MORGAN STANLEY | INSTITUTIONAL SECURITIES GROUP

NOTICE TO CLIENTS REGARDING LIBOR RISKS AND GLOBAL BENCHMARK REFORM

December 2021

While the risks highlighted in this notice focus on LIBOR, they are also relevant to other benchmarks that are, or may be, subject to proposals for reform or discontinuation.

Overview

Cessation or Non-Representativeness of LIBOR and Other Benchmarks

Regulators around the world have stated that LIBOR in all its currencies (USD, GBP, EUR, JPY and CHF), as well as certain other interest rate benchmarks (e.g., LIBOR-based swap rates and CDOR), will cease to be published and be replaced by alternative reference rates or will be subject to significant reform (including to their calculation and/or publication methodology).

On March 5, 2021, the UK Financial Conduct Authority (the "FCA") and the ICE Benchmark Administration (the "IBA"), the regulator and administrator of LIBOR, respectively, announced that panel bank submissions will cease, and representative LIBOR rates will no longer be available on the following dates:

(a) immediately after the December 31, 2021 publication, for all GBP, EUR, CHF and JPY LIBOR settings, and the 1 week and 2 month USD LIBOR settings; and
(b) immediately after the June 30, 2023 publication, for the overnight, and 1, 3, 6 and 12 month USD LIBOR settings.

Subsequently, the International Swaps and Derivatives Association (ISDA) published a statement that confirmed that the FCA announcement constitutes an index cessation event under the ISDA IBOR Fallbacks Supplement and the ISDA 2020 IBOR Fallbacks Protocol (collectively, the "ISDA IBOR Fallbacks") for all 35 LIBOR settings. As a result, the ISDA fallback spread adjustment published by Bloomberg was fixed on March 5, 2021 for all EUR, GBP, CHF, USD and JPY LIBOR settings. The fallbacks to the adjusted "risk-free" rate (RFR) plus fallback spread adjustment will automatically apply to outstanding LIBOR derivatives contracts that incorporate the ISDA IBOR Fallbacks on the first reset date following:

- For outstanding derivatives referencing all EUR, GBP, CHF and JPY LIBOR settings, immediately after December 31, 2021; and

- For outstanding derivatives referencing USD LIBOR settings, after June 30, 2023. Under the fallback methodology, the rate for the 1 week and 2 month USD LIBOR settings will be computed using linear interpolation for the period between December 31, 2021, and June 30, 2023, before falling back to the adjusted risk-free rate plus spread immediately after June 30, 2023.

In addition, the Alternative Reference Rates Committee (ARRC) confirmed that the March 2021 announcements by the FCA and IBA fixed the spread adjustments with respect to all USD LIBOR settings under the ARRC's non-consumer recommended fallback provisions for the cash markets. These spread adjustments are the same as ISDA's.

With little time remaining until LIBOR's cessation or non-representativeness, market participants should consider:

(i) using alternative reference rates in new cash, derivative and loan transactions, wherever possible; and

(ii) addressing any remaining LIBOR exposures in their portfolios through voluntary conversions of legacy LIBOR transactions and/or including robust fallbacks (e.g., the ISDA IBOR Fallbacks for derivatives or the ARRC recommended fallbacks for USD LIBOR-linked cash products).

Cessation of LIBOR Swap Rates

The JPY LIBOR Tokyo Swap Rate, the GBP LIBOR ICE Swap Rate and the USD LIBOR ICE Swap Rate (collectively, the "LIBOR Swap Rates") are determined by their benchmark administrators based on trading in the LIBOR swaps market for the relevant currency and are expected to cease publication when the underlying LIBOR rate ceases to be published or becomes unrepresentative. This will be immediately after December 31, 2021 for the GBP LIBOR ICE Swap Rate and the JPY LIBOR Tokyo Swap Rate. ICE Benchmark Administration, the administrator of USD LIBOR ICE Swap Rate, is expected to announce that its expected publication cessation date will be in tandem with the cessation of USD LIBOR (it is conducting market consultations to solicit feedback on this approach). The market is now transitioning to new RFR-based swap rates such as SONIA ICE Swap Rate, TONA Tokyo Swap Rate and SOFR ICE Swap Rate (collectively, the "RFR Swap Rates").

