

**The Morgan Stanley Precious Metal Currency Hedged
(MSPM) Indices Silver/Platinum/Palladium Manual**

October 2020 Edition

Updated October 14, 2020

The data and information (the “Information”) presented in this MSPM Indices Manual reflect the methodology (the “MSPM Indices Methodology”) for calculating and determining the level of each of the MSPM Indices (the “MSPM Indices” or individually, an “MSPM Index”). Upon launch in 2013, this MSPM Indices Manual and the MSPM Indices Methodology were created, compiled, and published, by the Morgan Stanley Institutional Research Department. As of April 10, 2017, the Morgan Stanley Fixed Income Sales and Trading Department took the role of index sponsor (the “Index Sponsor”) and Morgan Stanley India Financial Services Private Limited took the role of compiling and publishing all the MSPM Indices (the “Index Calculation Agent”). As of October 14, 2020 the Morgan Stanley & Co. LLC took the role of index sponsor (the “Index Sponsor”) and compiling and publishing all the MSPM Indices (the “Index Calculation Agent”). This MSPM Indices Manual and the MSPM Indices Methodology are the exclusive property of Morgan Stanley & Co. LLC (“Morgan Stanley”).

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This edition of the MSPM Indices Manual reflects the methodology that will be utilized with respect to the determination and calculation of the MSPM Indices as of November 4th, 2019, unless amended in accordance with the provisions herein. After November 4th, 2019, the methodology shall remain in effect until amended or replaced by an updated version. However, the MSPM 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 MSPM Indices

The MSPM Indices suite consists of tradable indices relating to three different Precious Metals (each, an “MSPM Precious Metal”) with Currency Hedges (each, an “MSPM Currency”) for investors based in a number of different currencies. The MSPM Indices were designed as benchmarks for long investments in a wide range of precious metals with an FX overlay. Each index consists of a position in metal and a position in an FX forward. The FX forwards are settled daily in metal quantities. Hence, the index values are always expressed in metal quantities. The FX overlay aims to hedge the dollar exposure in the Precious Metal for an investor based in another Currency.

The MSPM Indices were created, and are calculated and disseminated daily on a real time basis (though delayed), 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 indices are total return long indices.

The Index Sponsor first began publishing certain of the MSPM indices in August 2012 and will continue to roll out publication and calculation of new MSPM Indices in its sole discretion. In addition, the Index Sponsor has calculated historical levels for each of the MSPM 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 MSPM Indices Methodologies” herein. Each of the MSPM Indices will be set to a value of 10000 as of the date of its initial calculation. Levels for the MSPM Indices may be affected by modifications to the relevant MSPM Index in accordance with this MSPM Indices Manual.

Levels for each of the MSPM Indices will be published daily, by or for the Index Sponsor, between 8:00 a.m. (London Time) and 3:45 p.m. (New York Time) on each day which constitutes an Index Business Day (as defined below) for the related MSPM Currency, with such levels being updated on a “delayed” basis approximately every 15 seconds based on the related reference sources set forth herein. An official closing level will be published for each of the MSPM Indices on any day which constitutes an Index Business Day for that index (see methodology herein for description of Index Business Day).

I.2 The MSPM Indices Manual

This MSPM Indices Manual describes the current MSPM Indices Methodology used by the Index Sponsor in determining and calculating the MSPM Indices levels on any given day. The Index Sponsor is committed to using commercially reasonable efforts to maintain the MSPM Indices as liquid, tradable indices that serve as benchmarks for a currency hedged investment in the MSPM Precious Metals. As a result, modifications or refinements to the MSPM Indices Methodology, and consequently this MSPM 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 Index Committee (as defined below) as it believes necessary in order to preserve and enhance the utility and tradability of the MSPM Indices as benchmarks for currency hedged investing in the MSPM Precious Metals.

