

# **The MSFX<sup>SM</sup> Indices Manual**

**2023 Edition**

Updated March 29, 2023

The data and information (the “Information”) presented in this MSFX Indices Manual reflects the methodology (the “MSFX Indices Methodology”) for calculating and determining the level of each of the MSFX Indices (the “MSFX Indices” or individually, an “MSFX Index”). Upon launch in 2009, this MSFX Indices Manual and the MSFX Indices Methodology were created, with the exceptions noted below, and initially published and compiled by the Morgan Stanley Institutional Research Department. As of May 18, 2022, Morgan Stanley & Co. LLC took the role of index sponsor (the “Index Sponsor”) and of compiling and publishing all the MSFX Indices. This MSFX Indices Manual and the MSFX Indices Methodology are the exclusive property of Morgan Stanley & Co. LLC (“Morgan Stanley”).

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This edition of the MSFX Indices Manual reflects the methodology that will be utilized with respect to the determination and calculation of the MSFX Indices as of May 18, 2022, unless amended in accordance with the provisions herein. After May 18, 2022, the methodology shall remain in effect until amended or replaced by an updated version. However, the MSFX Methodology is subject to revision and adjustment by the Index Sponsor, as described herein.

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# I. Introduction

## I.1 Overview of the MSFX Indices<sup>1</sup>

The MSFX Indices suite consists of tradable indices (together, the “MSFX Indices” and individually, an “MSFX Index”) relating to (A) seven (7) developed market and one (1) emerging market currencies, each valued relative to the U.S. dollar, (B) seven (7) developed market currencies valued relative to the European Union euro (the “EUR cross-currencies”), (C) seven (7) developed market currencies valued relative to the British pound (the “GBP cross-currencies”) (together, the “MSFX Currencies” and individually, an “MSFX Currency”). The MSFX Indices were designed as tradable benchmarks for the foreign exchange rate performance of the related MSFX Currency pairs. The MSFX Indices were created by and are calculated and disseminated daily on a real time basis by or for the Index Sponsor using an objective and systematic methodology that uses publicly available data sources that reflect actual quotes or trades by market participants.

The MSFX Indices provide “long”, “short” and “leveraged” benchmarks for investments in a wide range of currencies. Each single currency pair has both a “long” version (the “MSFX Long Indices” or, individually, an “MSFX Long Index”) and a “short” version (the “MSFX Short Indices” or, individually, an “MSFX Short Index”), and may also have a “3x leveraged long” and “3x leveraged short” version (the “MSFX Triple Indices”), or “5x leveraged long” and “5x leveraged short” version (the “MSFX Five Times Leveraged (5X) Indices”), as more fully detailed herein.

Each MSFX Index will have a “total return” version, reflecting the performance of a constant fully collateralized currency investment in the related MSFX Currency, and may have an “excess return” version, reflecting the performance of a pure currency investment in the related MSFX Currency.

The Index Sponsor first began publishing certain of the MSFX indices in July 2009 and has continued to roll out publication and calculation of new MSFX Indices listed herein in its sole discretion. In addition, the Index Sponsor has calculated historical levels for each of the MSFX Indices being published using the methodology contained herein; provided however, that historical levels published may have been calculated using generic Bloomberg mid level data sources rather than the actual reference sources set forth under “The MSFX Indices Methodologies” herein. The MSFX Indices will be set to a value of 100 as of the date of their initial calculation, with the exception of the MSFX triple indices which will be set to a value of 100 as of the 4th of January 2010. Levels for the MSFX Indices may be affected by modifications to the relevant MSFX Index in accordance with this MSFX Indices Manual.

Levels for the MSFX Indices will be published daily by or for the Index Sponsor between 8:00 a.m. and 4:30 p.m. (London time) on each business day for the related MSFX Currency, with such levels being updated on a “live” basis approximately every 15 seconds on the related reference sources set forth herein. An official closing level will be published (i) for the MSFX Indices related to all MSFX Currencies other than CNY, on any day where The WM Company (“WM”) publishes a 4:00 p.m. London close for the specific currency, and (ii) for the MSFX Indices related to CNY on any day where the official fixing rate is published on the fixing source for the specific currency.

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<sup>1</sup> CC: we assume that this remains true for the new indices.

## **I.2 The MSFX Indices Manual**

This MSFX Indices Manual describes the current MSFX Indices Methodology used by the Index Sponsor in determining and calculating the MSFX Indices levels on any given day. The Index Sponsor is committed to using commercially reasonable efforts to maintain the MSFX Indices as liquid, tradable indices that serve as benchmarks for foreign exchange rate investing in the MSFX Currencies. As a result, modifications or refinements to the MSFX Indices Methodology, and consequently this MSFX Indices Manual, may be necessary from time to time. The Index Sponsor reserves the right to make such modifications or refinements, after consultation with the MSFX Indices Committee, as it believes necessary in order to preserve and enhance the utility and tradability of the MSFX Indices as benchmarks for foreign exchange rate investing in the MSFX Currencies.

Neither this MSFX Indices Manual nor any set of procedures, however, are capable of anticipating all possible circumstances and events that may affect the MSFX Indices and their respective calculation methodologies. The detailed rules-based approach contained in this MSFX Indices Manual may not at all times be able to reflect the underlying liquidity and condition of a specific market, particularly in periods of extraordinary market volatility or rapid technological change. Accordingly, the Index Sponsor, after consultation with the MSFX Indices Committee, may make certain determinations that cannot be adequately reflected in this MSFX Indices Manual with regard to an MSFX Currency, the related exchange rate or the related MSFX Index, should conditions exist (as described herein) or upon the occurrence of certain extraordinary market events and market emergencies, that in the discretion of the Index Sponsor and Index Committee, would undermine the effectiveness of the related MSFX Index as a measure for the related foreign exchange rate performance or as a tradable index.

All questions of interpretation with respect to the application of the provisions of this MSFX Indices Manual, including any determinations that need to be made in the event of an adjustment event, market disruption, discontinuance or other circumstances or events that affect the MSFX Indices, will be resolved in a commercially reasonable manner by the Index Sponsor after consultation with the MSFX Indices Committee (as discussed below). The composition of the MSFX Indices, and the value of the MSFX Indices on any given day, as determined and published by the Index Sponsor, are dispositive.

Wherever practicable, any modifications, adjustments or actions will be publicly announced by the Index Sponsor prior to their effective date.

### I.3 The MSFX Currencies

#### Developed Market Currencies (vs. USD)

Australian dollar (AUD)  
 British pound (GBP)  
 European Union euro (EUR)  
 Japanese yen (JPY)  
 Norwegian krone (NOK)  
 Swedish krona (SEK)  
 Swiss franc (CHF)

#### Standard Quotation

USD per 1 AUD  
 USD per 1 GBP  
 USD per 1 EUR  
 JPY per 1 USD  
 NOK per 1 USD  
 SEK per 1 USD  
 CHF per 1 USD

#### Emerging Market Currencies (vs. USD)

Chinese renminbi (Yuan) (CNY)

#### Standard Quotation

CNY per 1 USD

#### Developed Market EUR Cross-Currencies (vs. EUR)

Australian dollar (AUD)  
 British pound (GBP)  
 Japanese yen (JPY)  
 Norwegian krone (NOK)  
 Swedish krona (SEK)  
 Swiss franc (CHF)  
 United States dollar (USD)

#### Standard Quotation

AUD per 1 EUR  
 GBP per 1 EUR  
 JPY per 1 EUR  
 NOK per 1 EUR  
 SEK per 1 EUR  
 CHF per 1 EUR  
 USD per 1 EUR

#### Developed Market GBP Cross-Currencies (vs. GBP)

Australian dollar (AUD)  
 British pound (EUR)  
 Japanese yen (JPY)  
 Norwegian krone (NOK)  
 Swedish krona (SEK)  
 Swiss franc (CHF)  
 United States dollar(USD)

#### Standard Quotation

AUD per 1 GBP  
 EUR per 1 GBP  
 JPY per 1 GBP  
 NOK per 1 GBP  
 SEK per 1 GBP  
 CHF per 1 GBP  
 USD per 1 GBP

## I.4 The MSFX Indices

A list of all of the MSFX Indices can be accessed on Bloomberg Page “ALLX MSCE” and each MSFX Index can be found using respective Bloomberg Index Ticker set forth next to each MSFX Index set forth below. \*

