MORGAN STANLEY | INSTITUTIONAL SECURITIES GROUP

NOTICE TO CLIENTS REGARDING LIBOR RISKS AND GLOBAL BENCHMARK REFORM

May 2022

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

The industry transition away from LIBOR in all its currencies is well underway. Following December 31, 2021:

- All settings of GBP and JPY LIBOR ceased to be published, except for the 1, 3 and 6 month settings for which a synthetic LIBOR rate is being published (but which is unrepresentative and solely for use in legacy transactions);
- All settings of CHF and EUR LIBOR ceased to be published; and
- The 1 week and 2 month USD LIBOR settings ceased to be published.

The remaining settings of USD LIBOR (namely, 1, 3, 6 and 12 month USD LIBOR) will cease to be published immediately after the June 30, 2023 publication, but are already restricted from use in new transactions under U.S. bank supervisory guidance and U.K. regulation (with certain limited exceptions – see below for further details). As a result, each of the Singapore Swap Offer Rate (SOR), Thai Baht Interest Rate Fixing (THBFIX), Philippines Interbank Reference Rate (PHIREF) and Mumbai Interbank Forward Rate (MIFOR), which rely on USD LIBOR in its computation, will similarly be discontinued immediately after June 30, 2023 across all major tenor settings, and are already restricted by local regulators/central banks from use in new transactions for certain (or in the case of SOR, all) asset classes (with certain limited exceptions - see below for further details). In addition, Euroyen TIBOR is expected to cease publication at the end of December 2024. The JBA TIBOR Administration ("JBATA") plans to conduct public consultations and take other actions to develop a robust fallback. The Refinitiv Benchmark Services (UK) Limited (RBSL), as administrator of the Canadian Dollar Offered Rate (CDOR), published a consultation on the potential cessation of CDOR. This consultation follows a December 2021 white paper issued by the Canadian Alternative Reference Rate Working Group recommending that RBSL cease the calculation and publication of CDOR after June 30, 2024.

Announcements in March 2021 of LIBOR cessation dates by the U.K. Financial Conduct Authority (the "FCA") and the ICE Benchmark Administration (the "IBA"), the regulator and administrator of LIBOR, respectively, resulted in the International Swaps and Derivatives Association (ISDA) statement that an index cessation event had occurred 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 the fixed fallback spread adjustment 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, immediately after June 30, 2023. Under the fallback methodology, the rate for the 1 week and 2 month USD LIBOR settings is computed using linear interpolation for the period between December 31, 2021 (when these tenors ceased), and June 30, 2023, before falling back to the adjusted risk-free rate plus spread commencing with the 1st reset date 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 USD *cash* markets. These spread adjustments are the same as ISDA's.

Following the cessation or non-representativeness of all non-USD LIBOR settings, and with little time remaining until the cessation of USD LIBOR, market participants should consider:

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

(ii) addressing any remaining LIBOR exposures in their portfolios through voluntary conversions of legacy LIBOR transactions and/or amending these transactions to include 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 and the GBP LIBOR ICE Swap Rate, which were determined by their benchmark administrators based on trading in the LIBOR swaps market for the relevant currency, ceased publication immediately after December 31, 2021 for the GBP LIBOR ICE Swap Rate and December 30, 2021 for the JPY LIBOR Tokyo Swap Rate. IBA, the administrator of USD LIBOR ICE Swap Rate, is expected to announce that this rate will cease to be published in tandem with the cessation of USD LIBOR (IBA is expected to conduct a market consultation to solicit feedback on this approach). The JPY and GBP markets have now transitioned to the new RFR-based swap rates, which are the TONA Tokyo Swap Rate and Sonia ICE Swap Rate, respectively, and the USD market is currently transitioning to the SOFR ICE Swap Rate (the JPY, GBP and USD RFR swap rates are, collectively, the "RFR Swap Rates").

The JPY, GBP and USD LIBOR ICE Swap Rates (collectively, the "LIBOR Swap Rates") are not covered by any industry recommended IBOR fallback protocols (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 following the cessation of the applicable LIBOR Swap Rate, which may yield unintended and unpredictable economic consequences for market participants.

Given the cessation (whether actual or expected) of all 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 USD LIBOR & Related Benchmarks in New Transactions

Central bank sponsored committees (ARR Committees) in the U.S., the U.K. and Japan issued target milestones for USD LIBOR, GBP LIBOR and JPY LIBOR respectively to encourage the transition away from LIBOR by the end of 2021.

In the case of USD LIBOR, while the most widely used USD LIBOR settings (namely, 1, 3, 6 and 12 month USD LIBOR) 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, 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 outstanding USD LIBOR exposures; and
- Secondary trading in outstanding USD LIBOR-linked cash securities and loans.