Neither this MSPM Indices Manual nor any set of procedures, however, are capable of anticipating all possible circumstances and events that may affect the MSPM Indices and their respective calculation methodologies. The detailed rules-based approach contained in this MSPM 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

Index Committee (as defined below), may make certain determinations that cannot be adequately reflected in this MSPM Indices Manual with regard to a currency used for the hedge, the underlying precious metals, the related exchange rate or the related MSPM 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 (as defined below), would undermine the effectiveness of the relevant MSPM Index as a measure for the related currency hedged precious metal investment performance or as a tradable index.

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

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

I.3 Currency Conventions

As defined in Annex I which may, as required from time to time, be amended or updated.

I.4 Metal Conventions

<u>Metal (vs. USD)</u>	<u>Standard Quotation</u>
Platinum	USD per 1 Platinum oz.
Palladium	USD per 1 Palladium oz.
Silver	USD per 1 Silver oz.

MSPM Indices and Related Bloomberg Index Tickers

A list of all of the MSPM Indices is contained in Annex II, as amended or updated from time to time, and can also be accessed on Bloomberg Page “ALLX MSCE” and each MSPM Index can be found using its respective Bloomberg Index Ticker.

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

Currency Investment

The FX overlay are done in “deliverable currencies”, which means that a “spot transaction” will result in an actual exchange of currencies.

In order to avoid physical delivery of the MSPM Currency, the related MSPM Indices will be rebalanced daily on each Index Business Day (as defined below) via a “Spot Next” or “Tom Next” transaction (as defined below). For some currencies, the appropriate forward tenors may be different from Spot Next or Tom Next.

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 Index Business Days (as defined below) 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 Index Business Days (as defined below) 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 Index Business Day (as defined below) from the transaction date and receive back the same amount “A” of currency “Y” against currency “X” at the same rate plus a spread two Index Business Days (as defined below) from the transaction date. This spread is quoted in the market.

Physical (Spot Price); Future and EFPs

In order to close our index daily we need a Spot reference price for the metal in order to convert the proceeds from the FX forward in quantities of metals. Metal Spot prices can be computed as the sum of a Metal Future Price plus an EFP. The EFP is the adjustment that allows an investor to translate a future price into the current spot price.

Exchange For Physical

An EFP transaction involves a privately negotiated and simultaneous exchange of a futures position for a corresponding position in the underlying physical commodity. For metals contracts, the acceptable corresponding position component for an EFP is limited to the specific underlying commodity (e.g. Platinum for Platinum Futures).

I.6 Governance & Index Committee

Morgan Stanley has adopted the “Principles for Financial Benchmarks” published by the International Organization of Securities Commissions (“IOSCO”) on 17 July 2013 (the “**Principles**”) on a proportionate basis.

The MSPM Indices and the Rules have been approved in accordance with and are subject to the internal governance procedures implemented by Morgan Stanley in compliance with the Principles and managed by an internal oversight committee (the “**Index Committee**”).

The Index Committee will review the MSPM Indices and the Rules on an annual basis or more frequently in accordance with Morgan Stanley internal policies applicable to the relevant Index, to ensure that the Index still continues to reflect the economic interests it intends to measure.

Information on the systems and controls applied by Morgan Stanley in relation to financial benchmarks is available on request.

I.7 Morgan Stanley Conflicts of Interest

Morgan Stanley may from time to time engage in transactions involving the underlying components of the MSPM 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 MSPM 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 MSPM Indices and consequently on the value and performance of any financial products linked to the MSPM 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 MSPM Indices and acting as calculation agent for such products. Morgan Stanley may also issue derivative instruments in respect of the underlying components of the MSPM Indices and the use of such derivatives may affect the value of the underlying components of the MSPM Indices.

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

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

II. Index Rules

II.1 Calculation and Publication of the MSPM Indices

The Index Sponsor will itself or through its calculation agent (if any) use commercially reasonable efforts to calculate and publish (a) delayed levels for the MSPM Indices from 8:00 a.m. London Time to 3:45 p.m. New York time and (b) closing levels for the MSPM Indices at 3:45 p.m. New York time on any Index Business Day. (being a day on which CME Official Metal Settlement Prices are computed at 1:30pm New York time and which is also 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 London).