### A. MSFX Total Return (TR) Indices and Related Bloomberg Index Tickers

#### I. Developed Market Currencies – USD

<u>Long and Short Indices – Total Return (USD)</u>			
<u>Developed Market Currency Indices (TR) (USD)</u>	<u>Bloomberg Index Ticker</u>		
Long Australian Dollar Index (TR)	MSCEAUDL	N/A	N/A
Short Australian Dollar Index (TR)	MSCEAUDS	N/A	N/A
Long British Pound Index (TR)	MSCEGBPL	N/A	N/A
Short British Pound Index (TR)	MSCEGBPS	N/A	N/A
Long Euro Index (TR)	MSCEEURL	N/A	N/A
Short Euro Index (TR)	MSCEEURS	N/A	N/A
Long Japanese Yen Index (TR)	MSCEJPYL	N/A	N/A
Short Japanese Yen Index (TR)	MSCEJPYS	N/A	N/A
Long Norwegian Krone Index (TR)	MSCENOKL	N/A	N/A
Short Norwegian Krone Index (TR)	MSCENOKS	N/A	N/A
Long Swedish Krona Index (TR)	MSCESEKL	N/A	N/A
Short Swedish Krona Index (TR)	MSCESEKS	N/A	N/A
Long Swiss Franc Index (TR)	MSCECHFL	N/A	N/A
Short Swiss Franc Index (TR)	MSCECHFS	N/A	N/A
<u>Triple Long and Triple Short Indices – Total Return (USD)</u>		<u>5X Long and 5X Short Indices – Total Return (USD)</u>	
<u>Developed Market Currency Triple Indices (TR) (USD)</u>	<u>Bloomberg Index Ticker</u>	<u>Developed Market Currency 5X Indices (TR) (USD)</u>	
Triple Long Australian Dollar Index (TR)	MSCEAUUL	5X Long Australian Dollar Index (TR)	MSCEAUXL
Triple Short Australian Dollar Index (TR)	MSCEAUUS	5X Short Australian Dollar Index (TR)	MSCEAUXS
Triple Long British Pound Index (TR)	MSCEGBUL	5X Long British Pound Index (TR)	MSCEGBXL
Triple Short British Pound Index (TR)	MSCEGBUS	5X Short British Pound Index (TR)	MSCEGBXS
Triple Long Euro Index (TR)	MSCEERUL	5X Long Euro Index (TR)	MSCEERXL
Triple Short Euro Index (TR)	MSCEERUS	5X Short Euro Index (TR)	MSCEERXS
Triple Long Japanese Yen Index (TR)	MSCEJPUL	5X Long Japanese Yen Index (TR)	MSCEJPXL
Triple Short Japanese Yen Index (TR)	MSCEJPUS	5X Short Japanese Yen Index (TR)	MSCEJPXS
Triple Long Norwegian Krone Index (TR)	MSCENOUL	5X Long Norwegian Krone Index (TR)	MSCENOXL
Triple Short Norwegian Krone Index (TR)	MSCENOUS	5X Short Norwegian Krone Index (TR)	MSCENOXS
Triple Long Swedish Krona Index (TR)	MSCESEUL	5X Long Swedish Krona Index (TR)	MSCESEXL
Triple Short Swedish Krona Index (TR)	MSCESEUS	5X Short Swedish Krona Index (TR)	MSCESEXS
Triple Long Swiss Franc Index (TR)	MSCECHUL	5X Long Swiss Franc Index (TR)	MSCECHXL
Triple Short Swiss Franc Index (TR)	MSCECHUS	5X Short Swiss Franc Index (TR)	MSCECHXS



**II. Emerging Market Currencies – USD**

<b><u>Long and Short Indices – Total Return (USD)</u></b>	
<b><u>Emerging Market Currency Indices (TR) (USD)</u></b>	<b><u>Bloomberg Index Ticker</u></b>
Long Chinese Renminbi Index (TR)	MSCECNYL
Short Chinese Renminbi Index (TR)	MSCECNYS

**III. Developed Market Currencies – EUR**

<b><u>Long and Short Indices – Total Return (EUR)</u></b>			
<b><u>Developed Market Cross-Currency Indices (TR) (EUR)</u></b>	<b><u>Bloomberg Index Ticker</u></b>		
Long Australian Dollar/Euro Index (TR)	MSCEEAL	N/A	N/A
Short Australian Dollar/Euro Index (TR)	MSCEEAS	N/A	N/A
Long British Pound/Euro Index (TR)	MSCEEGL	N/A	N/A
Short British Pound/Euro Index (TR)	MSCEEGL	N/A	N/A
Long Japanese Yen/Euro Index (TR)	MSCEEJL	N/A	N/A
Short Japanese Yen/Euro Index (TR)	MSCEEJS	N/A	N/A
Long Norwegian Krone/Euro Index (TR)	MSCEENL	N/A	N/A
Short Norwegian Krone/Euro Index (TR)	MSCEENS	N/A	N/A
Long Swedish Krona/Euro Index (TR)	MSCEESL	N/A	N/A
Short Swedish Krona/Euro Index (TR)	MSCEESS	N/A	N/A
Long Swiss Franc/Euro Index (TR)	MSCEEHL	N/A	N/A
Short Swiss Franc/Euro Index (TR)	MSCEEHS	N/A	N/A
Long US Dollar/Euro Index (TR)	MSCEEUL	N/A	N/A
Short US Dollar/Euro Index (TR)	MSCEEUS	N/A	N/A
<b><u>Triple Long and Triple Short Indices – Total Return (EUR)</u></b>		<b><u>5X Long and 5X Short Indices – Total Return (EUR)</u></b>	
<b><u>Developed Market Cross-Currency Triple Indices (TR) (EUR)</u></b>	<b><u>Bloomberg Index Ticker</u></b>	<b><u>Developed Market Cross-Currency 5X Indices (TR) (EUR)</u></b>	<b><u>Bloomberg Index Ticker</u></b>
Triple Long Australian Dollar/Euro Index (TR)	MSCEEAL	5X Long Australian Dollar/Euro Index (TR)	MSCEEAXL
Triple Short Australian Dollar/Euro Index (TR)	MSCEEAS	5X Short Australian Dollar/Euro Index (TR)	MSCEEAXS
Triple Long British Pound/Euro Index (TR)	MSCEEGL	5X Long British Pound/Euro Index (TR)	MSCEEGLX
Triple Short British Pound/Euro Index (TR)	MSCEEGL	5X Short British Pound/Euro Index (TR)	MSCEEGLS
Triple Long Japanese Yen/Euro Index (TR)	MSCEEJL	5X Long Japanese Yen/Euro Index (TR)	MSCEEJXL
Triple Short Japanese Yen/Euro Index (TR)	MSCEEJS	5X Short Japanese Yen/Euro Index (TR)	MSCEEJXS
Triple Long Norwegian Krone/Euro Index (TR)	MSCEENL	5X Long Norwegian Krone/Euro Index (TR)	MSCEENXL
Triple Short Norwegian Krone/Euro Index (TR)	MSCEENS	5X Short Norwegian Krone/Euro Index (TR)	MSCEENXS
Triple Long Swedish Krona/Euro Index (TR)	MSCEESL	5X Long Swedish Krona/Euro Index (TR)	MSCEESXL
Triple Short Swedish Krona/Euro Index (TR)	MSCEESS	5X Short Swedish Krona/Euro Index (TR)	MSCEESXS
Triple Long Swiss Franc/Euro Index (TR)	MSCEEHL	5X Long Swiss Franc/Euro Index (TR)	MSCEEHXL
Triple Short Swiss Franc/Euro Index (TR)	MSCEEHS	5X Short Swiss Franc/Euro Index (TR)	MSCEEHXS
Triple Long US Dollar/Euro Index (TR)	MSCEEUL	5X Long US Dollar/Euro Index (TR)	MSCEEUXL
Triple Short US Dollar/Euro Index (TR)	MSCEEUS	5X Short US Dollar/Euro Index (TR)	MSCEEUXS

**IV. Developed Market Currencies – GBP**

<b><u>Long and Short Indices – Total Return (GBP)</u></b>			
<b><u>Developed Market Cross-Currency Indices (TR) (GBP)</u></b>	<b><u>Bloomberg Index Ticker</u></b>		
Long Australian Dollar/GBP Index (TR)	MSCEGAL	N/A	N/A
Short Australian Dollar/GBP Index (TR)	MSCEGAS	N/A	N/A
Long Euro/GBP Index (TR)	MSCEGEL	N/A	N/A
Short Euro/GBP Index (TR)	MSCEGES	N/A	N/A
Long Japanese Yen/GBP Index (TR)	MSCEGJL	N/A	N/A
Short Japanese Yen/GBP Index (TR)	MSCEGJS	N/A	N/A
Long Norwegian Krone/GBP Index (TR)	MSCEGNL	N/A	N/A
Short Norwegian Krone/GBP Index (TR)	MSCEGNS	N/A	N/A
Long Swedish Krona/GBP Index (TR)	MSCEGSL	N/A	N/A
Short Swedish Krona/GBP Index (TR)	MSCEGSS	N/A	N/A
Long Swiss Franc/GBP Index (TR)	MSCEGHL	N/A	N/A
Short Swiss Franc/GBP Index (TR)	MSCEGHS	N/A	N/A
Long US Dollar/GBP Index (TR)	MSCEGUL	N/A	N/A
Short US Dollar/GBP Index (TR)	MSCEGUS	N/A	N/A
<b><u>Triple Long and Triple Short Indices – Total Return (GBP)</u></b>		<b><u>5X Long and 5X Short Indices – Total Return (GBP)</u></b>	
<b><u>Developed Market Cross-Currency Triple Indices (TR) (GBP)</u></b>	<b><u>Bloomberg Index Ticker</u></b>	<b><u>Developed Market Cross-Currency 5X Indices (TR) (GBP)</u></b>	<b><u>Bloomberg Index Ticker</u></b>
Triple Long Australian Dollar/GBP Index (TR)	MSCEGAUL	5X Long Australian Dollar/GBP Index (TR)	MSCEGAXL
Triple Short Australian Dollar/GBP Index (TR)	MSCEGAUS	5X Short Australian Dollar/GBP Index (TR)	MSCEGAXS
Triple Long Euro/GBP Index (TR)	MSCEGEUL	5X Long Euro/GBP Index (TR)	MSCEGEXL
Triple Short Euro/GBP Index (TR)	MSCEGEUS	5X Short Euro/GBP Index (TR)	MSCEGEXS
Triple Long Japanese Yen/GBP Index (TR)	MSCEGJUL	5X Long Japanese Yen/GBP Index (TR)	MSCEGJXL
Triple Short Japanese Yen/GBP Index (TR)	MSCEGJUS	5X Short Japanese Yen/GBP Index (TR)	MSCEGJXS
Triple Long Norwegian Krone/GBP Index (TR)	MSCEGNUL	5X Long Norwegian Krone/GBP Index (TR)	MSCEGNXL
Triple Short Norwegian Krone/GBP Index (TR)	MSCEGNUS	5X Short Norwegian Krone/GBP Index (TR)	MSCEGNXS
Triple Long Swedish Krona/GBP Index (TR)	MSCEGSUL	5X Long Swedish Krona/GBP Index (TR)	MSCEGSXL
Triple Short Swedish Krona/GBP Index (TR)	MSCEGSUS	5X Short Swedish Krona/GBP Index (TR)	MSCEGSXS
Triple Long Swiss Franc/GBP Index (TR)	MSCEGHUL	5X Long Swiss Franc/GBP Index (TR)	MSCEGHXL
Triple Short Swiss Franc/GBP Index (TR)	MSCEGHUS	5X Short Swiss Franc/GBP Index (TR)	MSCEGHXS
Triple Long US Dollar/GBP Index (TR)	MSCEGUUL	5X Long US Dollar/GBP Index (TR)	MSCEGUXL
Triple Short US Dollar/GBP Index (TR)	MSCEGUUS	5X Short US Dollar/GBP Index (TR)	MSCEGUXS

## I.5 Certain Basic Foreign Exchange Market Concepts and Definitions

### **Deliverable Currencies**

All of the developed market MSFX Currencies are “deliverable currencies”, which means that a “spot transaction” will result in an actual exchange of currencies.

