

This English translation is provided exclusively for convenience. If any questions may arise related to the information contained in the English version, please refer to the original Japanese version.

## **Report on the Identification of a Japanese Yen Risk-Free Rate**

*December 2016*

*Study Group on Risk-Free Reference Rates*

«Contents»

1. Summary . . . . .	1
2. Identification of a Japanese Yen Risk-Free Rate	
2-1. Additional issues based on the feedback to the public consultation . . . . .	2
2-2. Conclusion of the Study Group . . . . .	2
(Reference 1) Candidates for risk-free rates in other major currencies . . . . .	6
(Reference 2) Preliminary study on developing the GC repo benchmark as a Japanese yen risk-free rate . . . . .	8
3. Next Steps . . . . .	11

## 1. Summary

The Study Group on Risk-Free Reference Rate has been working on the identification of a Japanese yen (JPY) nearly risk-free benchmark rate since April 2015 in line with the recommendations made by the Financial Stability Board (FSB) in "Reforming Major Interest Rate Benchmarks,"<sup>1</sup> published in July 2014.

In March 2016, the Study Group published a "Public Consultation on Identification and Use of a JPY Risk-Free Rate"<sup>2</sup> to invite comments from a wide range of interested parties. In the report, the Study Group considered the uncollateralized overnight call rate as the primary candidate and the GC repo rate as the secondary candidate.

In June 2016, in response to the public consultation, the Study Group announced that the JPY risk-free rate would be identified by the end of 2016 after further consideration, reflecting on comments received through the public consultation and progress of discussions on risk-free rates in other currencies.

In conclusion, the Study Group has identified the uncollateralized overnight call rate calculated and published by the Bank of Japan as the JPY risk-free rate.<sup>3</sup> This report will explain the identification of the JPY risk-free rate, mainly in terms of additional work of the Study Group after the public consultation.

From 2017 onwards, the Study Group will continue its investigation on market practices and contract design regarding the usage of the uncollateralized overnight call rate with reference to the analysis conducted by the Study Group.

---

<sup>1</sup> The FSB report can be obtained from: [http://www.fsb.org/2014/07/r\\_140722/](http://www.fsb.org/2014/07/r_140722/)

<sup>2</sup> The public consultation can be obtained from:  
<http://www.boj.or.jp/en/paym/market/sg/rfr1603c.pdf>

<sup>3</sup> For details on the calculation methodology, see:  
[http://www.boj.or.jp/en/statistics/outline/exp/exmenu\\_m.pdf](http://www.boj.or.jp/en/statistics/outline/exp/exmenu_m.pdf)

## **2. Identification of a Japanese Yen Risk-Free Rate**

### **2-1. Additional studies in response to the public consultation**

In June 2016, in response to the comments received through the public consultation paper released in March 2016 and the progress of discussion on risk-free rates in other currencies, the Study Group announced that the JPY risk-free rate would be identified by the end of 2016 after further consideration of the following three issues.

- (1) Assessment of the developments in the Japanese money market, especially in the uncollateralized call market, after the introduction of the Bank of Japan's "Quantitative and Qualitative Monetary Easing with a Negative Interest Rate," hereinafter "negative interest rate policy"
- (2) Assessment of the relationship of the JPY risk-free rate with risk-free rates in other currencies, and its importance
- (3) Preliminary study on developing the GC repo benchmark as a JPY risk-free rate

Since June 2016, the Study Group has held four meetings. In the following section, their outcome is presented.