Published levels for the MSPM Indices will be rounded to three (3) decimals. Closing levels for the MSPM Indices for purposes of the Index Methodology calculations will be rounded to seven (7) decimals.

II.2 Data Sources

Refinitiv will be the primary source used to obtain the relevant spot foreign exchange rates used in the calculation of the MSPM Indices. The Chicago Mercantile Exchange (CME) will be the primary source used to obtain the relevant Precious Metal Futures prices. 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 has been replaced by another source or (iii) in its reasonable judgment, 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 Morgan Stanley Precious Metal Currency Hedged Indices Methodology

The methodology applicable to the computation of the level for each of the MSPM Indices is defined in Annex III, as amended and updated from time to time.

III. Adjustments, Market Disruption Events and Discontinuance

III.1 Adjustments to the MSPM Indices

While the methodologies, composition and calculations described herein to calculate the MSPM 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 investments in Precious Metals with an FX overlay (hedge). 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 MSPM Index includes, but is not limited to, any of the following:

- the related exchange rate splits into dual or multiple exchange rates; or
- the related currency has been removed from circulation or otherwise discontinued and banks dealing in foreign exchange and foreign currency deposits in the MSPM Currency commence trading a successor or substitute currency substantially similar to the MSPM Currency that the Index Sponsor determines is comparable to the discontinued MSPM 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 a lack of, or a material decline in, liquidity in the market for trading in any MSPM 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 in, 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;
- (i) the declaration of a banking moratorium or the suspension of payments by banks, in either case, in the country of any currency used to determine the MSPM Currency exchange rate or (ii) 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 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, within or outside of the country of any currency used to determine the applicable exchange rate);
- 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 MSPM Index in any fashion;
- the method of calculating the value of the MSPM 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 MSPM Currency; or

- the Index Sponsor determines that there is a material difference in a relevant MSPM Currency exchange rate, as determined by reference to the rate source for the related MSPM Index and any other market source.

In addition to these Market Disruption Events, there may be additional market disruption events (“Additional Market Disruption Events”) applicable to certain indices relating to particular precious metals and/or currencies.

III.3 Discontinuance of the MSPM Indices

The Index Sponsor may, in its sole discretion, after consultation with the Index Committee, discontinue calculating and publishing any MSPM 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 MSPM Index is no longer reasonably possible or practical, in the determination of the Index Sponsor;
- the Index Sponsor or its successor terminates its index publication business operations, is declared insolvent or is subject to winding-up proceedings; or
- the Index Sponsor or its successor determines that it is no longer in its commercial interest 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.

Additional Market Disruption Events for MSCEPLTE (EUR/PLATINUM), MSCEPLTG (GBP/PLATINUM), MSCEPLE (EUR/PALLADIUM), MSCEPLG (GBP/PALLADIUM).

The occurrence or existence of any of the following events, as determined by the Index Sponsor, shall constitute a Market Disruption Event:

- (i) the failure of Refinitiv to announce or publish the relevant spot exchange rates or platinum fixing prices used in the calculation of the Index or (ii) the temporary or permanent discontinuance or unavailability of Refinitiv service;
- the failure of the NYM to announce or publish the official metal settlement prices for the relevant futures contracts;
- the material suspension of, or material limitation imposed on, trading in platinum by the London Platinum and Palladium Market (“LPPM”);
- the material suspension of, or material limitation imposed on, trading in the relevant platinum futures contracts on the NYM or in any related metal futures contract, options contract or options on futures. For this purpose:
 1. a suspension of the trading in the relevant metal futures contract on any Index Business Day shall be deemed to be material only if:
 - a. all trading in the relevant metal futures contract is suspended for the entire Index Business Day; or
 - b. all trading in the relevant futures contract is suspended subsequent to the opening of trading on that Index Business Day, trading does not recommence prior to the regularly scheduled

close of trading in such relevant metal futures contract on such Index Business Day and such suspension is announced less than one hour preceding its commencement; and

