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**Public Consultation on Identification and Use
of a Japanese Yen Risk-Free Rate**

March 2016

Study Group on Risk-Free Reference Rates

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1. Summary

Following the cases of attempted LIBOR manipulation that became apparent in the summer of 2012, the Financial Stability Board (FSB) published a report in July 2014 which recommended the development of alternative risk-free rate benchmarks for major currencies that would not include bank credit risk, in addition to the reform of the existing major interest rate benchmarks such as LIBOR.

In response to the recommendation, market participants in Japan established Study Group on Risk-Free Reference Rates in April 2015 and have been working on the identification and use of the Japanese yen (JPY) risk-free rate benchmark.

As a result of its work so far, the Study Group considers (1) the uncollateralized overnight call rate (so called Tokyo Overnight Average Rate, TONAR) as the primary candidate for the JPY risk-free rate, and (2) the GC repo rate as the secondary candidate.

In the FSB report, the use of the risk-free rate is primarily considered for derivatives transactions, and the Study Group likewise focused its study on the use as reference rates for JPY interest rate swaps (IRS). More specifically, the Study Group estimated the proportion of JPY IRS transactions for which the use of risk-free rate is suitable through its internal surveys on transactions purposes. The Study Group also considered revision of market conventions that would improve convenience of JPY Overnight Index Swap (OIS) transactions using TONAR, which is positioned as the primary candidate, as a reference rate.

This consultation paper summarizes the findings from the Study Group's works and invites comments from a wide range of interested parties. The Study Group will conduct further investigation taking into account the comments received through this public consultation, and plans to publish a report on the identification and use of the JPY risk-free rate by the end of June 2016.

Comments to this consultation paper should take into account the questions on Chapter 6 and be sent to the Secretariat of the Study Group (Financial Markets Department, Bank of Japan) by April 28, 2016.

2. Background

2-1 Discussion about interest rate benchmark reforms at the international forum

The major interest reference rates (such as LIBOR, EURIBOR, and TIBOR, collectively the IBORs) are used as benchmarks for a broad range of financial transactions and therefore play a critical role in the global financial system. The cases of attempted LIBOR manipulation that became apparent in the summer of 2012 and the post-crisis decline in liquidity in interbank unsecured funding markets (which are the underlying markets of the IBORs) have undermined the credibility and robustness of the benchmarks, leading the G20 in February 2013 to request the FSB to undertake review of major interest rate benchmarks and plans for their reform. In response to the request, the FSB established the Official Sector Steering Group (OSSG) to study issues regarding the reform plan, and in July 2014, the OSSG published the report of “Reforming Major Interest Rate Benchmarks” (hereinafter, FSB Report) (See Chart 2 for a list of major events in interest rate benchmark reforms).¹

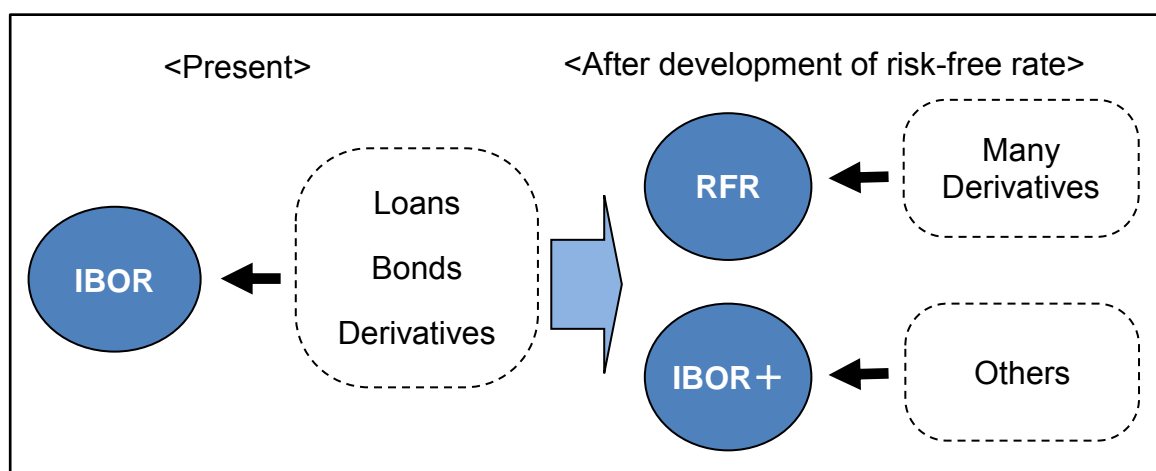
The FSB Report recommends that alternative risk-free benchmarks that do not include bank credit risk (hereinafter “risk-free rate”) be developed for major currencies (U.S. dollar, Euro, Pound sterling, Japanese yen, and Swiss franc), in addition to strengthening IBORs² that reflect bank funding costs (Chart 1). More specifically:

- (1) Strengthening existing IBORs and other potential reference rates based on unsecured bank funding costs by underpinning them to the greatest extent possible with actual transactions data (for convenience, reformed IBOR is termed “IBOR+”).
- (2) Developing alternative risk-free rates to provide market participants with choices that are better suited to their transaction purposes.

¹ The FSB Report can be obtained from: http://www.fsb.org/wp-content/uploads/r_140722.pdf

² Proposed reforms to the LIBOR, TIBOR, and EURIBOR have been published by their respective administrators.

Chart 1: Image of the Use of Interest Rate Benchmarks in the FSB Report



There are two reasons why the FSB Report recommends this multiple-rate approach: (1) Market Participants Group (MPG), tasked by the FSB with examining the feasibility and viability of adopting alternative reference rate³, reported that the need for IBORs that include bank credit risk will continue to exist, but it would be more rational for a large number of derivative market participants to use a risk-free rate; and (2) from the perspective of the official sector, multiple interest rate benchmarks would contribute to the overall financial stability by enabling market participants to have choices of benchmarks that are “fit for purpose”, which would improve the robustness against operational risks and reduce the incentive to manipulate specific interest rate benchmarks.