The LIBOR Swap Rates are not covered by any industry recommended IBOR fallbacks (e.g., the ISDA IBOR Fallbacks for derivatives, or the ARRC-recommended fallbacks for USD LIBOR-linked cash products). Absent the adoption of new industry recommended swap rate fallbacks based on the RFR Swap Rates (such as the recently published ISDA LIBOR Swap Rate Fallbacks) via amendments to outstanding transactions, legacy LIBOR Swap Rate fallbacks would apply under existing contractual arrangements. These legacy fallbacks may require the calculation agent or another party to run dealer polls or exercise discretion if the applicable LIBOR Swap Rate ceases being published, which may yield unintended and unpredictable economic consequences for market participants. In addition, liquidity in these LIBOR Swap Rates may be adversely impacted as a result of a decrease in liquidity in LIBOR swaps prior to cessation.

With little time remaining until cessation of the LIBOR Swap Rates, market participants should consider:

(i) using the RFR Swap Rates in new cash and derivative transactions, wherever possible; and

(ii) addressing any remaining LIBOR Swap Rate exposures in their portfolios through voluntary conversions of legacy LIBOR Swap Rate transactions and/or including robust fallbacks (e.g., the ISDA LIBOR Swap Rate Fallbacks for derivatives).

Restrictions on Continued Use of LIBOR in New Transactions

Central bank sponsored committees (ARR Committees) in the U.S., the U.K. and Japan have issued target milestones for USD LIBOR, GBP LIBOR and JPY LIBOR respectively to encourage the transition away from LIBOR by the end of 2021, including target dates to cease trading of new LIBOR-referencing derivatives (with exceptions for risk management purposes) and issuance of new LIBOR-linked cash products, such as loans, bonds and securitizations. As a result, LIBOR may perform differently than in the past (e.g., its liquidity may decline, its volatility may increase and/or the pricing of legacy LIBOR-referencing products may change materially). In addition, LIBOR liquidity may be significantly impacted by changes in inter-dealer swap market quoting conventions from LIBOR to the applicable recommended RFR following implementation of a series of U.K. SONIA First, U.S. SOFR First and Japan TONA First recommendations.

In the case of USD LIBOR, while the most widely used USD LIBOR settings will continue to be published until June 30, 2023, U.S. and U.K. regulators have issued regulatory guidance to restrict the continued use of USD LIBOR in new transactions after December 31, 2021. In particular, supervisory guidance and FAQs issued by U.S. prudential regulators, including the Federal Reserve, O.C.C. and F.D.I.C., along with comparable regulation issued by the U.K Financial Conduct Authority (U.K. FCA), restricts U.S. regulated financial institutions and U.K. regulated entities from entering into new USD LIBOR-linked cash or derivatives transactions after the end of 2021, with certain limited exceptions. These exceptions include:

- Drawdowns on outstanding USD LIBOR credit facilities;
- Trading derivatives which are risk reducing or hedging the client's or supervised institution's exposures; and
- Secondary trading in outstanding LIBOR-linked cash securities and loans, as provided in the relevant guidance.

Legislative and Regulatory Initiatives to Address "Tough Legacy" LIBOR Products

Synthetic LIBOR

On September 29, 2021, the FCA announced that it will require the IBA to continue to publish "synthetic" rates for 1, 3 and 6 month GBP and JPY LIBOR on a changed methodology (referred to as "synthetic LIBOR"). Synthetic LIBOR will not be published for EUR or CHF LIBOR or for other tenors of GBP and JPY LIBOR that are ceasing at the end of 2021. 1, 3 and 6 month GBP and JPY synthetic LIBOR are to be calculated as the sum of: (i) the relevant tenor of the relevant risk free rate (i.e. the ICE Term SONIA Reference Rate provided by IBA for GBP LIBOR, and the Tokyo Term Risk Free Rates (TORF) provided by QUICK Benchmarks Inc., adjusted to multiply the value of TORF published for an applicable London business day by 360/365, for JPY) and (ii) the fixed spread adjustment that applies as part of the ISDA IBOR fallback for the relevant tenor and that is published for the purposes of the ISDA IBOR Fallbacks Supplement and Protocol. Synthetic LIBOR has been designated by the FCA to be unrepresentative of the market or economic reality that it is intended to measure and is therefore not available for use in new transactions by UK supervised entities.