### **2-2. Conclusion of the Study Group**

#### **(1) Developments in the uncollateralized overnight call market**

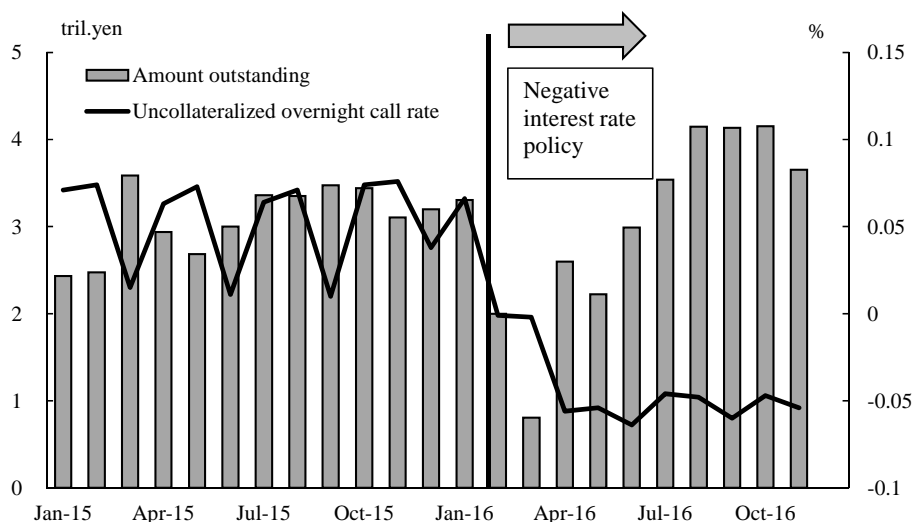
One of the desirable properties for a risk-free rate is the depth of the market underlying the rate. From the perspective of securing the credibility and robustness of the benchmark, it is desirable that the benchmark is calculated based on actual transactions to the extent possible, and the underlying 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.

In the public consultation paper, the uncollateralized overnight call rate is considered as a primary candidate for the JPY risk-free rate since it satisfies the requirements mentioned above. However, because the volume of transactions in the uncollateralized call market decreased temporarily after the introduction of the negative interest rate policy by the Bank of Japan this January, the Study Group considered it worth further assessing developments in the uncollateralized call market.

Looking at recent developments, the amount outstanding of uncollateralized call transactions with one business day maturity plunged temporarily right after the introduction of the negative interest rate policy but recovered thereafter. Nowadays, the outstanding amount exceeds that before the introduction of the negative interest rate policy (Chart 1). Also, the variety of participants has been maintained whilst the

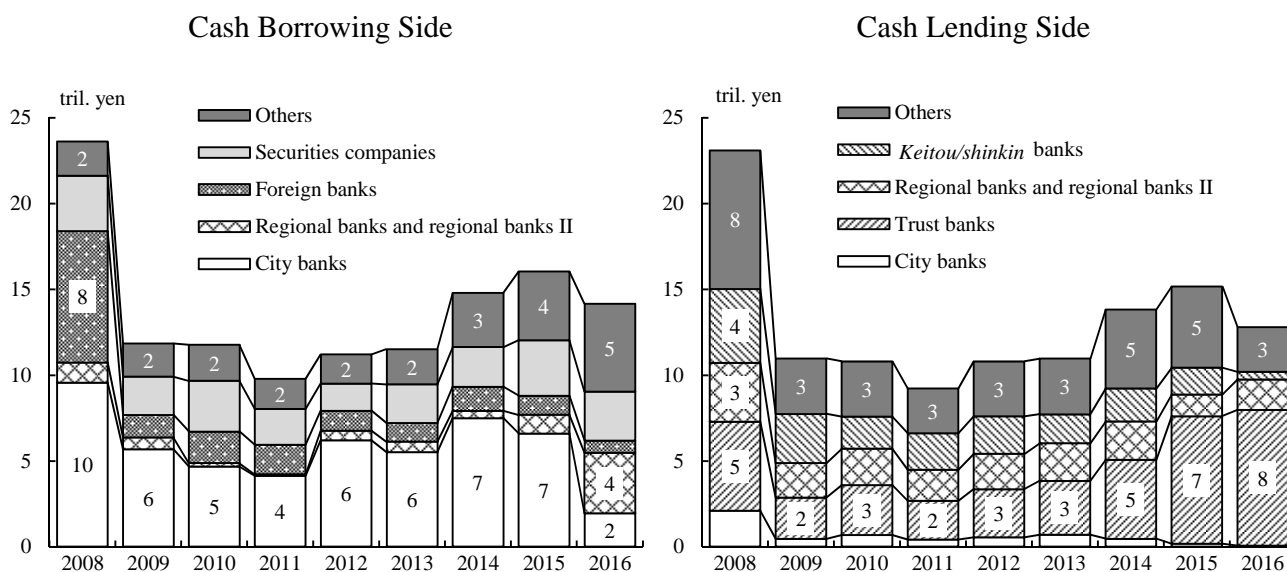
members of the participants have changed slightly (Chart 2). Therefore, when it comes to market depth underlying the uncollateralized overnight call rate, it seems that the sufficient volume of transactions and variety of participants are maintained.