The ARR Committees in Singapore, Thailand, Philippines and India have similarly issued target milestones for SOR, THBFIX, PHIREF and MIFOR, respectively to encourage the transition away from such USD LIBOR-derived rates. The Singapore regulator issued regulatory guidance on the target timelines in 2021 to restrict the continued use of SOR in new loans and securities (with maturities beyond December 31, 2021), and to restrict the continued use of SOR in new derivatives contracts with certain limited exceptions. These exceptions include:

- Transactions for risk management and reduction or transition of SOR transactions;
- Market-making in support of client activity related to SOR transactions;
- Novations of SOR derivatives transactions; and
- Transactions executed for required participation in CCP procedures.

The Bank of Thailand similarly issued regulatory guidance to restrict the continued use of THBFIX in new loans and securities (with maturities beyond June 30, 2023), and to restrict the continued use of THBFIX in new derivatives contracts after July 1, 2022 (except for risk management of THBFIX legacy contracts).

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 ceased at the end of 2021.

1, 3 and 6 month GBP and JPY synthetic LIBOR are 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 Rate (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 U.K. 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 become more 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 U.K. and Japan, have emphasized that market participants should not rely on synthetic LIBOR except in tough legacy transactions that cannot realistically be amended before their first fixing date in 2022, 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. In November 2021, the BOJ issued a report outlining the procedural steps that parties should follow when using synthetic LIBOR to mitigate dispute risk.

U.S. Federal Legislation On USD LIBOR

In March 2022, the "Adjustable Interest Rate (LIBOR) Act" (the "U.S. Act") was signed into federal law to address "tough legacy" USD LIBOR fallback provisions in contracts by replacing these fallbacks with a SOFR-based rate to be determined pursuant to Federal Reserve Board rulemaking plus a statutory spread adjustment that mirrors the spreads in the ISDA IBOR Fallbacks and the ARRC's recommended hardwired fallbacks for cash products. Upon USD LIBOR's cessation at the end of June 2023, the U.S. Act will, automatically and without further action, override and apply the SOFR-based rate and statutory spread in legacy USD LIBOR contracts that either contain (i) fallback language to a LIBOR-based rate or bank polling to determine a USD LIBOR rate; or (ii) no existing fallback language. The U.S. Act does not override contracts that fall back to a specific non-LIBOR rate, such as the Prime Rate or Fed Funds. Where one party has the right to exercise discretion to determine the fallback rate in a USD LIBOR cessation, that party may opt into the statute and use the SOFR-based rate determined pursuant to the FRB's rule and statutory spread and avail themselves of a safe harbor from litigation. The financial products potentially impacted by this legislation include, but are not limited to, USD LIBOR floating rate notes, preferred stock, securitized products, derivatives and certain consumer products. The U.S. Act includes pre-emption provisions that override state law, such as New York State's 2021 USD LIBOR 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., Japan, or other jurisdictions in Asia Pacific) 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 the U.S.). As a result, market participants should not assume that legislation or regulation dealing with legacy LIBOR exposures will be implemented in all applicable jurisdictions or that, if implemented, it will be consistent across jurisdictions, currencies, regions and products. In addition, at present, there are no legislative initiatives that address any of the LIBOR Swap Rates.

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 U.S. Act. 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 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. The ARR Committee in Singapore has recommended SORA, and the ARR Committee in Thailand has recommended THOR, but markets and products referencing alternative reference rates such as SORA and THOR continue to develop and there are currently differing levels of liquidity in each such market.

- 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.

This disclosure has been prepared solely for informational purposes and is not a recommendation, offer, or a solicitation of an offer, to buy, sell, borrow, or loan any security or financial instrument or to participate in any particular trading strategy. This disclosure is also not intended to constitute advice of any kind, including on accounting, audit, tax, legal, regulatory or investment matters. Morgan Stanley assumes no responsibility for, and makes no representation or warranty regarding, the information contained in this disclosure, including

its accuracy, completeness, suitability, or timeliness. Morgan Stanley assumes no duty to update the information. You assume all risks in relying on the information.

Links to key LIBOR Transition Resources:

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

- **Alternative Reference Rates Committee**
- **Sterling Risk Free Rates Working Group**
- **Euro Risk Free Rates Working Group**
- **Cross-Industry Committee on Japanese Yen Interest Rate Benchmarks**
- **Steering Committee for SOR & SIBOR Transition to SORA (SC-STS)**
- **BOT Steering Committee on Commercial Banks' Preparedness on LIBOR Discontinuation**

ISDA

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