sustained loss of liquidity in the underlying FX markets and (ii) a loss of liquidity in the available Data Sources such that the Data Sources are no longer representative of FX rates in the wider market.

In the event that an immediate change is required, RBSL will provide as much notice as is practicable in accordance with the RBSL Benchmark Methodology Change Procedures and following such change will conduct an internal review of the Benchmark Methodology.

If it becomes necessary to cease calculation and distribution of a benchmark, RBSL will implement the RBSL Benchmark Cessation Policy. This includes conducting an analysis of the estimated usage of the benchmark and, where feasible, the selection of a credible alternative benchmark. In all cases, RBSL will take all reasonable steps to ensure that all users and other stakeholders are made aware as soon as possible of any intention or possible necessity to cease the benchmark.

Any material change to a Benchmark Methodology or cessation of a benchmark may have an impact on any financial contract or financial instrument that references the benchmark or on the measurement of the performance of an investment fund that uses or refers to the benchmark. Financial instruments that reference a benchmark include spot FX contracts and exchange traded and OTC derivative contracts including outright forwards, FX swaps and option contracts. benchmarks are also used in indices based on portfolios of securities denominated in multiple currencies. Such indices may themselves be replicated by funds or serve as benchmarks for derivative contracts.

A material change to a Methodology may lead to a change in the economic reality represented by a benchmark and therefore to the economic exposure of any financial contract or financial instrument that references the benchmark. A cessation of a benchmark would require the selection of an alternative benchmark or the implementation of any fallback procedures for financial contracts or financial instruments that reference a benchmark.

Section 10

Further information

The Benchmark Methodology document which provides additional information and definitions on the determination and administration of the WMR Spot, Forward and NDF Rates is available on RBSL's [website](#).

This benchmark statement shall be reviewed at least every two years, or whenever there is a change to either the type of the Benchmark or to the Methodology used in the determination of the benchmark.

General statistics regarding activity in the FX market is compiled and published by the Bank for International Settlements. The most recent Triennial Survey of foreign exchange and OTC derivative trading is available at www.bis.org.

For further information about the WMR FX benchmark rates, please refer to the [WMR FX website](#) or contact the Administrator at or wmr.sales@lseg.com.

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For over 35 years we have been at the forefront of driving change for the investor, always innovating to shape the next generation of benchmarks and investment solutions that open up new opportunities for the global investment community.

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