For the Total Return versions of the MSFX Indices based on the deliverable MSFX Currencies, in order to replicate the return of a constant fully collateralized strategy, the related MSFX Index will accrue interest daily based on the (i) One-Month T-Bill Rate (“T-Bill”), in the case of the MSFX Currencies valued relative to the U.S. dollar, (ii) Euro Overnight Index Average rate (“ESTR”), in the case of the MSFX Currencies valued relative to the Euro and (iii) the Sterling Overnight Interbank Average Rate (“SONIA”), in the case of the MSFX Currencies valued relative to the British Pound. Hence, the daily return on the related MSFX Total Return Index will be computed based on the MSFX Currency return and the One-Month T-Bill return, ESTR return or SONIA return, as applicable. Please see the more fulsome MSFX Indices Methodologies herein.

### **Non-Deliverable Currencies**

The government of China restricts the trading of their currency and therefore it is not possible for foreign parties to own and trade this currency for speculative purposes. In order to allow hedging and trading by foreign parties, a market has developed in derivatives that allows parties to receive the equivalent U.S. dollar return on this currency. These derivatives are called Non-Deliverable Forward (“NDF”) contracts. An NDF contract sets an exchange rate for the currency at some time in the future. The exchange rate at which the NDF typically settles is the spot rate set by the People’s Bank of China for CNY.

For the Total Return versions of the related MSFX Indices, in order to replicate the return of a fully collateralized strategy, the related MSFX Index will accrue interest daily at the One-Month T-Bill Rate. Hence, the daily return on the related MSFX Index will be computed as the sum of the return of the NDF contract and the One Month T-Bill return for the relevant quarter. Please see the more fulsome MSFX Indices Methodologies herein.

### **Spot Transaction**

In a **Spot** currency transaction, a counterparty agrees to exchange some amount “A” of currency “X” against another currency “Y” at a certain rate. Generally, the actual exchange occurs T+2 from the transaction date (with the exception of CAD, which settles T+1).

### **Spot Next Transaction**

In a **Spot Next** transaction, a counterparty agrees to exchange some amount “A” of currency “X” against another currency “Y” at a certain rate two business days from the transaction date and receive back the same amount “A” of currency “Y” against currency “X” at the same rate plus a spread three business days from the transaction date. The spread is generally quoted in the market.

### **Tom Next Transaction**

In a **Tom Next** transaction, a counterparty agrees to exchange some amount “A” of currency “X” against another currency “Y” at a certain rate one business day from the transaction date and receive back the same amount “A” of currency “X” against currency “Y” at the same rate plus a spread two business days from the transaction date. This spread is quoted in the market.

### **I.6 The MSFX Indices Committee**

Morgan Stanley has established an Indices Committee (the “MSFX Indices Committee”) to oversee activities relating to the MSFX Methodology and the calculation and publication of the MSFX Indices. The MSFX Indices Committee will meet with the Index Sponsor on an annual basis and at other times during the year at the request of the Index Sponsor as issues or market events arise that warrant the MSFX Indices Committee consideration.

The principal purpose of the MSFX Indices Committee is to advise the Index Sponsor with respect to, among other things, the methodology and calculation of the MSFX Indices, the effectiveness of the MSFX Indices as a measure of the related foreign exchange rate performance and the need for changes in the composition or methodology of the MSFX Indices. The MSFX Indices Committee, currently comprised of senior employees of the Index Sponsor and representatives from Sales and Trading, Strats, Legal & Compliance, reviews any significant market events or conditions that may affect the MSFX Indices. In addition, the MSFX Indices Committee may suggest that the Index Sponsor revise the MSFX Methodology and make any changes to the MSFX Indices as it reasonably deems necessary in response to such events or conditions. Decisions with respect to the composition, calculation and operation of the MSFX Indices in the ordinary daily course of business will be made by the Index Sponsor after consultation with the MSFX Indices Committee. Morgan Stanley considers information about any changes to the MSFX Indices and related matters to be potentially market moving and material. Therefore, all MSFX Indices Committee discussions are deemed to be confidential.

### **I.7 Morgan Stanley Conflicts of Interest**

Morgan Stanley may from time to time engage in transactions involving the underlying components of the MSFX Indices to facilitate client business or in response to a direct client instruction and may act as market-maker in such underlying components of the MSFX Indices. Such activities may not be for the benefit of the holders of financial products linked to the Index and may have a positive or negative effect on the levels for the MSFX Indices and consequently on the value and performance of any financial products linked to the MSFX Indices. In addition, Morgan Stanley may from time to time have other roles in relation to the Index such as acting as the issuer of, or counterparty to, financial products linked to the MSFX Indices and acting as calculation agent for such products. Morgan Stanley may also issue derivative instruments in respect of the underlying components of the MSFX Indices and the use of such derivatives may affect the value of the underlying components of the MSFX Indices.

The MSFX Indices reflect the performance of the underlying components of the MSFX Indices but there is no requirement that the Index Sponsor purchase or sell the underlying components of the MSFX Indices in order to calculate the MSFX Indices. However, in its role in relation to financial products linked to the MSFX Indices, Morgan Stanley may enter into hedging transactions in respect of the underlying components of the MSFX Indices which may or may not affect the value of the underlying components of the MSFX Indices and/or the MSFX Indices. In addition, the unwinding of such hedging transactions may also affect the value of such underlying components of the MSFX Indices, which may in turn affect the value of the MSFX Indices and any financial products linked to the MSFX Indices.

These and other activities carried out by Morgan Stanley may present conflicts of interest and may affect the levels for the MSFX Indices in ways detrimental to investors in financial products linked to the MSFX Indices.

## **II. Index Rules**

### **II.1 Calculation and Publication of the MSFX Indices**

The Index Sponsor will itself or through its calculation agent (if any) use commercially reasonable efforts to calculate and publish (a) live levels for the MSFX Indices from 8:00 a.m. to 4:30 p.m. London time and (b) closing levels for the MSFX Indices at 4:30 p.m. London time, (i) for the MSFX Indices related to all MSFX Currencies other than CNY, on any day where WM publishes a 4:00 p.m. London close for the specific currency, and (ii) for the MSFX Indices related to CNY on any day where the official fixing rate is published on the fixing source; in each case subject to the adjustment and market disruption provisions set forth herein.

Published levels for the MSFX Indices will be rounded to 3 decimals. Closing levels for the MSFX Indices for purposes of the Index Methodology will be rounded to 7 decimals.

### **II.2 Data Sources**

Reuters will be the primary source used to obtain the relevant spot foreign exchange rates used in the calculation of the MSFX Indices. WM will be the primary source used to obtain the relevant fixings for the relevant foreign exchange market. To the extent possible, the underlying rates represent those sources that are commonly used by market participants when executing foreign investment transactions. Where available, multi-contributor rate sources are used over single contributor rate sources, with the exception of official fixing rates.

Reference sources for any of the rates or inputs in the methodology may be changed by the Index Sponsor, if after consultation with the Index Committee, the Index Sponsor determines that (i) the reference source is no longer available, (ii) the reference source is replaced by another source or (iii) the Index Sponsor determines, in its reasonable judgment, that the source is manifestly incorrect and no longer reflects accurate market data. In the event of any such determination, and wherever practicable, any such source change will be publicly announced prior to its effective date.

**II.3 The MSFX Indices Methodologies**

**Developed Market Currency Long Indices (Total Return) (USD) – AUD, GBP, EUR vs. USD**

The following methodology applies to the computation of the level for any of the Developed Market Currency Long Indices (Total Return) (USD) relating to the MSFX Currencies listed above, adjusted to reflect the parameters set forth below and in the table below with respect to each MSFX Currency.

“**Business Day**” means a day on which commercial banks and foreign exchange markets settle payments and are open for general business (including dealings in foreign exchange and foreign currency deposits) in the Financial Center for the related MSFX Currency; provided that, a TARGET Business Day shall refer to any day on which TARGET (the Trans-European Automated Gross settlement Express Transfer system) is open.

On any day “D” the related MSFX Index closing level “I” will be computed as follows:

$$I_D = I_{D-1} \times \left[ 1 + \left[ \frac{(D - D_{-1}) \times TB Y_D}{36,500} \right] \right] + \frac{I_{D-2}}{FX_{D-2}} \times \left[ FX_D - \left( FX_{D-1} + \frac{S/N_{D-1}}{S/N \text{ ScalingFactor}} \right) \right]$$

where:

- “I” is the related MSFX Index closing level;
- “D” is any day;
- “D-1” is the first Index-Good Day preceding day D;
- “D-2” is the first GBP Business Day preceding day D-1;
- “**Index-Good Day**” is a day that is both a (i) Business Day with respect to the related MSFX Currency and (ii) the next Business Day is also a New York Business Day. The related MSFX Index will only be rolled on an Index-Good Day.
- “**TBY**” is the One (1)-Month Treasury Bill Yield reported by the U.S Federal Reserve on Reuters Page “USYTFRB1M=RR”. The value of TBY will be taken at 8 a.m. London time on the relevant calculation day (D) and will reflect the value published for the prior New York Fed Business Day.
  - “**New York Fed Business Day**” means any day except for a Saturday, Sunday or a day on which the Federal Reserve Bank of New York is closed;
- “**FX**” is the WM exchange rate fixing for the related MSFX Currency relative to the USD at the Roll Time, as posted under the column “Mid” on the Fix Source; and
- “**S/N**” is the Spot/Next “Ask” side for the related MSFX Currency relative to USD at the Roll Time, as reported on the S/N Source.