There are two points regarding “development” of “risk-free rates” recommended in the FSB Report that must be emphasized in advance to accurately communicate the intent of this public consultation.

First, “risk-free” rates as used in the FSB Report does not necessarily mean that the credit risk of trading participants are absolutely zero, but include those as close to zero as possible (i.e., “near risk-free”). Therefore, the term “risk-free” in this consultation paper is used with the meaning of “(near) risk free”.

Second, "development" of a risk-free rate does not necessarily mean taking procedures to formulate and publish new interest rate data. Formulating a new interest rate data is an obvious option, but when there is already robust interest rate data backed by sufficient actual transactions, designating it to be the JPY risk-free rate would also constitute “development” as recommended in the FSB Report. This is a common understanding in the context at the international forum.

³ MPG recommendations can be obtained from:
http://www.fsb.org/wp-content/uploads/r_140722b.pdf

To develop risk-free rates, the FSB Report requests that studies be conducted for each major currency and risk-free rates satisfying the requirements listed in the “Principles for Financial Benchmarks”, formulated by the International Organization of Securities Commissions (IOSCO; hereinafter “IOSCO’s Principles”)⁴ be implemented, by the end of June 2016.

Chart 2: Major Events in Interest Rate Benchmark Reforms

Time	Description
2012 Summer	LIBOR manipulation surfaces
2013 February	G20 requests the FSB to study interest rate benchmark reforms
March	Bank for International Settlements (BIS) publishes a report on better reference rate practices
June	FSB establishes the OSSG to study interest rate benchmark reforms
July	IOSCO publishes “Principles for Financial Benchmarks”
2014 March	At the request of OSSG, MPG recommends on the identification and implementation of new interest rate benchmarks as alternatives to existing interest rate benchmarks (report published in July)
July	FSB publishes a report on interest rate benchmark reforms
December	An U.S. study group on risk-free reference rates (Alternative Reference Rates Committee) is established
2015 March	An U.K. study group on risk-free reference rates (Working Group on Sterling Risk-Free Reference Rates) is established
April	A Japanese study group on risk-free reference rates (Study Group on Risk-Free Reference Rates) is established
2016 End of June	Implementation of at least one risk-free reference rate satisfying the IOSCO’s Principles (target date set by FSB)

⁴ Principles to be satisfied by financial benchmarks used in financial markets. There are a total of 19 principles covering matters such as the governance of administrative organizations creating benchmarks, the quality of benchmarks, the quality of calculation guidelines, and accountability. The IOSCO’s Principles can be obtained from the following source: <https://www.iosco.org/library/pubdocs/pdf/IOSCOPD415.pdf>

2-2 Framework for exploring risk-free rates in Japan

In Japan, initiatives by the major market participants led to the establishment of the Study Group on Risk-Free Reference Rates in April 2015. This Study Group is comprised of market participants and has investigated the identification and use of JPY risk-free rate, mainly from the following perspectives:

- (1) Identification of risk-free rates and deliberation on their administrators.
- (2) Market conventions and contract design regarding risk free rate that are based on expected usage of the chosen rates.

The members of the Study Group are comprised of 12 financial institutions active in the Tokyo market (SMBC Nikko Securities, Goldman Sachs Japan, Daiwa Securities, Deutsche Bank, Nomura Securities, Barclays Securities Japan, Mizuho Bank, Mizuho Securities, Sumitomo Mitsui Banking Corporation, Bank of Tokyo-Mitsubishi UFJ, Mitsubishi UFJ Morgan Stanley Securities, and UBS AG), together with representatives from the Japanese Bankers Association, Japan Security Dealers Association, and International Swaps and Derivatives Association, Inc. (ISDA). In addition, the Financial Services Agency and the Bank of Japan participate as observers. The Bank of Japan serves as the Secretariat for the Study Group.

To date, the meetings of Study Group have been held ten times to narrow down the candidates for the JPY risk-free rate, and to assess the scope of use of the risk-free rate in financial transactions and contracts, and how to expand its use.⁵ In November 2015, to better reflect the opinions of a broader range of market participants, the Group reported on the status of its investigations to the Study Group for Activation of Short-Term Money Markets and sought feedbacks from its members.

This public consultation summarizes the findings from the works of the Study Group to date and invites comments from a broader range of interested parties. The Study Group will conduct further investigation taking into account the comments received through this public consultation, and plans to publish a report on the identification and use of the JPY risk-free rate by the end of June 2016⁶.

⁵ The Study Group's terms of reference, meeting agendas, and the minutes are available on the Bank of Japan's web site: <https://www.boj.or.jp/en/paym/market/sg/index.htm/>

⁶ One of the important properties of risk-free rates is consistency with other currencies, if they were to be used as currency swap indices, and thus before identifying JPY risk-free rate, the Study Group may want to take into consideration of development of risk-free rate in other currencies such as U.S. dollar, Euro, Pound sterling. This may cause delay of the publication timing to later than July 2016.

3. Current Japanese Yen Interest Rate Benchmarks

3-1 Current major benchmarks

At present, there are two JPY interest rate benchmarks that are broadly used for financial transactions: JBA TIBOR (Japanese Yen TIBOR and Euroyen TIBOR) and JPY LIBOR.

(1) JBA TIBOR (Japanese Yen TIBOR and Euroyen TIBOR)

JBA TIBOR (hereinafter “TIBOR”) is published by the JBA TIBOR Administration as a benchmark for unsecured funding in the Tokyo interbank market. There are two types of rates depending on the underlying markets; the Japanese Yen TIBOR, which reflects prevailing rates on the unsecured call market, and the Euroyen TIBOR, which reflects prevailing rates in the Japan offshore market. Both Japanese Yen TIBOR and Euroyen TIBOR are calculated and published in six tenors: 1 week, 1 month, 2 month, 3 month, 6 month, and 12 month.

(2) JPY LIBOR

LIBOR is calculated and published by the ICE Benchmark Administration as a benchmark for unsecured funding in the London interbank market. LIBOR for five major currencies, including JPY, are calculated and published in seven tenors: spot-next, 1 week, 1 month, 2 month, 3 month, 6 month, and 12 month.