Chart1 : Amount Outstanding of Transactions with One Business Day Maturity in the Uncollateralized Call Market and the Uncollateralized Overnight Call Rate



Note : Amount outstanding as of end-month  
The latest data as at end-Nov. 2016  
Source : Bank of Japan

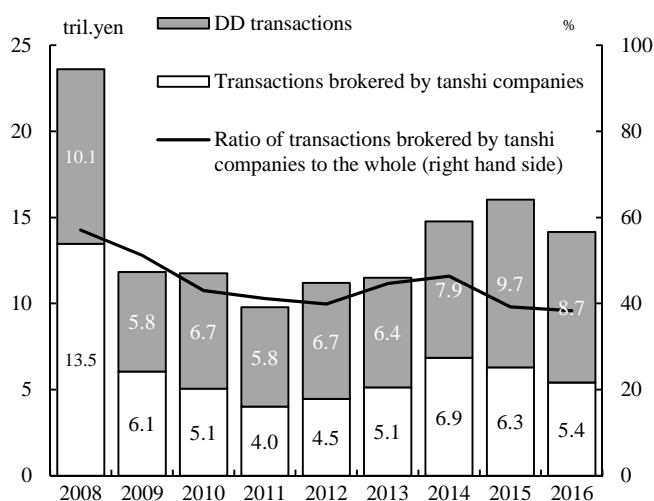
Chart2 : Amount Outstanding in the Uncollateralized Call Market by Investor Type



Note: The data as of end-July, including DD transactions and transactions brokered by *tanshi* companies (all terms).  
Source : Bank of Japan

In addition, the transactions used for the calculation of the uncollateralized overnight call rate comprise transactions brokered by *tanshi* companies (money market brokers) and do not include transactions through direct dealing (DD). The ratio of transactions brokered by *tanshi* companies to the whole has been unchanged over recent years, maintaining a sufficient level (Chart 3). Thus, the Study Group deems to maintain the current methodology for calculating the uncollateralized overnight call rate; the Bank of Japan calculates the volume-weighted average rate based on the actual transactions using the data submitted by *tanshi* companies.

Chart3 : Amount Outstanding in the Uncollateralized Call Market and the Ratio of Transactions Brokered by *Tanshi* Companies to the Whole



Note: Cash borrowing side.  
The data as of end-July  
Source: Bank of Japan

## (2) The relationship of a JPY risk-free rate with risk-free rates in other currencies

As for risk-free rates in other currencies, a US dollar risk-free rate and a Pound sterling risk-free rate are still under consideration with both secured and unsecured rates as candidates, whilst an unsecured rate (EONIA) is regarded as a Euro risk-free rate. On the other hand, the secured rate (SARON) is recommended as a Swiss franc risk-free rate (see Reference 1 for details). Reflecting on these developments in other currencies, the Study Group examined the potential issues on derivative transactions that might be highlighted if an unsecured rate is identified as a Japanese risk-free rate whilst a secured rate is identified as a risk-free rate in other currencies.

Regarding this issue, the Study Group concurred that although it is desirable that risk-free rates in all the major currencies including JPY be on the same side for the ease of financial transactions, it is not an indispensable factor. Namely, an unsecured rate generally includes the credit risk of parties to the transactions; however, the credit risk included in the uncollateralized overnight call rate, whose maturity is literally overnight,

seems to be negligible and the rate can be regarded as a nearly risk-free rate. Accordingly, it is unlikely that the subtle difference between a secured rate and an unsecured rate will cause an immediate impact on transactions.

**(3) Preliminary study on developing the GC repo benchmark as a JPY risk-free rate**

As for the GC repo rate, which was regarded as the secondary candidate, two methodologies were proposed: (i) a rate calculated based on the reference institutions' submissions and (ii) a rate calculated by central counterparties (CCPs). However, in order to create such a GC repo rate, there remain many practical problems to be solved, and furthermore, it is necessary to assess developments in the new GC repos under the subsequent collateral allocation method, which is expected to be introduced in the first half of 2018. Taking account of these aspects, the Study Group concludes that the new GC repo benchmarks are not pertinent for the JPY risk-free rate (see Reference 2 for details).