2. a limitation on trading in the relevant metal futures contract on any Index Business Day shall be deemed to be material only if the NYM establishes limits on the range within which the price of the relevant metal futures contract may fluctuate and the closing or settlement price of the relevant metal futures contract on such day is at the upper or lower limit of that range;
 - (i) the permanent discontinuation of trading in the relevant metal futures contract on the NYM;
 - (ii) the disappearance of, or of trading in, relevant metal; or (iii) the disappearance or permanent discontinuance or unavailability of a fixing price for relevant metal or an official metal settlement price for the relevant metal futures contract, notwithstanding the status of trading in the relevant metal futures contract or relevant metal;
 - the occurrence of a material change in the method of calculating (i) the relevant official metal settlement price for the relevant metal futures contract or (ii) the fixing price for metal;
 - the occurrence of a material change in the content, composition or constitution of relevant metal or the relevant metal futures contract;
 - the imposition of, change in or removal of an excise, severance, sales, use value-added, transfer, stamp, documentary, recording or similar tax on, or measured by reference to relevant metal (other than a tax on, or measured by reference to, overall gross or net income) by any government or taxation authority; or an event beyond the control of the Index Sponsor as a result of which delivery of relevant metal bullion cannot be effected by delivery loco London under the rules of the LPPM by credit to an unallocated account at a member of the LPPM.

Additional Market Disruption Events for MSCESILE (EUR/SILVER), MSCESILG (GBP/SILVER)

The occurrence or existence of any of the following events, as determined by the Index Sponsor, shall constitute a Market Disruption Event:

- (i) the failure of Refinitiv to announce or publish the relevant spot exchange rates or silver fixing prices used in the calculation of the EUR Silver Index or (ii) the temporary or permanent discontinuance or unavailability of Refinitiv service;
- the failure of the CME to announce or publish the official metal settlement prices for the relevant silver futures contracts;
- the material suspension of, or material limitation imposed on, trading in silver by the London Bullion Market Association (“LBMA”);
- the material suspension of, or material limitation imposed on, trading in the relevant silver futures contracts on the CME or in any related futures contract, options contract or options on futures. For this purpose:
 1. a suspension of the trading in the silver futures contract on any Index Business Day shall be deemed to be material only if:
 - a. all trading in the silver futures contract is suspended for the entire Index Business Day; or

- b. all trading in the silver futures contract is suspended subsequent to the opening of trading on that Index Business Day, trading does not recommence prior to the regularly scheduled close of trading in such silver futures contract on such Index Business Day and such suspension is announced less than one hour preceding its commencement; and
2. a limitation on trading in the silver futures contract on any Business Day shall be deemed to be material only if the CME establishes limits on the range within which the price of the silver futures contract may fluctuate and the closing or settlement price of the silver futures contract on such day is at the upper or lower limit of that range;
- (i) the permanent discontinuation of trading in the relevant silver futures contract on the CME;
 - (ii) the disappearance of, or of trading in, silver; or (iii) the disappearance or permanent discontinuance or unavailability of a fixing price for silver or an official metal settlement price for the relevant silver futures contract, notwithstanding the status of trading in the relevant silver futures contract or silver;
 - the occurrence of a material change in the method of calculating (i) the relevant official metal settlement price for the relevant silver futures contract or (ii) the fixing price for silver;
 - the occurrence of a material change in the content, composition or constitution of silver or the relevant silver futures contract;
 - the imposition of, change in or removal of an excise, severance, sales, use value-added, transfer, stamp, documentary, recording or similar tax on, or measured by reference to silver (other than a tax on, or measured by reference to, overall gross or net income) by any government or taxation authority; or an event beyond the control of the Index Sponsor as a result of which delivery of silver bullion cannot be effected by delivery loco London under the rules of the LBMA by credit to an unallocated account at a member of the LBMA.