3-2 Use of interest rate benchmarks in financial transactions

These interest rate benchmarks are used as reference rates for derivatives transactions, loan contracts, and other financial transactions. JPY LIBOR serves as the reference rate for a variety of financial transactions, principally OTC derivatives, and according to the report by the MPG, the notional amounts of these financial transactions are estimated to exceed 30 trillion U.S. dollars. Likewise, TIBOR is used in a broad range of financial transactions, and their notional amounts are estimated to exceed 5 trillion U.S. dollars.

The IRS market is the largest segment of the JPY interest rate derivatives markets, and various tenors of JPY LIBOR and TIBOR are used as floating-rate indices. Particularly, 6-month JPY LIBOR is commonly used for JPY IRS because there exists liquid basis swap market against 6-month JPY LIBOR (Chart 3). As floating-rate indices in JPY IRS, TONAR is also used as a reference rate for OIS⁷. However, the transaction volume of OIS has been low in recent years, after it had temporarily

⁷ An IRS using the overnight rate as the reference rate.

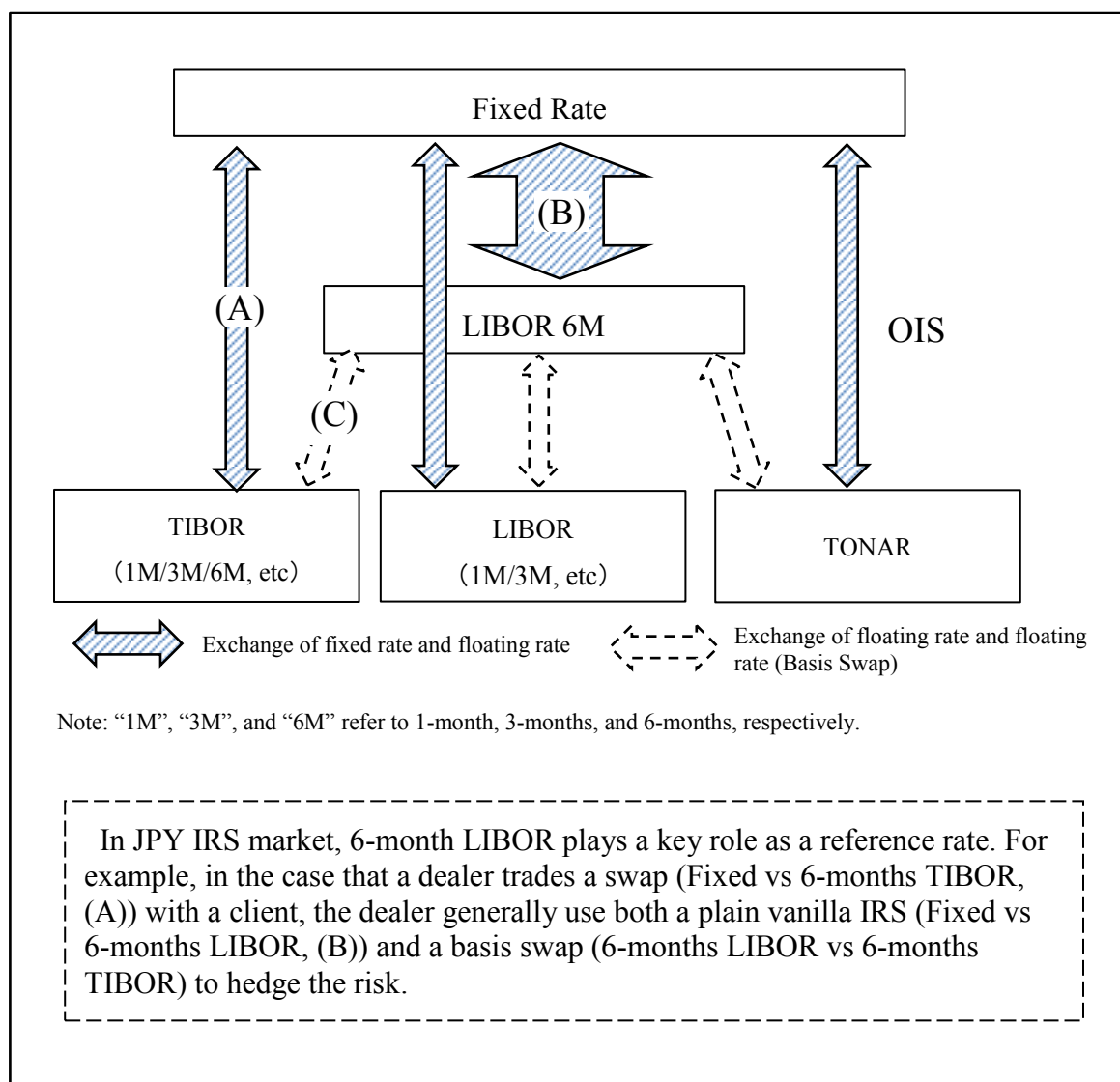
increased from 2006 to 2008 reflecting the monetary policy rate changes by the Bank of Japan.

Additionally, in the currency swap market related to JPY, 3-month JPY LIBOR is the primary reference rate, and is exchanged for U.S. dollar LIBOR and the like. As for the major JPY interest rate futures, 3-month Euroyen futures referencing 3-month Euroyen TIBOR is listed on the Tokyo Financial Exchange.

In financial transactions other than derivatives transactions, JPY LIBOR and Japanese Yen TIBOR are used as base rates for floating-rate corporate loans (syndicated and bilateral loans). While small in scale compared to corporate loans, JPY LIBOR etc. are also used as the reference rates for floating-rate notes.

In addition to the aforementioned financial transactions, Credit Support Annex (CSA), which is a collateral contract for derivatives transactions, commonly uses TONAR for interest payment calculation on JPY cash collateral. The Japan Securities Clearing Corporation, which is the central clearing organization for JPY IRS, also uses TONAR for interest payments calculation on variation margin.