There are a number of risks you should be aware of if you do not remediate your legacy LIBOR transactions and synthetic LIBOR applies to them, including that:

a) The publication of synthetic LIBOR will be time-limited. The FCA has confirmed that publication of 1, 3 and 6 month synthetic JPY LIBOR will cease at the end of 2022 and that publication of the 1, 3 and 6 month synthetic GBP LIBOR tenors will be subject to annual review.

b) In the future, the FCA may also impose a supervisory prohibition on certain legacy use of synthetic LIBOR, even if it is still being published.

c) As the calculation methodology for synthetic LIBOR is different from the market-standard replacement rates determined pursuant to industry initiatives for the various products (e.g., the ISDA IBOR Fallbacks and the ARRC recommended fallbacks for USD LIBOR-linked cash products), it may be difficult and/or costly to unwind or hedge your unremediated legacy LIBOR transactions after the end of 2021. There may also be mismatches between your unremediated legacy LIBOR transactions and other products, e.g., cleared derivatives.

Global regulators, including in the UK and Japan, have emphasized that market participants should not rely on synthetic LIBOR except in tough legacy transactions that cannot realistically be amended before the end of 2021, that synthetic LIBOR should not be relied upon as a long-term solution for legacy exposures and that active transition of legacy LIBOR transactions should continue.

State of New York and Alabama Legislation in relation to USD LIBOR

In April 2021, New York State adopted legislation that will, among other things, replace USD LIBOR-linked fallback references in certain contracts governed by New York law with the ARRC-recommended Secured Overnight Financing Rate and spread. The legislation will override fallback references in contracts with: (i) fallback language referencing a LIBOR-based rate; (ii) contracts with fallback language referencing bank polling; and (iii) contracts with no existing fallback language. Where one party has the right to exercise discretion or judgment regarding the fallback rate, that party may opt to use the ARRC's recommended rate and spread and avail themselves of a safe harbor from litigation. The financial products potentially impacted by this legislation include, but are not limited to, floating rate notes, preferred stock, securitized products, derivatives and certain consumer products. The State of Alabama also passed legislation in 2021 addressing USD contracts governed by Alabama law that is substantially the same as New York's legislation.

Legislative and regulatory risk

There is no guarantee that legislative and/or regulatory initiatives implemented or contemplated in different jurisdictions (e.g. the U.S., the U.K., the E.U. and Japan) will have the same scope of application or result in the same outcome or timing for legacy LIBOR-referencing transactions (e.g., there is currently no legislation dealing with USD LIBOR contracts governed by the laws of jurisdictions other than New York and Alabama). As a result, market participants should not assume that legislation or regulation dealing with legacy LIBOR exposures will be implemented or that, if implemented, that it will be consistent across jurisdictions, currencies, regions and products.

Risks related to legacy LIBOR contracts, systems and operational processes

- Legacy contractual terms may not adequately provide for the occurrence of a permanent cessation or non-representativeness determination (or a future announcement thereof) in relation to LIBOR. For example, legacy ISDA derivative contracts and bonds/notes typically include fallbacks that were designed at a time when market participants did not contemplate a permanent cessation of LIBOR (e.g., a dealer poll and/or fallback to the last LIBOR fixing). Such fallbacks may result in increased uncertainty (e.g., dealer polls may not result in a sufficient number of quotes) and/or lack of market pricing transparency, and may materially change the economics of the contract (e.g., a last LIBOR fixing would convert a floating rate instrument into a fixed rate contract). As a result, market participants should consider actively transitioning their legacy LIBOR transactions and/or introducing robust fallbacks covering permanent cessation and non-representativeness of LIBOR (such as the ISDA IBOR fallbacks or the ARRC recommended fallbacks for USD LIBOR-linked cash products).

- There may be a population of LIBOR-linked products ("tough legacy products") that cannot be amended due to an inability to obtain sufficient consent from counterparties or product owners. For example, bonds and notes linked to LIBOR typically involve high noteholder consent requirements, while structured transactions that involve one or more instruments (such as bonds, loans and/or swaps) may require the consent of multiple classes of creditors whose interests may differ from each other. Some of these products may not be covered by legislative or regulatory initiatives regarding tough legacy products, e.g., synthetic LIBOR, or the New York State or Alabama legislation regarding USD LIBOR in contracts governed by New York or Alabama law, respectively.

For risks relating to products where synthetic LIBOR may apply, please see the section on "Synthetic LIBOR" above.