Annex I Currency Conventions

<u>Currencies (vs. USD)</u>	<u>Standard Quotation</u>
British pound (GBP)	USD per 1 GBP
European Union euro (EUR)	USD per 1 EUR

Annex II MSPM Indices

<u>Morgan Stanley Precious Metal Currency Hedged Indices</u>			
<u>Index Name</u>	<u>Precious Metal Denomination</u>	<u>FX Currency Hedge</u>	<u>Bloomberg Index Ticker</u>
Morgan Stanley EUR Platinum Index	PLATINUM	EUR	MSCEPLTE
Morgan Stanley GBP Platinum Index	PLATINUM	GBP	MSCEPLTG
Morgan Stanley EUR Palladium Index	PALLADIUM	EUR	MSCEPALE
Morgan Stanley GBP Palladium Index	PALLADIUM	GBP	MSCEPALG
Morgan Stanley EUR Silver Index	SILVER	EUR	MSCESILE
Morgan Stanley GBP Silver Index	SILVER	GBP	MSCESILG

Annex III
Index Methodology Description

III.1 Morgan Stanley Precious Metal Index Methodology for MSCEPLTE (EUR/PLATINUM), MSCEPLTG (GBP/PLATINUM).

“Index **Business Day**” means a day on which NYMEX is open for trading (for normal trading hours and with a Daily Settlement Time Range: 13:00:00-13:01:00 EST) in the Precious Metal Future and which is also a settlement date for the GBP currency.

On any Index Business Day (“D”) the related MSPM Index closing level (“I”) will be computed as follows:

$$I_D = I_{D-1} + \frac{I_{D-2} \times [NYMEX_{D-2} - EFP_{D-2}]}{[NYMEX_D - EFP_{baD}] \times FX_{mid,D-2}} \times [FX_{mid,D} - FW(D-1, S_{FX,D})]$$

where

$$FW(T1, T2) = FX_{mid,T1} + \left[\frac{Pts_{SN,FX,T1}}{10000} + \frac{(Pts_{1w,FX,T1} - Pts_{SN,FX,T1}) \times (T2 - SN_{FX,T1})}{10000 \times (1W_{FX,T1} - SN_{FX,T1})} \right] \times 1(T2 - SN_{FX,T1})$$

where:

- “I” is the related Index closing level;
- “D₁” is the first Index Business Day preceding day D;
- “D₂” is the first Index Business Day preceding D₁;
- “I(X)” is 1 if X ≥ 0 and 0 otherwise.
- “FX_{mid}” is the exchange rate fixing using WM rates calculated as WM, Mid on the Fix Source at the roll time.
- “Pts_{Mat,FX,t}” refers to the ask side of the points for term Mat, for currency FX on day t.
- “S_{FX,T}” is the Spot Settlement date of FX on date T according to usual convention.
- “SN_{FX,T}” is the Spot Next Settlement date of FX on date T according to usual conventions.
- “1W_{FX,T}” is the 1 week Settlement date of FX Currency pair on date T according to usual conventions.
- EFP_{ba,T} refers to the ask side of EFP quote if $[FX_{mid,D} - FW(D-1, S_{FX,D})] < 0$ and the bid side otherwise. The EFP is updated daily by Morgan Stanley trading desk.
- **EFP refers to the mid EFP quote.**
- **NYMEX** means the precious metal future settlement price settlement as published by NYM at or before 3.45 pm New York time. The underlying reference future expiry is chosen according to the following table (we take the first Future expiring such Maturity month).

Only on the 4th of November 2019, as per the Index Methodology effective from April 10, 2019,

$$FW(T1, T2) = FX_{ask,T1} + \left[\frac{Pts_{SN,FX,T1}}{10000} + \frac{(Pts_{1w,FX,T1} - Pts_{SN,FX,T1}) \times (T2 - SN_{FX,T1})}{10000 \times (1W_{FX,T1} - SN_{FX,T1})} \right] \times 1(T2 - SN_{FX,T1})$$

Where: “FX_{ask}” is the exchange rate fixing using WM rates calculated as WM, Mid+(WM, Ask-WM, Mid)/8 on the Fix Source at the roll time

III.2 Morgan Stanley Precious Metal Index Methodology for MSCEPLE (EUR/PALLADIUM), MSCEPLG (GBP/PALLADIUM).