Chart 3: Image of Interest Rate Benchmarks in the JPY IRS Market



4. Identification of the Risk-Free Rate

4-1 Desirable properties

In identifying a JPY risk-free rate, the following three properties are considered: (1) the risk-free nature of the rate; (2) the depth of the market underlying the rate; and (3) ease of use in financial transactions (particularly derivatives transactions).

(1) Risk-free nature of the rate

As discussed in section 2-1, the FSB Report recommends the introduction of risk-free rates based on the idea that it is desirable for derivatives transactions -- which are for hedging, risk taking, and arbitraging regarding general interest rate levels -- to reference interest rate benchmarks reflecting only rewards for fixing of cash for some term periods, rather than JPY LIBOR and TIBOR, both of which include bank credit risk. In light of this, the transactions underlying a risk-free rate should not, to the extent possible, reflect the credit risks of parties to the transaction. And also, it is preferable that influence by the supply and demand of the underlying market is as little as possible regarding the impact on the formation of the rate.

(2) Depth of the market underlying the rate

From the perspective of securing the credibility and robustness of the benchmark, it is desirable that the benchmark is calculated based on actual transactions to the extent possible, and the underlying market has sufficient amount of transactions. The market should also have as wide a variety of participants as possible to make it more difficult to manipulate the benchmark and to prevent specific transactions in the market from distorting the rate. Given the role as a benchmark for the risk-free rate, such market depth to be maintained over the medium and long term is also an important property.

(3) Ease of use in financial transactions (particularly derivatives transactions)

The identified risk-free rate should be easily used in financial transactions. The Study Group positions the derivatives market as a primary concern regarding the use of the risk-free rate, in light of the discussions at the FSB report. Therefore, ease of use as a reference rate for derivatives transactions is being considered in terms of the cost of defining market conventions, and the degree of recognition among market participants.

Additionally, the availability of term reference rates in the benchmark could be a key point for consideration. On this point, however, the current conclusion of the Study Group is that the availability of term reference rates is desirable in terms of expanding the use of the risk-free rate but, at least at the beginning of the introduction of risk-free rate, is not an essential property. JPY LIBOR and TIBOR currently have longer tenor rates and are broadly used for loans and derivatives transactions for hedging such loans. However, in other

derivatives transactions, there are some transactions that do not require term reference rates. Therefore, while it will depend on the scope of use, it is conceivable that there will be a certain amount of demand for a risk-free rate benchmark even if it consists only of an overnight rate.

Investigation for the introduction of risk-free rates is also taking place in major currency zones in Europe and in the U.S. From the perspective of use in currency swaps, it is preferable that the underlying markets of the benchmarks have consistency in their characteristics, such as secured or unsecured (see “Reference” on page 15 for the details).

4-2 Candidates and the Study Group’s assessment

Based on the aforementioned desirable properties, the Study Group considered five rates as candidates for the JPY risk-free rate: (1) the uncollateralized overnight call rate; (2) the GC repo rate; (3) the secured call rate; (4) the T-Bill rate; and (5) the OIS rate. It found (3), (4), and (5) to fall short in terms of market depth, etc., and therefore narrowed down its candidates to (1) and (2).

As a result of subsequent studies, the Study Group is currently of the view that (1) the uncollateralized overnight call rate is the primary candidate for the JPY risk-free rate because it satisfies all three properties in a very balanced way, and (2) the GC repo rate is the secondary candidate behind the uncollateralized overnight call rate.

Below is a summary of findings about the suitability of each candidate as a risk-free rate (see Chart 4 for a summary of the group’s assessment of each candidate).

(1) Uncollateralized overnight call rate

- With respect to the nature of the benchmark, credit risk of parties to transactions is included because it is unsecured, although limited to some extent as it is for the overnight transaction. In this regard, this rate is close in nature to risk-free.
- With respect to market depth, the overnight uncollateralized call market has, at present, considerable transaction volume and diversity of trading participants.
- With respect to ease of use, there is a benchmark calculated and published by the Bank of Japan and the benchmark has been used in certain types of financial transactions. For example, the rate is already used as reference rates in OIS transactions, though transaction volumes are limited at present. Therefore, market participants are familiar with OIS, and risk-free rate can be introduced to derivatives transactions with limited costs (developing market conventions, etc).
- In other major currency zones, the unsecured interbank overnight funding rates are being studied as candidates for risk-free rates.

(2) GC repo rate

- With respect to the nature of the benchmark, while it is desirable that GC repo rate excludes the credit risk of parties to transactions due to the nature of a secured transaction, its tendency to reflect the supply and demand of the bond market is considered problematic as a candidate of risk-free rate. It should also be noted that the rate tends to have larger swings at quarter-ends, etc. than other candidates.
- With respect to market depth, the underlying market has a sufficient market volume and diversification of trading participants, particularly relative to collateralized call transactions, which has similar characteristics. However, the government bond settlement cycle is expected to be shortened in the first half of fiscal 2018⁸, which should be noted from the perspective of continuity in the market and the benchmark.
- With respect to ease of use, the Tokyo Repo Rate⁹ calculated and published by the Japan Security Dealers Association (JSDA) is used as statistics on GC repo transactions, but this is not calculated based on actual transactions and has little track records in financial transactions. Thus, a new benchmark needs to be developed if it is to be used as a risk-free rate.
- In other major currency zones, repo rates are being studied as candidates for risk-free rates.

(3) Collateralized call rate

- The characteristic of the rate matches the properties of the risk-free rate because it is a secured transaction. However, transaction volumes and diversification of trading participants in the underlying market are not sufficient, particularly relative to GC repo rate.

(4) T-Bill rate

- The characteristic of the rate (the underlying is backed by government credit and term reference rates can be created relatively easier than other candidates) is desirable as a risk-free rate.
- On the other hand, transaction volumes in the secondary market are not necessarily sufficient and its tendency to reflect the supply and demand of individual issues is considered problematic as a risk-free rate.