- The occurrence of a permanent cessation and/or non-representativeness determination in relation to LIBOR (or any announcement thereof) may lead to Morgan Stanley exercising discretion to determine a replacement rate, spread and other adjustments to contractual terms. Any such determination made by Morgan Stanley, while exercised in good faith and taking into account relevant market practice or regulatory guidance where available, may be inconsistent with, or contrary to, your interests or positions.

- New industry ARR fallbacks, such as those recommended by ARR Committees may change the operational mechanics and/or economics of financial products. As a result, the replacement of LIBOR with alternative reference rates may require significant modifications and/or development of systems, models and other analytics (including by third party vendors). For example, interest and other amounts linked to the RFRs may be determined at or around the end of an applicable calculation period, whereas those linked to LIBOR are typically determined at the start of the applicable calculation period.

- LIBOR fallback provisions (regardless of whether they are new or legacy provisions) may vary across products, currencies and regions, even within asset classes. As a result of such differences, there may be economic mismatches between instruments (e.g., a bond or a loan referencing LIBOR and a related derivative transaction intended to operate as a hedge, or between an OTC derivative and a cleared derivative intended to hedge that OTC derivative).

- The replacement of LIBOR in existing contracts, as well as the introduction or modification of fallback terms, may lead to additional tax, accounting and regulatory impact or risk, which may vary across jurisdictions and products. Some relief and/or official guidance to ensure the continued grandfathering of trades from applicable tax, accounting and regulatory requirements has been granted in each of the major jurisdictions (including the U.S., E.U. (or its member states), U.K. and Japan). Clients should consider the applicability of tax, accounting and regulatory risks to their own circumstances, as well as the availability of any relevant relief, in consultation with their own professional advisors.

- The retention of LIBOR in existing contracts, particularly as we approach the end of 2021 and beyond, could also lead to additional tax, accounting and regulatory risk. For example, regulators and relevant industry bodies have and may look to apply more conservative and/or cumbersome requirements or guidance (including on tax, accounting, capital and other regulatory requirements or guidance) in order to encourage the transition away from LIBOR, such as the limitations on regulated entities' entering into new USD LIBOR-linked transactions after the end of 2021. Clients should consider these risks and weigh them against any risks arising from replacing LIBOR in existing contracts, in consultation with their own professional advisors.

Risks related to the Alternative Reference Rates

- Alternative reference rates chosen by ARR Committees to replace LIBOR in each currency have different characteristics (in particular, unlike LIBOR, they are primarily overnight "risk-free" rates that do not embed a forward-looking term structure or credit risk premium). As a result, they may perform materially differently than LIBOR and/or may not gain universal market acceptance in one or more asset classes due to these differences in composition and characteristics. In addition, where forward-looking term RFRs have been developed and are used as replacement rates in contracts, such term RFRs may not include a credit risk premium or be suitable for all asset classes. The ARR Committee in Japan has recommended TORF, but TORF may severely lack market liquidity and there remains uncertainty as to whether an established trading market will develop. In addition, replacing LIBOR with another IBOR (*e.g.*, TIBOR) may increase potential dispute risk with respect to the spread adjustment methodology and exhibit hedging challenges.

- Replacing LIBOR with the ARRs (including through the inclusion of fallbacks or active conversions to the ARRs) may not be economically equivalent (even after the inclusion of industry-standard adjustment spreads), and therefore may result in contracts or instruments not performing in the same way as when linked to LIBOR and/or having lower secondary market liquidity, which may adversely impact their value, pricing, or return.

- Alternative reference rates (in particular, SOFR and ESTR, but also SONIA and TONA for certain products and markets) have a limited history and their future performance may not be capable of being predicted based on historical performance. Spread adjustments and market conventions regarding the use of these RFRs in different products and currencies have recently been developed and may change over time.

- New reference rates may be developed over time and may be different from and compete for liquidity with the ARRs recommended by the ARR Committees to replace LIBOR.

- The administrators of the ARRs may make changes to their calculation methodology over time, which may adversely impact the value and/or liquidity of instruments linked to them.

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Links to key LIBOR Transition Resources:

ARR Committees in U.S., U.K., E.U. and Japan

+ **Alternative Reference Rates Committee**
+ **Euro Risk Free Rates Working Group**
+ **Sterling Risk Free Rates Working Group**
+ **Cross-Industry Committee on Japanese Yen Interest Rate Benchmarks**

ISDA

+ **Benchmark Reform and Transition from LIBOR**
+ **IBOR Alternative Reference Rates Disclosure**