“Index **Business Day**” means a day on which NYMEX is open for trading (for normal trading hours and with a Daily Settlement Time Range: 13:00:00-13:01:00 EST) in the Precious Metal Future and which is also a settlement date for the GBP currency.

On any Index Business Day (“D”) the related MSPM Index closing level (“I”) will be computed as follows:

$$I_D = I_{D-1} + \frac{I_{D-2} \times [NYMEX_{D-2} - EFP_{D-2}]}{[NYMEX_D - EFP_{D-2}] \times FX_{mid,D-2}} \times [FX_{mid,D} - FW(D_{-1}, S_{FX,D})]$$

where

$$FW(T1, T2) = FX_{mid,T1} + \left[\frac{Pts_{SN,FX,T1}}{10000} + \frac{(Pts_{1w,FX,T1} - Pts_{SN,FX,T1}) \times (T2 - SN_{FX,T1})}{10000 \times (1W_{FX,T1} - SN_{FX,T1})} \right] \times 1(T2 - SN_{FX,T1})$$

where:

- “I” is the related Index closing level;
- “D₋₁” is the first Index Business Day preceding day D;
- “D₋₂” is the first Index Business Day preceding D₋₁;
- “I(X)” is 1 if X ≥ 0 and 0 otherwise.
- “FX, mid” is the exchange rate fixing using WM rates calculated as WM, Mid on the Fix Source at the roll time.
- “Pts_{Mat,FX,t}” refers to the ask side of the points for term Mat, for currency FX on day t.
- “S_{FX,T}” is the Spot Settlement date of FX on date T according to usual convention.
- “SN_{FX,T}” is the Spot Next Settlement date of FX on date T according to usual conventions.
- “1W_{FX,T}” is the 1 week Settlement date of FX Currency pair on date T according to usual conventions.
- **EFP_{ba,T}** refers to the ask side of EFP quote if $[FX_{mid,D} - FW(D_{-1}, S_{FX,D})] < 0$ and the bid side otherwise. The EFP is updated daily by Morgan Stanley trading desk.
- **EFP refers to the mid EFP quote.**
- **NYMEX** means the precious metal future settlement price settlement as published by NYM at or before 3.45 pm New York time. The underlying reference future expiry is chosen according to the following table (we take the first Future expiring such Maturity month).

Only on the 4th of November 2019, as per the Index Methodology effective from April 10, 2019,

$$FW(T1, T2) = FX_{ask,T1} + \left[\frac{Pts_{SN,FX,T1}}{10000} + \frac{(Pts_{1w,FX,T1} - Pts_{SN,FX,T1}) \times (T2 - SN_{FX,T1})}{10000 \times (1W_{FX,T1} - SN_{FX,T1})} \right] \times 1(T2 - SN_{FX,T1})$$

Where: “FX,ask” is the exchange rate fixing using WM rates calculated as $WM, Mid + (WM, Ask - WM, Mid) / 8$ on the Fix Source at the roll time

III.3 Morgan Stanley Precious Metal Index Methodology for MSCESILE (EUR/SILVER), MSCESILG (GBP/SILVER).

“Index **Business Day**” means a day on which COMEX is open for trading (for normal trading hours and with a Daily Settlement Time Range: 13:29:00-13:30:00 EST) in the Precious Metal Future and which is also a settlement date for the GBP currency.

On any Index Business Day (“D”) the related MSPM Index closing level (“I”) will be computed as follows:

$$I_D = I_{D-1} + \frac{I_{D-2} \times [COMEX_{D-2} - EFP_{D-2}]}{[COMEX_D - EFP_{ba,D}] \times FX_{mid,D-2}} \times [FX_{mid,D} - FW(D_{-1}, S_{FX,D})]$$

where

$$FW(T1, T2) = FX_{mid,T1} + \left[\frac{Pts_{SN,FX,T1}}{10000} + \frac{(Pts_{1w,FX,T1} - Pts_{SN,FX,T1}) \times (T2 - SN_{FX,T1})}{10000 \times (1W_{FX,T1} - SN_{FX,T1})} \right] \times 1(T2 - SN_{FX,T1})$$

where:

- “I” is the related Index closing level;
- “D₋₁” is the first Index Business Day preceding day D;
- “D₋₂” is the first Index Business Day preceding D₋₁;
- “1(X)” is 1 if X ≥ 0 and 0 otherwise.
- “FX, mid” is the exchange rate fixing using WM rates calculated as WM, Mid on the Fix Source at the roll time.
- “Pts_{Mat,FX,t}” refers to the ask side of the points for term Mat, for currency FX on day t.
- “S_{FX,T}” is the Spot Settlement date of FX on date T according to usual convention.
- “SN_{FX,T}” is the Spot Next Settlement date of FX on date T according to usual conventions.
- “1W_{FX,T}” is the 1 week Settlement date of FX Currency pair on date T according to usual conventions.
- **EFP_{ba,T}** refers to the ask side of EFP quote if $[FX_{mid,D} - FW(D_{-1}, S_{FX,D})] < 0$ and the bid side otherwise. The EFP is updated daily by Morgan Stanley trading desk.
- **EFP refers to the mid EFP quote.**
- **COMEX** means the precious metal future settlement price settlement as published by CME at or before 3.45 pm New York time. The underlying reference future expiry is chosen according to the following table (we take the first Future expiring such Maturity month).

Only on the 4th of November 2019, as per the Index Methodology effective from April 10, 2019,

$$FW(T1, T2) = FX_{ask,T1} + \left[\frac{Pts_{SN,FX,T1}}{10000} + \frac{(Pts_{1w,FX,T1} - Pts_{SN,FX,T1}) \times (T2 - SN_{FX,T1})}{10000 \times (1W_{FX,T1} - SN_{FX,T1})} \right] \times 1(T2 - SN_{FX,T1})$$

Where: “FX,ask” is the exchange rate fixing using WM rates calculated as $WM, Mid + (WM, Ask - WM, Mid) / 8$ on the Fix Source at the roll time

Annex IV

	<u>D in 25 Dec-24 March</u>	<u>D in 25 Mar-24 June</u>	<u>D in 25 June-24 September</u>	<u>D in 25 Sep-24 December</u>
Reference Platinum Future	April	July	October	January

	<u>D in 25 Nov-24 Feb</u>	<u>D in 25 Feb-24 May</u>	<u>D in 25 May-24 August</u>	<u>D in 25 Aug-24 November</u>
Reference Palladium Future	March	June	September	December

	<u>D in 25 Feb- 24 April</u>	<u>D in 25 April- 24 June</u>	<u>D in 25 June- 24 August</u>	<u>D in 25 August- 24 November</u>	<u>D in 25 Nov-24 February</u>
Reference SILVER Future	May	July	September	December	March

MSPM Index	”FX” Currenc y	FX Roll Time	Fix Source (Mid) (Refinitiv)	S/N, T/N, 1W Source (Refinitiv) (1)	Live Source (Mid) (Refinitiv)	Precious Metal Future (Exchange, Future ticker)
MSCEPLTE	EUR	4:00 p.m. London	WMRSP0 T05	EURFWD = TTKL	EUR=	PLATINUM (NYMEX, PL.)
MSCEPLTG	GBP	4:00 p.m. London	WMRSP0 T07	GBPFWD = TTKL	GBP=	PLATINUM (NYMEX, PL.)
MSCEPALE	EUR	4:00 p.m. London	WMRSP0 T05	EURFWD = TTKL	EUR=	PALLADIUM (NYMEX, PA.)
MSCEPALG	GBP	4:00 p.m. London	WMRSP0 T07	GBPFWD = TTKL	GBP=	PALLADIUM (NYMEX, PA.)
MSCESILE	EUR	4:00 p.m. London	WMRSP0 T05	EURFWD = TTKL	EUR=	SILVER (COMEX, SI.)
MSCESILG	GBP	4:00 p.m. London	WMRSP0 T07	GBPFWD = TTKL	GBP=	SILVER (COMEX, SI.)

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