⁸ Details on the shortening of the government bond settlement cycle can be obtained from: http://market.jsda.or.jp/shiraberu/saiken/kessai/jgb_kentou/ (in Japanese)

⁹ Details on the Tokyo Repo Rate can be obtained from: <http://www.jsda.or.jp/en/statistics/bond-market/trr/>

(5) OIS rate

- Lack of sufficient transaction volume, at least at present, makes it difficult to create a transaction-based benchmark.
- In the case the uncollateralized overnight call rate is identified as the risk-free rate, it is envisaged that the OIS rate would function as term reference rate of the risk-free rate. As stated above in the section 4-1, the availability of the term reference rate is not essential characteristic of risk-free rate, at least at the initial stage of introduction, but it is desirable to have the term reference rate to facilitate future expansion of the benchmark, and the OIS rate is expected to perform this function.

Chart 4: Assessment of Risk-Free Rate Candidates

	Nature of the rate		Market depth		Ease of use	
	Credit risk	Factors other than the supply and demand of funding	Market size	Diversity of Participants	Track record	Consistencies with other currencies
Uncollateralized overnight call rate	Fair	Good	Good	Good	Good	Good*
GC repo rate	Good	Poor	Good	Good	Poor	Good*
Collateralized call rate	Good	Good	Fair	Fair	Poor	—
T-Bill rate	Good	Poor	Poor	Fair	Poor	—
OIS rate	Good	Good	Poor	Fair	Poor	—

Good: Matches the properties required as a risk-free rate.

Fair: No major problems as a risk-free rate, but there are more desirable alternatives.

Poor: Impediments as a risk-free rate.

*: At present, the similar underlying markets are being studied in other major currency zones.

4-3 Framework for calculation and publication of the benchmark

(1) Uncollateralized overnight call rate (primary candidate)

The Bank of Japan calculates and publishes TONAR; a transaction-based benchmark for the uncollateralized overnight call rate using information provided by money market brokers. It is expected that the current basic framework for calculation and publication will be maintained in the case that the rate is identified as the risk-free rate.

(2) GC repo rate (secondary candidate)

The Tokyo Repo Rate is calculated and published by the JSDA, but it is not transaction-based benchmark. As discussed in subsection 4-1(2), it should be desirable that the risk-free rate is based on actual transactions as much as possible. Therefore, a new benchmark of GC repo rate needs to be created and developed if the GC repo rate is identified as the risk-free rate.

At present, the GC repo rate is positioned as the secondary candidate for the risk-free rate and the Study Group has therefore not made any specific works on a framework for calculation and publication of the benchmark in the case that GC repo rate is identified as the risk-free rate.

(Reference) Candidates for risk-free rates in other major currency zones

In response to the FSB Report, similar efforts have been undertaken in major currency zones outside of Japan for the identification and implementation of alternative risk-free rates. Below is an outline of the current risk-free rate candidates in the United States, Eurozone, and United Kingdom.

(1) United States

In U.S., the Alternative Reference Rates Committee is studying a risk-free rate for U.S. dollars,¹⁰ and its current candidates are the Overnight Bank Funding Rate (OBFR) and the overnight repo rate.

The OBFR is a benchmark of interbank uncollateralized overnight funding rate that the Federal Reserve Bank of New York started to publish data from that for March 1, 2016.¹¹ The Effective Federal Funds Rate, calculated from federal funds transactions, has traditionally been published as an overnight interest rate benchmark, but the OBFR includes a certain part of Eurodollar transactions in addition to federal funds transactions.

For the overnight repo rate, there is as yet no specific benchmark that would serve as a risk-free rate candidate. The Federal Reserve Board noted the possibility of publishing a reference rate for overnight transactions collateralized by Treasury securities, in cooperation with the Office of Financial Research.

(2) Eurozone

In the Eurozone, the EONIA (Euro OverNight Index Average), calculated and published by the EMMI (European Money Markets Institute) as a benchmark for uncollateralized overnight interest rate in the interbank market, has been deemed as the risk-free rate, and is now under investigation for improvements in the way the benchmark is calculated. The EMMI has also begun to investigate the creation of a new repo rate benchmark based on actual transactions¹².

¹⁰ For a summary of discussions at the Alternative Reference Rates Committee, see: <https://www.newyorkfed.org/arrc>

¹¹ For more information on the OBFR, see: <https://www.newyorkfed.org/markets/effr-obfr-data>

¹² For more information on the new repo rate benchmark under study by the EMMI, see: <http://www.emmi-benchmarks.eu/emmi/market-consultation-on-a-new-transaction-based-secured-index.html>

(3) United Kingdom

In the U.K., the Working Group on Sterling Risk-free Reference Rates is investigating to identify a risk-free rate for the Pound sterling,¹³ and has narrowed down the candidates to the Sterling Overnight Index Average (SONIA) and the overnight repo rate.

SONIA is currently calculated and published by the Wholesale Markets Brokers' Association (WMBA) as the uncollateralized overnight interest rate benchmark of the interbank market. The Bank of England (BoE) is now in the process of reforming the benchmark, and the plan is to transfer administration of the benchmark to the BoE and begin calculation and publication based on actual transaction data that the BoE collects, with a target of 2Q 2017.¹⁴

For the overnight repo rate, a new benchmark is expected to be calculated and published based on Gilts GC repo and SC repo transactions¹⁵.

¹³ For a summary of discussions at the Working Group on Sterling Risk-free Reference Rates, see: <http://www.bankofengland.co.uk/markets/Pages/sterlingoperations/rfr/rfr.aspx>

¹⁴ For more information on the SONIA reforms being studied by the BoE, see: <http://www.bankofengland.co.uk/markets/Documents/epsonia0715.pdf>

¹⁵ For an overview of benchmarks being studied as repo rates for the Pound sterling, see: <http://www.bankofengland.co.uk/markets/Documents/sterlingoperations/rfr/sterlingsecure.pdf>

5. Use of the Risk-Free Rate

5-1 Scope of the use of risk-free rates

The Study Group focused its investigations on use of risk-free rates as indices for JPY IRS in light of the FSB Report, which focused on their primary use in derivatives transactions.