<u>MSFX Currency</u>	<u>MSFX Currency Pair</u>	<u>MSFX Index</u>	<u>Financial Center</u>	<u>Roll Time</u>	<u>Fix Source (Mid) (Reuters)</u>	<u>Live Source (Mid) (Reuters)</u>	<u>S/N Source (Ask) (Reuters)<sup>(1)</sup></u>	<u>S/N Scaling Factor</u>
AUD	AUDUSD	MSCEAUDL	Sydney, Australia	4:00 p.m. London	WMRSPOT12	AUD=	AUDSN = TTKL	10,000
GBP	GBPUSD	MSCEGBPL	London, England	4:00 p.m. London	WMRSPOT07	GBP=	GBPSN = TTKL	10,000
EUR	EURUSD	MSCEEURL	TARGET	4:00 p.m. London	WMRSPOT05	EUR=	EURSN = TTKL	10,000

(1) The “=TTKL” notation signifies that the source of the data is obtained via Tullett Prebon inter dealer brokers based in London.

To calculate a **live level** at any time on any day for any of the MSFX Indices listed above, the Fix Source (Mid) in the definition of “FX” will be replaced by the “mid” side (average of the bid and the ask) value taken from the related Live Source. All other calculations will remain the same.

**Developed Market Currency Short Indices (Total Return) (USD) - AUD, GBP, EUR vs. USD**

The following methodology applies to the computation of the level for any of the Developed Market Currency Short Indices (Total Return) (USD) relating to the MSFX Currencies listed above, adjusted to reflect the parameters set forth below and in the table below with respect to each MSFX Currency.

“**Business Day**” means a day on which commercial banks and foreign exchange markets settle payments and are open for general business (including dealings in foreign exchange and foreign currency deposits) in the Financial Center for the related MSFX Currency; provided that, a TARGET Business Day shall refer to any day on which TARGET (the Trans-European Automated Gross settlement Express Transfer system) is open.

On any day “D” the related MSFX Index closing level “I” will be computed as follows:

$$I_D = I_{D-1} \times \left[ 1 + \left[ \frac{(D - D_{-1}) \times TBY_D}{36,500} \right] \right] - \frac{I_{D-2}}{FX_{D-2}} \times \left[ FX_D - \left( FX_{D-1} + \frac{S/N_{D-1}}{S/N \text{ ScalingFactor}} \right) \right]$$

where:

- “I” is the related MSFX Index closing level;
- “D” is any day;
- “D<sub>-1</sub>” is the first Index-Good Day preceding day D;
- “D<sub>-2</sub>” is the first GBP Business Day preceding day D<sub>-1</sub>;
- “**Index-Good Day**” is a day that is both a (i) Business Day with respect to the related MSFX Currency and (ii) the next Business Day is also a New York Business Day. The related MSFX Index will only be rolled on an Index-Good Day;
- “**TBY**” is the One (1)-Month Treasury Bill Yield reported by the U.S Federal Reserve on Reuters Page “USYTFRB1M=RR”. The value of TBY will be taken at 8 a.m. London time on the relevant calculation day (D) and will reflect the value published for the prior New York Fed Business Day.
  - “**New York Fed Business Day**” means any day except for a Saturday, Sunday or a day on which the Federal Reserve Bank of New York is closed;
- “**FX**” is the WM exchange rate fixing for the related MSFX Currency relative to the USD at the Roll Time, as posted under the column “Mid” on the Fix Source; and
- “**S/N**” is the Spot/Next “Bid” side for the related MSFX Currency relative to USD at the Roll Time, as reported on the S/N Source.

<u>MSFX Currency</u>	<u>MSFX Currency Pair</u>	<u>MSFX Index</u>	<u>Financial Center</u>	<u>Roll Time</u>	<u>Fix Source (Mid) (Reuters)</u>	<u>Live Source (Mid) (Reuters)</u>	<u>S/N Source (Bid) (Reuters) <sup>(1)</sup></u>	<u>S/N Scaling Factor</u>
AUD	AUDUSD	MSCEAUDS	Sydney, Australia	4:00 p.m. London	WMRSPOT12	AUD=	AUDSN = TTKL	10,000
GBP	GBPUSD	MSCEGBPS	London, England	4:00 p.m. London	WMRSPOT07	GBP=	GBPSN = TTKL	10,000
EUR	EURUSD	MSCEEURS	TARGET	4:00 p.m. London	WMRSPOT05	EUR=	EURSN = TTKL	10,000

(1) The “=TTKL” notation signifies that the source of the data is obtained via Tullett Prebon inter dealer brokers based in London.

To calculate a **live level** at any time on any day for any of the MSFX Indices listed above, the Fix Source (Mid) in the definition of “FX” will be replaced by the “mid” side (average of the bid and the ask) value taken from the related Live Source. All other calculations will remain the same.



**Developed Market Currency Long Indices (Total Return) (USD) - JPY, NOK, SEK, CHF vs. USD**

The following methodology applies to the computation of the level for any of the Developed Market Currency Long Indices (Total Return) (USD) relating to the MSFX Currencies listed above, adjusted to reflect the parameters set forth below and in the table below with respect to each MSFX Currency.

“**Business Day**” means a day on which commercial banks and foreign exchange markets settle payments and are open for general business (including dealings in foreign exchange and foreign currency deposits) in the Financial Center for the related MSFX Currency.

On any day “D” the related MSFX Index closing level “I” will be computed as follows:

$$I_D = I_{D-1} \times \left[ 1 + \left[ \frac{(D-D_{-1}) \times TBY_D}{36,500} \right] \right] + I_{D-2} \times FX_{D-2} \times \left[ \frac{1}{FX_D} - \frac{1}{FX_{D-1} + \frac{S/N_{D-1}}{S/N \text{ ScalingFactor}}} \right]$$

where:

- “I” is the related MSFX Index closing level;
- “D” is any day;
- “D<sub>-1</sub>” is the first Index-Good Day preceding day D;
- “D<sub>-2</sub>” is the first GBP Business Day preceding day D<sub>-1</sub>;
- “**Index-Good Day**” is a day that is both a (i) Business Day with respect to the related MSFX Currency and (ii) the next Business Day is also a New York Business Day. The related MSFX Index will only be rolled on an Index-Good Day;
  - For JPY, though December 25<sup>th</sup> is a Business Day in Japan, such day will not be considered an Index-Good Day for the purposes of the related MSFX Index. Rather, the related MSFX Index will be rolled on the first Index-Good Day prior to December 25<sup>th</sup> using the S/N Date relating to that December 25<sup>th</sup> and the S/N points of the first Index-Good Day prior to December 25<sup>th</sup>;
- “**TBY**” is the One (1)-Month Treasury Bill Yield reported by the U.S Federal Reserve on Reuters Page “USYTFRB1M=RR”. The value of TBY will be taken at 8 a.m. London time on the relevant calculation day (D) and will reflect the value published for the prior New York Fed Business Day.
  - “**New York Fed Business Day**” means any day except for a Saturday, Sunday or a day on which the Federal Reserve Bank of New York is closed;
- “**FX**” is the WM exchange rate fixing for the related MSFX Currency relative to the USD at the Roll Time, as posted under the column “Mid” on the Fix Source; and
- “**S/N**” is the Spot/Next “Bid” side for the related MSFX Currency relative to USD at the Roll Time, as reported on the S/N Source.

<u>MSFX Currency</u>	<u>MSFX Currency Pair</u>	<u>MSFX Index</u>	<u>Financial Center</u>	<u>Roll Time</u>	<u>Fix Source (Mid) (Reuters)</u>	<u>Live Source (Mid) (Reuters)</u>	<u>S/N Source (Bid) (Reuters)<sup>(1)</sup></u>	<u>S/N Scaling Factor</u>
JPY	USDJPY	MSCEJPYL	Tokyo, Japan	4:00 p.m. London	WMRSPOT12	JPY=	JPYSN = TTKL	100
NOK	USDNOK	MSCENOKL	Oslo, Norway	4:00 p.m. London	WMRSPOT06	NOK=	NOKSN = TTKL	10,000
SEK	USDSEK	MSCESEKL	Stockholm, Sweden	4:00 p.m. London	WMRSPOT07	SEK=	SEKSN = TTKL	10,000
CHF	USDCHF	MSCECHFL	Zurich, Switzerland	4:00 p.m. London	WMRSPOT07	CHF=	CHFSN = TTKL	10,000

(1) The “=TTKL” notation signifies that the source of the data is obtained via Tullett Prebon inter-dealer brokers based in London.

To calculate a **live level** at any time on any day for any of the MSFX Indices listed above, the Fix Source (Mid) in the definition of “FX” will be replaced by the “mid” side (average of the bid and the ask) value taken from the related Live Source. All other calculations will remain the same.

**Developed Market Currency Short Indices (Total Return) (USD) - JPY, NOK, SEK, CHF vs. USD**

The following methodology applies to the computation of the level for any of the Developed Market Currency ShortIndices (Total Return) (USD) relating to the MSFX Currencies listed above, adjusted to reflect the parameters set forth below and in the table below with respect to each MSFX Currency.

“**Business Day**” means a day on which commercial banks and foreign exchange markets settle payments and are open for general business (including dealings in foreign exchange and foreign currency deposits) in the related Financial Center for the related MSFX Currency.