This section describes the scope of use of risk-free rates in derivatives transactions based on the assumption that TONAR is identified as the JPY risk-free rate.

(1) Uses as reference rates for Japanese yen interest rate swaps

JPY IRS which references TONAR already exists as OIS. As noted in section 3-2, most transactions on the JPY IRS market use either JPY LIBOR or TIBOR, both of which include bank credit risk. In the FSB report, however, it is expected that a risk free rate will be used for these transactions where suitable for the purpose of the transactions. In view of the report to this effect, the study group examined the scope of use of the OIS in JPY IRS market. In specific, the study group investigated the trading purposes of JPY IRS by user types, and the conceivable uses of the risk-free rate considering various trading purposes, through surveys to the Study Group members¹⁶.

In the survey, the Study Group tried to estimate the proportion of JPY IRS transactions, which does not necessarily need to reference IBOR (hereinafter, Non-IBOR transactions) based on the Study Group member's recognition and their assumption on the main trading purpose of their counterparties by types of market participants. (See "Appendix" for the details of the estimation methodology.) Therefore, it should be noted that the result of the survey is based on assumptions and discussions by the Study Group members.

According to the result of the survey, the main trading purposes of customers¹⁷ seemed to be dominated by adjustment of general interest risk and hedge of fixed-rate borrowing (Chart 5). A considerable portion of JPY IRS transactions with customers were estimated to be Non-IBOR transactions, and thus OIS should be suitable for most of the transactions with customers (Chart 6). On the other hand, the main trading purposes of banks and securities firms were cash flow hedge of floating rate lending and hedge of bond issuances

¹⁶ Transaction data submitted by the Study Group members corresponds to more than 70% of "Regular Derivatives Market Statistics in Japan" as of June 2015.

¹⁷ "customers" are defined as the counterparties of banks and securities firms, who are the main members of the Study Group. Specifically, these are insurance companies, pensions, asset managements, investment trusts, hedge funds, corporates, and others.

(receiver's side), and it suggests that there are quite a few of transactions which are suitable for the use of IBOR (Chart 5). In light of these results, the proportion of transactions which could be expected to shift to OIS transactions is relatively smaller in interbank transactions than customer transactions (Chart 6).

Based on the estimates described above, if OIS transactions are used for Non-IBOR transactions which are derived by analysis, the share of OIS transactions will be 30-40% of total JPY IRS transactions (Chart 6). In addition, considering the fact that the survey asked the Study Group members to check the proportion of Non-IBOR transactions in interbank assuming current derivatives businesses with their clients, there is a possibility that additional transactions could shift to OIS as transactions with customers will start to shift to OIS. In that case, there would be more OIS transactions than the aforementioned estimated portion of 30-40% of the total.

These estimates are based on the assumption that OIS market has sufficient market liquidity. However, such conditions are not met at present, and there is a high possibility that market participants have no choice but to use interest rate benchmarks which contain bank credit risk even if the transaction is not intended to take bank credit risk, in the absence of appropriate alternatives. During the financial crisis, many interest rate benchmarks had been affected by the development of bank credit risk and users of the benchmarks had also been affected. Given these points, the use of risk-free rate for derivatives transactions focusing on the general level of interest rate would match the needs of market participants and contribute the financial stability.

At present, as discussed in section 3-2, IRS referencing 6-month JPY LIBOR attracts the biggest liquidity in JPY IRS market. This is because there is a momentum to use the reference rate because of high market liquidity and rebalancing needs generated from legacy positions. Promotion of OIS transactions could be difficult due to this momentum in the market, as mentioned above, and to the concerns of liquidity segmentation.

However, it is desirable that market participants should have choices of reference rates with sufficient liquidity for derivatives transactions in light of purposes of each trading. The Study Group considers the room of improving OIS market conventions in terms of with providing choices to market participants.

Chart 5: Assumed Purposes of IRS Trading by Types of Market Participants

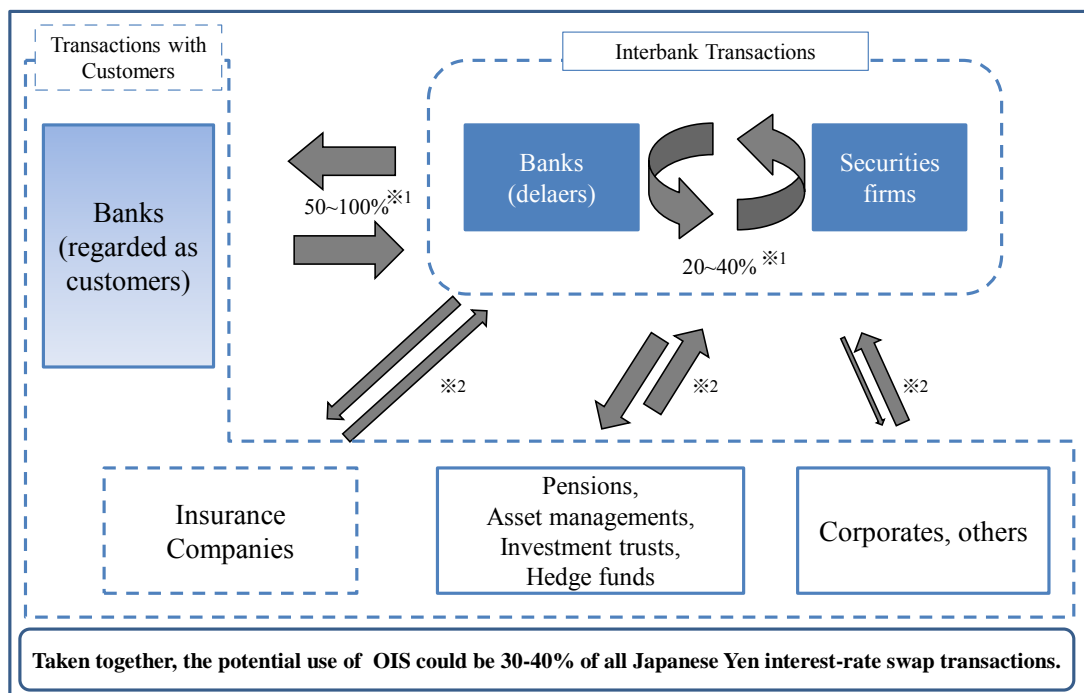
	Transactions maturity			
	0-2Y		2+Y	
	Payer of fixed interest	Receiver of fixed interest	Payer of fixed interest	Receiver of fixed interest
Banks (※1)	<ul style="list-style-type: none"> Adjustment of general interest rate risk Fair value hedge of fixed rate lending Cash flow hedge of time deposits (less than 1 year) 	<ul style="list-style-type: none"> Adjustment of general interest rate risk Cash flow hedge of floating rate lending 	<ul style="list-style-type: none"> Adjustment of general interest rate risk Fair value hedge of fixed rate lending Government bond portfolio hedging and asset swaps 	<ul style="list-style-type: none"> Adjustment of general interest rate risk Cash flow hedge of floating rate lending Fair value hedge of time deposits (more than 1 year)
Securities Firms	<ul style="list-style-type: none"> Adjustment of general interest rate risk Government bond (auction) risk hedge IBOR-related derivatives hedge 	<ul style="list-style-type: none"> Adjustment of general interest rate risk Bond issuance hedge IBOR-related derivatives hedge 	<ul style="list-style-type: none"> Adjustment of general interest rate risk Government bond (auction) risk hedge Bond issuance hedge IBOR-related derivatives hedge 	<ul style="list-style-type: none"> Adjustment of general interest rate risk Bond issuance hedge (including structured notes) IBOR-related derivatives hedge
Insurance	<ul style="list-style-type: none"> Adjustment of general interest rate risk (※2) 	<ul style="list-style-type: none"> Adjustment of general interest rate risk 	<ul style="list-style-type: none"> Adjustment of general interest rate risk Foreign currency denominated bond issuing hedge 	<ul style="list-style-type: none"> Adjustment of general interest rate risk
Pensions, Asset managements, Investment trusts, Hedge funds	<ul style="list-style-type: none"> Risk-taking 	<ul style="list-style-type: none"> Risk-taking 	<ul style="list-style-type: none"> Risk-taking 	<ul style="list-style-type: none"> Risk-taking
Corporates, others	<ul style="list-style-type: none"> Floating rate borrowing hedge (fixing interest payment) 	<ul style="list-style-type: none"> Fixed rate borrowing hedge (floating interest payment) 	<ul style="list-style-type: none"> Floating rate borrowing hedge (fixing interest payment) 	<ul style="list-style-type: none"> Fixed rate borrowing hedge (floating interest payment)

Note: Shadows indicate transactions that do not necessarily require the reference rate to be IBORs.

※1 The purposes of trading on bank's trading accounts are assumed to be similar to those of securities firms.

※2 Adjustment of general interest rate risk by Insurance is assumed to include delta hedge of variable annuity on both of the payer's and receiver's side and mid-long term ALM on the receiver's side.

Chart 6: Estimated of the Proportion of Transactions that could be replaced with OIS



※1: The numbers represent the proportion of Non-IBOR related transactions.

※2: It is estimated that the significant proportion of these transactions could be replaced with OISs.

- The arrows represent the direction of fixed interest payment.
- The width of the arrows between dealers and customers indicate the approximate size of markets. And, the transaction size of inter-dealers is estimated to be 2-3 times as much as that of transactions between dealers and customers.

(2) Other use of risk-free rates

Currently, the investigation for the introduction of risk-free rates is also taking place in other major currency zones, and the risk-free rate could be used as reference rates for currency swaps if the expansion in the use of risk-free rates in derivatives markets will materialize. If that happens, the reference rate of JPY leg, currently using 3-month JPY LIBOR, etc. will presumably start to use the risk-free rate.

As described in section 3-2, use of the risk-free rate is also envisioned for interest payment calculations on cash collateral defined in CSA, and on variation margin of central counterparties, considering the properties of these transactions, which tend to use risk free rates as reference rates. The cost of introducing risk-free rates to these transactions would be limited in the case that TONAR is identified as the risk-free rate because it is already used for these transactions.

5-2 Revision of OIS market conventions to expand use of the risk-free rate

The Study Group has investigated revisions of OIS market conventions to make OIS more convenient and help to expanding the use of the TONAR in the derivatives market.

Given its historical background, current OIS market conventions differ from other IRS referencing JPY LIBOR or TIBOR in several ways. Such differences include the payment frequency and the day count fraction. While the differences in market conventions are not a serious impediment to use of OIS, it could reduce the incentives of transition from IBORs to OIS. Particularly, the differences are undesirable in basis swap transactions between TONAR and IBORs. The Study Group believes that the revisions of market conventions noted in the table below could improve the convenience of OIS transactions and contribute to greater use of TONAR in basis swaps, currency swaps, and other derivatives markets (Chart 7).

The Study Group thinks that it is necessary to confirm merits and demerits of the revision, by asking the comments of a wide variety of investors and other market participants, and this is a point that the Study Group would like to verify in this public consultation.

Additionally, changes in market conventions could affect market infrastructures such as CCPs and trading platforms in a way that they need to change their operations and/or systems. Taking these points into account, due considerations such as sufficient preparation period should be paid in case of changes in market conventions.

Chart 7: Proposed Reforms to OIS Market Conventions and the Study Group's Evaluations

Items	Current	Proposed reforms	Benefits	Costs/Reservations
Payment frequency	1Y	3M	<ul style="list-style-type: none"> It will be easier to introduce the risk-free rate to currency swaps if it has the same payment frequency as current currency swaps. 	<ul style="list-style-type: none"> The higher payment frequency will increase administrative burdens.
		6M	<ul style="list-style-type: none"> It will be easier to apply hedge accounting if payment frequency is the same as government bonds, which will improve convenience in asset swaps and other transactions. 	<ul style="list-style-type: none"> Same as above.
Day count fraction (floating-rate)	ACT365	ACT360	<ul style="list-style-type: none"> Harmonization with LIBOR swaps will make it easier to handle basis swaps. 	<ul style="list-style-type: none"> It will be necessary to scrutinize the influence to trading platforms, etc.
Payment calendar	Tokyo	Tokyo & London	<ul style="list-style-type: none"> Same as above 	<ul style="list-style-type: none"> Same as above.
Basis swaps with other benchmarks	2 swaps	1 swap	<ul style="list-style-type: none"> Transactions that currently use a combination of two swaps (fixed vs floating) can be consolidated into one swap (floating vs floating) to improve convenience in transactions. 	<ul style="list-style-type: none"> It will be necessary to reform market conventions on payment frequency and interest rate calculation, etc.