On any day “D” the related MSFX Index closing level “I” will be computed as follows:

$$I_D = I_{D-1} \times \left[ 1 + \left[ \frac{(D-D-1) \times TBY_D}{36,500} \right] \right] - I_{D-2} \times FX_{D-2} \times \left[ \frac{1}{FX_D} - \frac{1}{FX_{D-1} + \frac{S/N_{D-1}}{S/N \text{ ScalingFactor}}} \right]$$

where:

- “I” is the related MSFX Index closing level;
- “D” is any day;
- “D<sub>1</sub>” is the first Index-Good Day preceding day D;
- “D<sub>2</sub>” is the first GBP Business Day preceding day D<sub>1</sub>;
- “**Index-Good Day**” is a day that is both a (i) Business Day with respect to the related MSFX Currency and (ii) the next Business Day is also a New York Business Day. The related MSFX Index will only be rolled on an Index-Good Day;
  - For JPY, though December 25<sup>th</sup> is a Business Day in Japan, such day will not be considered an Index-Good Day for the purposes of the related MSFX Index. Rather, the related MSFX Index will be rolled on the first Index-Good Day prior to December 25<sup>th</sup> using the S/N Date relating to that December 25<sup>th</sup> and the S/N points of the first Index-Good Day prior to December 25<sup>th</sup>;
- “**TBY**” is the One (1)-Month Treasury Bill Yield reported by the U.S Federal Reserve on Reuters Page “USYTFRB1M=RR”. The value of TBY will be taken at 8 a.m. London time on the relevant calculation day (D) and will reflect the value published for the prior New York Fed Business Day.
  - “**New York Fed Business Day**” means any day except for a Saturday, Sunday or a day on which the Federal Reserve Bank of New York is closed;
- “**FX**” is the WM exchange rate fixing for the related MSFX Currency relative to the USD at the Roll Time, as posted under the column “Mid” on the Fix Source; and
- “**S/N**” is the Spot/Next “Ask” side for the related MSFX Currency relative to USD at the Roll Time, as reported on the S/N Source.

<u>MSFX Currency</u>	<u>MSFX Currency Pair</u>	<u>MSFX Index</u>	<u>Financial Center</u>	<u>Roll Time</u>	<u>Fix Source (Mid) (Reuters)</u>	<u>Live Source (Mid) (Reuters)</u>	<u>S/N Source (Ask) (Reuters)<sup>(1)</sup></u>	<u>S/N Scaling Factor</u>
JPY	USDJPY	MSCEJPYS	Tokyo, Japan	4:00 p.m. London	WMRSPOT12	JPY=	JPYSN = TTKL	100
NOK	USDNOK	MSCENOKS	Oslo, Norway	4:00 p.m. London	WMRSPOT06	NOK=	NOKSN = TTKL	10,000
SEK	USDSEK	MSCSEKES	Stockholm, Sweden	4:00 p.m. London	WMRSPOT07	SEK=	SEKSN = TTKL	10,000
CHF	USDCHF	MSCECHFS	Zurich, Switzerland	4:00 p.m. London	WMRSPOT07	CHF=	CHFSN = TTKL	10,000

(1) The “=TTKL” notation signifies that the source of the data is obtained via Tullett Prebon inter-dealer brokers based in London.

To calculate a **live level** at any time on any day for any of the MSFX Indices listed above, the Fix Source (Mid) in the definition of “FX” will be replaced by the “mid” side (average of the bid and the ask) value taken from the related Live Source. All other calculations will remain the same.

**Developed Market EUR Cross-Currency Long and Short Indices (Total Return) (EUR) - AUD, CHF, GBP, JPY, NOK, SEK, USD vs. EUR**

The following methodology applies to the computation of the level for any of the Developed Market EUR Cross-Currency Long and Short Indices (Total Return) (EUR) relating to the MSFX Currencies listed above, adjusted to reflect the parameters set forth below and in the table below with respect to each MSFX Index.

“**Business Day**” means a day on which commercial banks and foreign exchange markets settle payments and are open for general business (including dealings in foreign exchange and foreign currency deposits) in the Financial Center for the related MSFX Currency.

On any day “D” the related MSFX Index closing level “I” will be computed as follows:

$$I_D = I_{D-1} \times \left[ 1 + \left[ \frac{(D-D_{-1}) \times EU_D}{36,500} \right] \right] + B \times I_{D-2} \times FW(D-2, SN_{Cross, D-2}, -B, B \times A) \times \left[ \frac{1}{FW(D, SN_{Cross, D}, B, -B \times A)} - \frac{1}{FW(D-1, SN_{Cross, D-1}, -B, B \times A)} \right]$$

where

$$FW(T1, T2, c1, c2) = \frac{EURUSD_{T1} + \left[ \frac{Pts_{SN, EUR, T1, c1}}{10'000} + \frac{Pts_{1w, EUR, T1, c1} - Pts_{SN, EUR, T1, c1}}{10'000} \frac{T2 - SN_{EUR, T1}}{1W_{EUR, T1} - SN_{EUR, T1}} \right] \times 1(T2 - SN_{EUR, T1})}{\left\{ FX_{T1} + \left[ \frac{Pts_{SN, FX, T1, c2}}{S/N \text{ Scaling Factor}} + \frac{Pts_{1w, FX, T1, c2} - Pts_{SN, FX, T1, c2}}{S/N \text{ Scaling Factor}} \frac{T2 - SN_{FX, T1}}{1W_{FX, T1} - SN_{FX, T1}} \right] \times 1(T2 - SN_{FX, T1}) \right\}^A}$$

where:

- “I” is the related MSFX Index closing level;
- “D” is any day;
- “D<sub>-1</sub>” is the first Index-Good Day preceding day D;
- “D<sub>-2</sub>” is the first GBP Business Day preceding day D<sub>-1</sub>;
- “**Index-Good Day**” is any day where WM publishes a close for the related MSFX Currency at the Roll Time and SN<sub>Cross, T</sub> is computed to be greater than SN<sub>Cross, T-1</sub>
- “**EU**” is the Euro Overnight Index Average rate (“EONIA”) calculated by the European Central Bank, as published on Bloomberg Page “EONIA Index”, minus – 0.5. The value of EU will be taken at 8 a.m. London time on the relevant calculation day (D) and will reflect the value published for the prior TARGET Business Day. Prior to 10 April 2017, this EU rate was floored at 0;
  - As of December 31, 2021, “EU” is the Euro Short-Term rate (“ESTR”) calculated by the European Central Bank, as published on Bloomberg Page “ESTRON Index”, minus - 0.415. The value of EU will be taken at 8a.m. London time on the relevant calculation day D and will reflect the value published for the prior TARGET Business Day
- “**TARGET Business Day**” is any day on which TARGET (the Trans-European Automated Gross settlement Express Transfer system) is open;
- “**FX**” is the WM exchange rate fixing for the related MSFX USD Currency relative to the USD at the Roll Time, as posted under the column “Mid” on the Fix Source; and
- “**EURUSD**” is the WM exchange rate fixing for EURUSD Currency at the Roll Time, as posted under the column “Mid” on the Fix Source (WMRSPOT05 on Reuters);
- “1(X)” is 1 if X ≥ 0 and 0 otherwise.
- “Pts<sub>Mat, FX, t, 1</sub>” refers to the ask side of the points for term Mat, for currency FX on day t
- “Pts<sub>Mat, FX, t, -1</sub>” refers to the bid side of the points for term Mat, for currency FX on day t
- “Pts<sub>Mat, EUR, T1, 1</sub>” refers to the ask side of the points for term Mat for the Euro Currency (EURFWD= on Reuters)
- “Pts<sub>Mat, EUR, T1, -1</sub>” refers to the bid side of the points for term Mat for the Euro Currency (EURFWD= on Reuters)
- “**SEUR, T**” is the Spot Settlement date of EURUSD on date T according to usual conventions.
- “**SFX, T**” is the Spot Settlement date of the MSFX USD Currency pair on date T according to usual conventions.
- “**SNEUR, T**” is the Spot Next Settlement date of EURUSD on date T according to usual conventions.
- “**SNFX, T**” is the Spot Next Settlement date of the MSFX USD Currency pair on date T according to usual conventions.
- “**1W<sub>EUR, T</sub>**” is the 1 week Settlement date of EURUSD on date T according to usual conventions.
- “**1W<sub>FX, T</sub>**” is the 1 week Settlement date of the MSFX USD Currency pair on date T according to usual conventions.
- “**SCross, T**” is defined as the first USD, EUR, GBP, MSFX Currency Business Date after the first EUR, GBP, MSFX Currency Business date after T.
- “**SN<sub>Cross, T</sub>**” will be defined as the first USD, EUR, GBP, MSFX Currency Business Date following SCross, T.