6. Questions

The Study Group invites comments on the following points regarding the identification and use of risk-free rates.

- (1) Benchmark to be identified as the risk-free rate
 - The Study Group considers that the uncollateralized call rate (the one calculated and published by the Bank of Japan or TONAR in this paper) as a primary candidate of the risk free rate and the GC repo rate as the secondary candidate (please note: there is no transaction-based benchmark for GC repo rate at present) . The Study Group will continue its investigation with the aim to identify JPY risk-free rates by the end of June 2016. Please provide your comments about this Study Group's direction.
- (2) Scope of risk-free rate use
 - The Study Group estimates trading purposes of market participants and possibility to shift to OIS in JPY IRS market based on its discussion (as written in the section 5-1). Please provide your comments about the estimation methodology and the result.
 - Please provide your comments about the Study Group's direction to promote OIS transactions so that market participants could choose reference rates suitable for their trading purposes.
- (3) Proposed reforms in OIS market conventions
 - Do you consider that the proposed revisions of OIS market conventions would help and contribute to promote the use of OIS? Please also provide your comments if any of the proposed revisions in Chart 7 would cause any problems regarding the transactions and operations of your business.
 - Are there any other measures not listed in Chart 7 that you think would also be effective for expanding the use of TONAR in derivatives transactions?
- (4) Others
 - Please provide any other comments on the identification and use of a risk-free rate.

[Submission guideline]

(1) Submission deadline

April 28, 2016 (Thursday)

(2) Submission address

Please send your comments to the following address by email.

Secretariat of the Study Group on Risk-Free Reference Rates

Market Infrastructure Group, Market Infrastructure Division, Financial
Markets Department, Bank of Japan

post.fmd33@boj.or.jp

(3) Required information

Please use "Comment on risk-free rate public consultation" as the subject of the email and include the following information in your submission.

- Your name (or your organization's name)
- Contact information (telephone number and email address)
- Name of the organization (relevant only if you belong to an legal entity or any other types of organization)

(4) Notes

Information provided by the submission, such as name, contact address, and other personal information may be used to contact you to clarify and confirm information provided. Your comments may be published with your affiliation, unless specifically requested.

Appendix: Estimation Methodology of the Proportion of Non-IBOR transactions

For the purpose of estimating the proportion of Non-IBOR transaction in the JPY IRS market, presented in chapter 5 of this consultation paper, the Study Group collected data on transaction volume conducted by members in the period from April to September 2015. Among the members, the securities firms submitted data by classifying them into Customer Transactions and Dealer Transactions (transactions other than Customer Transactions), while the banks submitted data by classifying them into Banking Transactions (transactions conducted in banking account) in addition to the above two categories. The proportion of Non-IBOR transactions of each transaction category was estimated based on a methodology presented below.

(A) Customer Transactions

Members (banks and securities firms) classified their Customer Transactions based on (i) customer type (banks / securities firms / life or non-life insurance / pension funds, asset managements, investment trusts or hedge funds / non-financial corporations and others), (ii) transaction maturity (up to 2 years / more than 2 years and up to 10 years / more than 10 years), and (iii) transaction type (receive / pay fixed interest), and submitted the respective transaction volume.

In order to estimate the proportion of Non-IBOR transaction in each of the above mentioned classification categories, Members also created a matrix indicating the objective of transaction and its suitability as Non-IBOR transaction, based on the discussion in the Study Group. Simplified version of the matrix is presented as Chart 5 in Chapter 5.

The proportion of Non-IBOR transaction in Customer Transaction was estimated by applying the matrix to the submitted data.

(B) Dealer Transactions

Members (banks and securities firms) classified their Dealer Transactions into three categories; (i) bond business-related, (ii) derivative-related and (iii) other transactions, and submitted respective transaction volume. Members also answered the estimated proportion of their Non-IBOR transactions within each of the three categories. The proportion of Non-IBOR transactions in Dealer Transactions was calculated using the submitted data and member's estimation on the proportion of Non-IBOR transaction.

(C) Banking Transactions

Members (banks only) classified their Banking Transaction into (i) transactions subject to hedge accounting and (ii) other transactions, and submitted respective transaction volume. In estimating the proportion of Non-IBOR transactions, the former was assumed to be Non-IBOR and the latter was assumed to be IBOR.

Based on the methodology above, the overall proportion of Non-IBOR transactions in JPY IRS market was estimated to be 30-40%, consisting of (a) 60-100% of Customer Transactions, (b) 20% of Dealer Transactions, and (c) the estimated proportion of Non-IBOR transactions in Banking Transactions.

In the abovementioned estimation, the proportion of Non-IBOR transaction of Dealer Transactions was estimated based on member's assessment, assuming the current derivative business with their customers (Customer Transactions). If the Customer Transactions, which currently use IBOR as a reference rate, will shift to OIS, some additional portions of Dealer Transactions are expected to shift to Non-IBOR transactions.

For the further estimation of the proportion of Non-IBOR transaction after taking into account the expected transition of Customer Transaction to OIS and its effect on Dealer Transactions, the proportion of Non-IBOR transactions in "derivative-related" Dealer Transactions was assumed to have equal proportion as the case in Customer Transactions (60-100%).

Based on this revised estimation methodology, the proportion of Non-IBOR transactions in Dealer Transactions was estimated to increase to 30-40%, and accordingly, the overall proportion of Non-IBOR transactions would be 40-70%.