## MSFX Indices Manual – 2023 Edition

<u>MSFX</u> <u>Currency</u>	<u>MSFX EUR</u> <u>Currency</u> <u>Pair</u>	<u>MSFX</u> <u>USD</u> <u>Currency</u> <u>Pair</u>	<u>A</u>	<u>B</u>	<u>MSFX Index</u>	<u>Financial</u> <u>Center</u>	<u>Roll Time</u>	<u>Fix Source</u> <u>(Mid) (Reuters)</u>	<u>Live Source</u> <u>(Mid)</u> <u>Reuters)</u>	<u>S/N, T/N, 1W</u> <u>Source</u> <u>(Reuters)<sup>(1)</sup></u>	<u>S/N Scaling</u> <u>Factor</u>
USD	EURUSD	1	1	1	MSCEEUL	TARGET	4:00 p.m. London		1	0	10,000
GBP	EURGBP	GBPUSD	1	1	MSCEEGL	London, England	4:00 p.m. London	WMRSPOT07	GBP=	GBPFWD = TTKL	10,000
AUD	EURAUD	AUDUSD	1	1	MSCEEAL	Sydney, Australia	4:00 p.m. London	WMRSPOT12	AUD=	AUDFWD = TTKL	10,000
NOK	EURNOK	USDNOK	-1	1	MSCEENL	Oslo, Norway	4:00 p.m. London	WMRSPOT06	NOK=	NOKFWD= TTKL	10,000
SEK	EURSEK	USDSEK	-1	1	MSCEEESL	Stockholm, Sweden	4:00 p.m. London	WMRSPOT07	SEK=	SEKFWD= TTKL	10,000
JPY	EURJPY	USDJPY	-1	1	MSCEEJL	Tokyo, Japan	4:00 p.m. London	WMRSPOT12	JPY=	JPYFWD= TTKL	100
CHF	EURCHF	USDCHF	-1	1	MSCEEHL	Zurich, Switzerland	4:00 p.m. London	WMRSPOT07	CHF=	CHFWD= TTKL	10,000
USD	EURUSD	1	1	-1	MSCEEUS	TARGET	4:00 p.m. London		1	0	10,000
GBP	EURGBP	GBPUSD	1	-1	MSCEEESG	London, England	4:00 p.m. London	WMRSPOT07	GBP=	GBPFWD = TTKL	10,000
AUD	EURAUD	AUDUSD	1	-1	MSCEEAS	Sydney, Australia	4:00 p.m. London	WMRSPOT12	AUD=	AUDFWD = TTKL	10,000
NOK	EURNOK	USDNOK	-1	-1	MSCEEENS	Oslo, Norway	4:00 p.m. London	WMRSPOT06	NOK=	NOKFWD= TTKL	10,000
SEK	EURSEK	USDSEK	-1	-1	MSCEEES	Stockholm, Sweden	4:00 p.m. London	WMRSPOT07	SEK=	SEKFWD= TTKL	10,000
JPY	EURJPY	USDJPY	-1	-1	MSCEEESJ	Tokyo, Japan	4:00 p.m. London	WMRSPOT12	JPY=	JPYFWD= TTKL	100
CHF	EURCHF	USDCHF	-1	-1	MSCEEES	Zurich, Switzerland	4:00 p.m. London	WMRSPOT07	CHF=	CHFWD= TTKL	10,000

(1) The “=TTKL” notation signifies that the source of the data is obtained via Tullett, Prebon inter-dealer brokers based in London.

**Developed Market GBP Cross-Currency Long and Short Indices (Total Return) (GBP) – AUD, CHF, EUR, JPY, NOK, SEK, USD vs. GBP**

The following methodology applies to the computation of the level for any of the Developed Market GBP Cross-Currency Long and Short Indices (Total Return) (GBP) relating to the MSFX Currencies listed above, adjusted to reflect the parameters set forth below and in the table below with respect to each MSFX Index.

“**Business Day**” means a day on which commercial banks and foreign exchange markets settle payments and are open for general business (including dealings in foreign exchange and foreign currency deposits) in the Financial Center for the related MSFX Currency.

On any day “D” the related MSFX Index closing level “I” will be computed as follows:

$$I_D = I_{D_1} \times \left[ 1 + \left[ \frac{(D-D_1) \times GB_D}{36,500} \right] \right] + B \times I_{D_2} \times FW(D_2, SN_{Cross,D_2}, B, B \times A) \times \left[ \frac{1}{FW(D, SN_{Cross,D_1}, B, B \times A)} - \frac{1}{FW(D_1, SN_{Cross,D_1}, B, B \times A)} \right]$$

where

$$FW(T1, T2, c1, c2) = \frac{GBPUSD_{T1} + \left[ \frac{Pts_{SN,GBP,T1,c1}}{10,000} + \frac{Pts_{1w,GBP,T1,c1} - Pts_{SN,GBP,T1,c1}}{10,000} \frac{T2 - SN_{GBP,T1}}{1W_{GBP,T1} - SN_{GBP,T1}} \right] \times 1(T2 - SN_{GBP,T1})}{\left\{ FX_{T1} + \left[ \frac{Pts_{SN,FX,T1,c2}}{S/N \text{ Scaling Factor}} + \frac{Pts_{1w,FX,T1,c2} - Pts_{SN,FX,T1,c2}}{S/N \text{ Scaling Factor}} \frac{T2 - SN_{FX,T1}}{1W_{FX,T1} - SN_{FX,T1}} \right] \times 1(T2 - SN_{FX,T1}) \right\}^A}$$

where:

- “I” is the related MSFX Index closing level;
- “D” is any day;
- “D<sub>1</sub>” is the first Index-Good Day preceding day D;
- “D<sub>2</sub>” is the first GBP Business Day preceding day D<sub>1</sub>;
- “**Index-Good Day**” is any day where WM publishes a close for the related MSFX Currency and SN<sub>Cross,T</sub> is computed to be greater than SN<sub>Cross,T-1</sub>
- “**GB**” is the Sterling Overnight Interbank Average Rate (“SONIA”) as published on Bloomberg Page “SONIO/N Index”, minus – 0.5. The value of GB will be taken on the relevant calculation day (D) and will reflect the value published for the prior BOE Business Day. Prior to 10 April 2017 this GB rate was floored at zero;
- “**TARGET Business Day**” is any day on which TARGET (the Trans-European Automated Gross settlement Express Transfer system) is open;
- “**FX**” is the WM exchange rate fixing for the related MSFX USD Currency relative to the USD at the Roll Time, as posted under the column “Mid” on the Fix Source; and
- “**GBPUSD**” is the WM exchange rate fixing for GBPUSD Currency at the Roll Time, as posted under the column “Mid” on the Fix Source (WMRSPOT05 on Reuters); and
- “1(X)” is 1 if X ≥ 0 and 0 otherwise.
- “Pts<sub>Mat FX,t,I</sub>” refers to the ask side of the points for term Mat, for currency FX on day t
- “Pts<sub>Mat FX,t,-I</sub>” refers to the bid side of the points for term Mat, for currency FX on day t
- “Pts<sub>Mat GBP,T1,I</sub>” refers to the ask side of the points for term Mat for the GBP Currency (GBPFW= on Reuters)
- “Pts<sub>Mat GBP,T1,-I</sub>” refers to the bid side of the points for term Mat for the GBP Currency (GBPFW= on Reuters)
- “**SG<sub>BP,T</sub>**” is the Spot Settlement date of GBPUSD on date T according to usual conventions.
- “**S<sub>FX,T</sub>**” is the Spot Settlement date of the MSFX USD Currency pair on date T according to usual conventions.
- “**SN<sub>GBP,T</sub>**” is the Spot Next Settlement date of GBPUSD on date T according to usual conventions.
- “**SN<sub>FX,T</sub>**” is the Spot Next Settlement date of the MSFX USD Currency pair on date T according to usual conventions.
- “**1W<sub>GBP,T</sub>**” is the 1week Settlement date of GBPUSD on date T according to usual conventions.
- “**1W<sub>FX,T</sub>**” is the 1 week Settlement date of the MSFX USD Currency pair on date T according to usual conventions.
- “**SC<sub>ross,T</sub>**” is defined as the first USD,GBP, MSFX Currency Business Date after the first GBP, MSFX Currency Business date after T.
- “**SN<sub>Cross,T</sub>**” will be defined as the first USD,GBP, MSFX Currency Business Date following S<sub>Cross,T</sub>.

## MSFX Indices Manual – 2023 Edition

<u>MSFX Currency</u>	<u>MSFX GBP Currency Pair</u>	<u>MSFX USD Currency Pair</u>	<u>A</u>	<u>B</u>	<u>MSFX Index</u>	<u>Financial Center</u>	<u>Roll Time</u>	<u>Fix Source (Mid) (Reuters)</u>	<u>Live Source (Mid) (Reuters)</u>	<u>S/N, T/N, 1W Source (Reuters)<sup>(1)</sup></u>	<u>S/N Scaling Factor</u>
USD	GBPUSD	1	1	1	MSCEGUL	London, England	4:00 p.m. London		1	0	10,000
EUR	GBPEUR	EURUSD	1	1	MSCEGEL	Target	4:00 p.m. London	WMRSPOT07	GBP=	EURFWD = TTKL	10,000
AUD	GBPAUD	AUDUSD	1	1	MSCEGAL	Sydney, Australia	4:00 p.m. London	WMRSPOT12	AUD=	AUDFWD = TTKL	10,000
NOK	GBPNOK	USDNOK	-1	1	MSCEGNL	Oslo, Norway	4:00 p.m. London	WMRSPOT06	NOK=	NOKFWD= TTKL	10,000
SEK	GBPSEK	USDSEK	-1	1	MSCEGSL	Stockholm, Sweden	4:00 p.m. London	WMRSPOT07	SEK=	SEKFWD= TTKL	10,000
JPY	GBPJPY	USDJPY	-1	1	MSCEGJL	Tokyo, Japan	4:00 p.m. London	WMRSPOT12	JPY=	JPYFWD= TTKL	100
CHF	GBPCHF	USDCHF	-1	1	MSCEGHL	Zurich, Switzerland	4:00 p.m. London	WMRSPOT07	CHF=	CHFWD= TTKL	10,000
USD	GBPUSD	1	1	-1	MSCEGUS	London, England	4:00 p.m. London		1	0	10,000
EUR	GBPEUR	EURUSD	1	-1	MSCEGES	Target	4:00 p.m. London	WMRSPOT07	GBP=	EURFWD = TTKL	10,000
AUD	GBPAUD	AUDUSD	1	-1	MSCEGAS	Sydney, Australia	4:00 p.m. London	WMRSPOT12	AUD=	AUDFWD = TTKL	10,000
NOK	GBPNOK	USDNOK	-1	-1	MSCEGNS	Oslo, Norway	4:00 p.m. London	WMRSPOT06	NOK=	NOKFWD= TTKL	10,000
SEK	GBPSEK	USDSEK	-1	-1	MSCEGSS	Stockholm, Sweden	4:00 p.m. London	WMRSPOT07	SEK=	SEKFWD= TTKL	10,000
JPY	GBPJPY	USDJPY	-1	-1	MSCEGJS	Tokyo, Japan	4:00 p.m. London	WMRSPOT12	JPY=	JPYFWD= TTKL	100
CHF	GBPCHF	USDCHF	-1	-1	MSCEGHS	Zurich, Switzerland	4:00 p.m. London	WMRSPOT07	CHF=	CHFWD= TTKL	10,000

(1) The “=TTKL” notation signifies that the source of the data is obtained via Tullett, Prebon inter-dealer brokers based in London.

**Emerging Market Currency Long Indices (Total Return) (USD) – NDFs – CNY vs. USD**

The following methodology applies to the computation of the level for the Emerging Market Currency Long Index (Total Return) (USD) relating to the non-deliverable forward MSFX Currency CNY, adjusted to reflect the parameters set forth below and in the table below:

On day “D” the index is computed as:

$$I_D = I_{rb} \times (1 + Return_D) + \sum_{t=rb}^{D-1} I_t \times TBY_{t+1} \times (D_{t+1} - D_t) / 36,500;$$

where:

- t is any day where the MSFX Index level is published, if TBY is not available for day t, the most recently available value is used.
- “**I<sub>D</sub>**” is the related MSFX Index closing level on day D; provided that if D is not a WM business day, then the MSFX Index level will be the related MSFX Index closing level on the preceding WM business day.
- “**D**” is any day;
- “**I<sub>rb</sub>**” is the related MSFX Index level on the previous Rebalancing Date (rb is the first rebalancing date preceding D)
  - The related MSFX Index will be rebalanced 6 times per year. A “Rebalancing Date” (rb) is on the first US and London business day prior to the first CNY business day prior to the last US and CNY business day in February, April, June, August, October and December of each year.
- “**Return<sub>D</sub>**” = ((Forward Rate<sub>rb</sub> / Forward Rate<sub>D</sub>) - 1) x DF<sub>D</sub>
  - $DF_D = \text{Discount Factor} = 1 / (1 + (T3M,rb - TSpot,D) / 36000 * Rate_D)$
  - Forward Rate<sub>rb</sub> is the bid side of the 3 month NDF on the rebalancing date rb at 9am London time.
  - $\text{Forward Rate}_D = \frac{\text{NDF}(3m,D) - \text{NDF}(1m,D)}{T3M,D - T1M,D} [T3M, rb - T1M, D] + \text{NDF}(1m, D)$
  - T1M,D is the settlement date of the 1M MSFX currency NDF on day D T3M,D is the settlement date of the 3M MSFX currency NDF on day D
  - T3M, rb is the “Rebalancing Date” in a month which is three months away from rb.
  - TSpot,D is the spot settlement date of the MSFX currency on day D
  - $\text{Rate}_D = \frac{\text{Rate}(3m,D) - \text{Rate}(1m,D)}{T3M,D - T1M,D} [T3M, rb - T1M, D] + \text{Rate}(1m, D)$
  - Rate(3m,D)\* is defined as SOFR<sub>t</sub> + 0.26 where t is D+1 Calendar Day – 2 SOFR Publication Days. The source for this rate can be found in the table SOFR Rate Source.
  - Rate(1m,D)\* is defined as SOFR<sub>t</sub> + 0.11 where t is D+1 Calendar Day – 2 SOFR Publication Days. The source for this rate can be found in the table SOFR Rate Source.
  - NDF(3m,D) is the bid side of the 3m MSFX Currency NDF (if D is a rebalancing date, we take the ask side), the fixing value are taken at 9am London time.
  - NDF(1m,D) is the bid side of the 1m MSFX Currency NDF (if D is a rebalancing date, we take the ask side), the fixing value are taken at 9am London time.
- “**TBY**” is the One (1)-Month Treasury Bill Yield reported by the U.S Federal Reserve on Reuters Page “USYTFRB1M=RR”. The value of TBY will be taken at 8 a.m. London time on the relevant calculation day (D) and will reflect the value published for the prior New York Fed Business Day.
  - “**New York Fed Business Day**” means any day except for a Saturday, Sunday or a day on which the Federal Reserve Bank of New York is closed.

<u>MSFX Currency</u>	<u>MSFX Currency Pair</u>	<u>MSFX Index</u>	<u>Forward Rate (Reuters)</u>	<u>Rebalancing Frequency</u>
CNY	USDCNY	MSCECNYL	PYLNDF	Every 2 Months

Table: SOFR Rate Source

Name	Primary Source
SOFR	Bloomberg: SOFRRATE Index

“Calendar Day” means all days in a year, including weekends and holidays.

“SOFR Publication Day” means any day when a SOFR rate is published on the New York Fed website.

\*Prior to the Libor Switch Date, the rates used to calculate the Discount Factor were defined as:

- Rate(3m,D) is the 3month Libor on the first London Business day prior to D.
- Rate(1m,D) is the 1month Libor on the first London Business day prior to D.

“Libor Switch Date” means 29 March 2023.



**Emerging Market Currency Short Indices (Total Return) (USD) – NDFs – CNY vs. USD**

The following methodology applies to the computation of the level for the Emerging Market Currency Short Index (Total Return) (USD) relating to the non-deliverable forward MSFX Currency CNY, adjusted to reflect the parameters set forth below and in the table below:

On day “D” the index is computed as:

$$I_D = I_{rb} \times (1 - \text{Return}_D) + \sum_{t=rb}^{D-1} I_t \times TB Y_{t+1} \times (D_{t+1} - D_t) / 36,500;$$

where:

- “**I<sub>D</sub>**” is the related MSFX Index closing level on day D; provided that if D is not a WM business day, then the MSFX Index level will be the related MSFX Index closing level on the preceding WM business day.
- “**D**” is any day;
- “**I<sub>rb</sub>**” is the related MSFX Index level on the previous Rebalancing Date, (rb is the first rebalancing date preceding D)
  - The related MSFX Index will be rebalanced 6 times per year. A “Rebalancing Date” (rb) is on the first US and London business day prior to the first CNY business day prior to the last US and CNY business day in February, April, June, August, October and December of each year.
- “**Return<sub>D</sub>**” = ((Forward Rate<sub>rb</sub> / Forward Rate<sub>D</sub>) - 1) x DF<sub>D</sub>
  - DF<sub>D</sub> = Discount Factor = 1 / (1 + (T3M,rb - TSpot,D) / 36000 \* LIBOR<sub>D</sub>)
  - Forward Rate<sub>rb</sub> is the ask side of the 3 month NDF on the rebalancing date rb at 9am London.
  - Forward Rate<sub>D</sub> =  $\frac{\text{NDF}(3\text{m},D) - \text{NDF}(1\text{m},D)}{\text{T3M},D - \text{T1M},D} [\text{T3M},rb - \text{T1M},D] + \text{NDF}(1\text{m},D)$
  - T1M,D is the settlement date of the 1M MSFX currency NDF on day D
  - T3M,D is the settlement date of the 3M MSFX currency NDF on day D
  - T3M, rb is the “Rebalancing Date” in a month which is three months away from rb.
  - TSpot,D is the spot settlement date of the MSFX currency on day D
  - LIBOR<sub>D</sub> =  $\frac{\text{LIBOR}(3\text{m},D) - \text{LIBOR}(1\text{m},D)}{\text{T3M},D - \text{T1M},D} [\text{T3M},rb - \text{T1M},D] + \text{LIBOR}(1\text{m},D)$
  - LIBOR(3m,D) is the 3month Libor on day D published by the BBA for the most recently available day
  - LIBOR(1m,D) is the 1month Libor on day D published by the BBA for the most recently available day
  - NDF(3m,D) is the ask side of the 3m MSFX Currency NDF (if D is a rebalancing date, we take the bid side), the fixing value are taken at 9am London time.
  - NDF(1m,D) is the ask side of the 1m MSFX Currency NDF (if D is a rebalancing date, we take the bid side), the fixing value are taken at 9am London time.
- “**TBY**” is the One (1)-Month Treasury Bill Yield reported by the U.S Federal Reserve on Reuters Page “USYTFRB1M=RR”. The value of TBY will be taken at 8 a.m. London time on the relevant calculation day (D) and will reflect the value published for the prior New York Fed Business Day.
  - “**New York Fed Business Day**” means any day except for a Saturday, Sunday or a day on which the Federal Reserve Bank of New York is closed.

<u>MSFX Currency</u>	<u>MSFX Currency Pair</u>	<u>MSFX Index</u>	<u>Forward Rate (Reuters)</u>	<u>Rebalancing Frequency</u>
CNY	USDCNY	MSCECNYS	PYLNDF	Every 2 Months

**The MSFX Triple Indices**

The methodology for computation of the level for any of the MSFX Triple Indices will be the same as the methodologies used for the corresponding single exposure MSFX Index and will use the same reference sources and inputs; provided that the formulas will be modified, in each case, by multiplying “ $I_{D-2}$ ” by three (3).

**Developed Market Currency Triple Long Indices (Total Return) (USD) - AUD, GBP, EUR, vs. USD**

$$I_D = I_{D-1} \times \left[ 1 + \left[ \frac{(D - D_{-1}) \times TBY_D}{36,500} \right] \right] + 3 \times \frac{I_{D-2}}{FX_{D-2}} \times \left[ FX_D - \left( FX_{D-1} + \frac{S/N_{D-1}}{S/N \text{ ScalingFactor}} \right) \right]$$

**Developed Market Currency Triple Short Indices (Total Return) (USD) - AUD, GBP, EUR, vs. USD**

$$I_D = I_{D-1} \times \left[ 1 + \left[ \frac{(D - D_{-1}) \times TBY_D}{36,500} \right] \right] - 3 \times \frac{I_{D-2}}{FX_{D-2}} \times \left[ FX_D - \left( FX_{D-1} + \frac{S/N_{D-1}}{S/N \text{ ScalingFactor}} \right) \right]$$

**Developed Market Currency Triple Long Indices (Total Return) (USD) - JPY, NOK, SEK, CHF vs. USD**

$$I_D = I_{D-1} \times \left[ 1 + \left[ \frac{(D - D_{-1}) \times TBY_D}{36,500} \right] \right] + 3 \times I_{D-2} \times FX_{D-2} \times \left[ \frac{1}{FX_D} - \frac{1}{FX_{D-1} + \frac{S/N_{D-1}}{S/N \text{ ScalingFactor}}} \right]$$

**Developed Market Currency Triple Short Indices (Total Return) (USD) - JPY, NOK, SEK, CHF vs. USD**

$$I_D = I_{D-1} \times \left[ 1 + \left[ \frac{(D - D_{-1}) \times TBY_D}{36,500} \right] \right] - 3 \times I_{D-2} \times FX_{D-2} \times \left[ \frac{1}{FX_D} - \frac{1}{FX_{D-1} + \frac{S/N_{D-1}}{S/N \text{ ScalingFactor}}} \right]$$

**Developed Market EUR Cross-Currency Triple Indices (Total Return) (EUR) - AUD, CHF, GBP, JPY, NOK, SEK, USD vs. EUR**

$$I_D = I_{D-1} \times \left[ 1 + \left[ \frac{(D-D_1) \times EU_D}{36,500} \right] \right] + 3 \times B \times I_{D-2} \times FW(D-2, SN_{Cross, D-2}, -B, B \times A) \times \left[ \frac{1}{FW(D, SN_{Cross, D-1}, B, -B \times A)} - \frac{1}{FW(D-1, SN_{Cross, D-1}, -B, B \times A)} \right]$$

**Developed Market GBP Cross-Currency Triple Indices (Total Return) (GBP) - AUD, CHF, EUR, JPY, NOK, SEK, USD vs. GBP**

$$I_D = I_{D-1} \times \left[ 1 + \left[ \frac{(D-D_1) \times GB_D}{36,500} \right] \right] + 3 \times B \times I_{D-2} \times FW(D-2, SN_{Cross, D-2}, -B, B \times A) \times \left[ \frac{1}{FW(D, SN_{Cross, D-1}, B, -B \times A)} - \frac{1}{FW(D-1, SN_{Cross, D-1}, -B, B \times A)} \right]$$

**The MSFX Five Times Leveraged (5X) Indices**

The methodology for computation of the level for any of the MSFX Five Times Leveraged (5X) Indices will be the same as the methodologies used for the corresponding single exposure MSFX Index and will use the same reference sources and inputs; provided that the formulas will be modified, in each case, by multiplying “ $I_{D-2}$ ” by five (5).

**Developed Market Currency Five Times Leveraged (5X) Long Indices (Total Return) (USD) - AUD, GBP, EUR, vs. USD**

$$I_D = I_{D-1} \times \left[ 1 + \left[ \frac{(D - D_{-1}) \times TBY_D}{36,500} \right] \right] + 5 \times \frac{I_{D-2}}{FX_{D-2}} \times \left[ FX_D - \left( FX_{D-1} + \frac{S/N_{D-1}}{S/N \text{ ScalingFactor}} \right) \right]$$

**Developed Market Currency Five Times Leveraged (5X) Short Indices (Total Return) (USD) - AUD, GBP, EUR, vs. USD**

$$I_D = I_{D-1} \times \left[ 1 + \left[ \frac{(D - D_{-1}) \times TBY_D}{36,500} \right] \right] - 5 \times \frac{I_{D-2}}{FX_{D-2}} \times \left[ FX_D - \left( FX_{D-1} + \frac{S/N_{D-1}}{S/N \text{ ScalingFactor}} \right) \right]$$

**Developed Market Currency Five Times Leveraged (5X) Long Indices (Total Return) (USD) - JPY, NOK, SEK, CHF vs. USD**

$$I_D = I_{D-1} \times \left[ 1 + \left[ \frac{(D - D_{-1}) \times TBY_D}{36,500} \right] \right] + 5 \times I_{D-2} \times FX_{D-2} \times \left[ \frac{1}{FX_D} - \frac{1}{FX_{D-1} + \frac{S/N_{D-1}}{S/N \text{ ScalingFactor}}} \right]$$

**Developed Market Currency Five Times Leveraged (5X) Short Indices (Total Return) (USD) - JPY, NOK, SEK, CHF vs. USD**

$$I_D = I_{D-1} \times \left[ 1 + \left[ \frac{(D - D_{-1}) \times TBY_D}{36,500} \right] \right] - 5 \times I_{D-2} \times FX_{D-2} \times \left[ \frac{1}{FX_D} - \frac{1}{FX_{D-1} + \frac{S/N_{D-1}}{S/N \text{ ScalingFactor}}} \right]$$

**Developed Market EUR Cross-Currency Five Times Leveraged (5X) Indices (Total Return) (EUR) - AUD, CHF, GBP, JPY, NOK, SEK, USD vs. EUR**

$$I_D = I_{D,-1} \times \left[ 1 + \left[ \frac{(D-D_{-1}) \times EU_D}{36,500} \right] \right] + 5 \times B \times I_{D,-2} \times FW(D_{-2}, SN_{Cross,D,-2}, -B, B \times A) \times \left[ \frac{1}{FW(D, SN_{Cross,D,-1}, B, -B \times A)} - \frac{1}{FW(D_{-1}, SN_{Cross,D,-1}, -B, B \times A)} \right]$$

**Developed Market GBP Cross-Currency Five Times Leveraged (5X) Indices (Total Return) (GBP) - AUD, CHF, EUR, JPY, NOK, SEK, USD vs. GBP**

$$I_D = I_{D,-1} \times \left[ 1 + \left[ \frac{(D-D_{-1}) \times GB_D}{36,500} \right] \right] + 5 \times B \times I_{D,-2} \times FW(D_{-2}, SN_{Cross,D,-2}, -B, B \times A) \times \left[ \frac{1}{FW(D, SN_{Cross,D,-1}, B, -B \times A)} - \frac{1}{FW(D_{-1}, SN_{Cross,D,-1}, -B, B \times A)} \right]$$

## III. Adjustments, Market Disruption Events and Discontinuance

### III.1 Adjustments to the MSFX Indices

While the methodologies, composition and calculations described herein to calculate the MSFX Indices are currently in use by the Index Sponsor, it is possible that market, regulatory, judicial, financial, fiscal or other circumstances (including, but not limited to, any adjustment events as described below) may arise that would, in the opinion of the Index Sponsor, necessitate a modification or adjustment to such methodologies, composition or calculation. In such event, the Index Sponsor, after consultation with the Index Committee, will make such modifications or adjustments based on market conditions and other relevant factors, as in the judgment of the Index Sponsor, are necessary to maintain such index as a tradable benchmark for foreign exchange rate performance of the related MSFX Currency. Wherever practicable, any adjustments will be publicly announced as soon as is reasonably practicable and prior to the effective date.

An “**adjustment event**” with respect to any MSFX Index or related MSFX Currency includes, but is not limited to, any of the following:

- the related exchange rate splits into dual or multiple exchange rates; or
- the related MSFX Currency has been removed from circulation or otherwise discontinued and banks dealing in foreign exchange and foreign currency deposits in the MSFX Currency commence trading a successor or substitute currency substantially similar to the MSFX Currency that the Index Sponsor determines is comparable to the discontinued MSFX Currency;

### III.2 Market Disruption Events

The occurrence or existence of any of the below, as determined by the Index Sponsor:

- any event or any condition (including without limitation any event or condition that occurs as a result of the enactment, promulgation, execution, ratification, change in any application or official interpretation of, or any change in or amendment to, any law (including those laws or regulations that relate to taxation), rule or regulation by any applicable governmental authority) that (i) results in the occurrence or existence of a lack of, or a material decline in, the liquidity in the market for trading in any MSFX Currency that generally makes it impossible, illegal or impracticable for market participants, or hinders, disrupts or impairs their abilities, (a) to convert from one foreign currency to another through customary commercial channels, (b) to effect currency transactions or, or to obtain market values of, such currency, (c) to obtain a firm quote for the related exchange rate or (d) to obtain the relevant exchange rate by reference to the applicable price source; or (ii) leads to or may lead to a currency peg regime; or
- (i) the declaration of a banking moratorium or (ii) the suspension of payments by banks, in either case, in the country of any currency used to determine the MSFX Currency exchange rate or (iii) the declaration of capital and/or currency controls (including without limitation any restriction placed on assets in or transactions through any account through which a non-resident of the country of any currency used to determine the MSFX currency exchange rate may hold assets or transfer monies outside the country of that currency, and any restriction on the transfer of funds, securities or other assets of market participants from or within or outside of the country of any currency used to determine the applicable exchange rate); or
- an event or circumstance (including without limitation, a systems failure, natural or man-made disaster, act of God, armed conflict, act of terrorism, riot or labor disruption or any similar intervening circumstance) that is beyond the reasonable control of the Index Sponsor and that the Index Sponsor determines affects the related MSFX Index in any fashion; or
- the method of calculating the value of the MSFX Currency is changed in a material respect, or is in any other way modified so that the conventional market quotation does not, in the opinion of the Index Sponsor, fairly represent the value of such MSFX Currency; or
- the Index Sponsor determines that there is a material difference in a relevant MSFX Currency exchange rate, as determined by reference to the rate source for the related MSFX Index and any other market source.

### III.3 Discontinuance of the MSFX Indices

The Index Sponsor may, in its sole discretion, after consultation with the Index Committee, discontinue calculating and publishing any MSFX Index at any time upon the occurrence of, but not limited to, any of the following.

- if as a result of a market disruption event or an adjustment event, an adjustment to and/or calculation of the related MSFX Index is no longer reasonably possible or practical, in the determination of the Index Sponsor; or
- the Index Sponsor or its successor terminates its index publication business operations, is declared insolvent or is subject to winding-up proceedings
- the Index Sponsor or its successor determines that it no longer in its commercial interests to continue publishing the index

Upon any such discontinuance, the Index Sponsor will use commercially reasonable efforts to publicly announce such discontinuance as soon as is reasonably practicable prior to the effective date.