Regardless of whether or not it could be identified as the JPY risk-free rate, the Study Group shares the view that for enhancing market transparency, it is worthwhile to create a new GC repo benchmark in a way the rate could be a robust risk-free rate. Thus, the Study Group will continue to follow developments in creating a new GC repo benchmark by relevant institutions in Japan as well as developments in overseas' secured benchmarks.

In conclusion, the Study Group has identified the uncollateralized overnight call rate as the JPY risk-free rate.

## **(Reference 1) Candidates for risk-free rates in other major currencies**

Progress has been being made in other major currencies in identifying and implementing risk-free rates. This subsection outlines the current risk-free rate candidates in the United States, Eurozone, the United Kingdom and Switzerland.

### **(1) United States**

In the U.S., the Alternative Reference Rates Committee (ARRC) has been working on the identification and implementation of a risk-free rate for U.S. dollars.<sup>4</sup> In the public consultation paper published in May 2016, the ARRC has preliminarily narrowed its candidates to two rates, the Overnight Bank Funding Rate (OBFR) as an unsecured rate and some form of overnight Treasury GC repo rate as a secured rate.

Separately the Federal Reserve Bank of New York, in cooperation with the Treasury Department's Office of Financial Research, recently announced it is considering publishing three benchmark rates based on overnight repo transactions collateralized by Treasury securities by late 2017 or early 2018.<sup>5</sup>

### **(2) Eurozone**

In the Eurozone, EONIA (Euro Overnight Index Average), administered by the EMMI (European Money Markets Institute) as a benchmark for the uncollateralized overnight interest rate in the interbank market, has been deemed as a viable and actively used nearly-credit-risk-free rate based on transactions.

EMMI is currently reviewing the benchmark governance framework and has published a consultation paper in August 2016<sup>6</sup> as well as a summary of the stakeholder feedback in December 2016.<sup>7</sup> The paper outlines the EONIA Review program and consults stakeholders about the introduction of arrangements for the determination of the EONIA benchmark under contingency circumstances. The EMMI has also begun to investigate the creation of a new repo rate benchmark based on transactions.

---

<sup>4</sup> For details on the discussions of ARRC, see: <http://www.newyorkfed.org/arrc/index.html>

<sup>5</sup> For details on the new benchmark rates for repos considered by the NY Fed, see: [http://www.newyorkfed.org/markets/opolicy/operating\\_policy\\_161104](http://www.newyorkfed.org/markets/opolicy/operating_policy_161104)

<sup>6</sup> For details on the consultation paper on enhancements to the EONIA benchmark, see: <http://www.emmi-benchmarks.eu/assets/files/D0200E-2016-Eonia%20Consultation%20Paper.pdf>

<sup>7</sup> For details on the summary of the stakeholder feedback on the consultation paper on enhancements to the EONIA benchmark, see: <http://www.emmi-benchmarks.eu/assets/files/D0548A-2016-EMMI%20publishes%20feedback%20on%20Eonia%20stakeholder%20consultation.pdf>



### (3) United Kingdom

In the U.K., the Working Group on Sterling Risk-free Reference Rates has been investigating to identify a risk-free rate for the Pound sterling, and has narrowed down its candidates to two rates, the Sterling Overnight Index Average (SONIA) and the secured overnight repo rate.<sup>8</sup>

The Bank of England (BoE) has been working on the reform of SONIA, the overnight benchmark of the unsecured market, including the review of calculation and broadening the scope of actual transaction data (using data collected by the BoE). The calculation of the new benchmark and its release is expected to be implemented in 2017<sup>9</sup>.

As for the secured overnight repo rate, calculation and release of various benchmarks have been implemented or are expected to be made by private entities.

### (4) Switzerland

In Switzerland, the National Working Group (NWG)<sup>10</sup> on Swiss franc reference rates recommends SARON, the secured overnight benchmark based on overnight repo transactions as the Swiss franc risk-free rate. The TOIS fixing, the unsecured day to day benchmark, will be discontinued at the end of 2017 since the market activity for TOIS fixing seems not to be sufficient. The TOIS fixing is currently used as the floating leg for overnight index swaps in Swiss francs (TOIS curve). Other uses of the TOIS fixing include valuation of interest rate swaps and remuneration of collateral used to collateralize swaps. The transition from TOIS fixing to SARON is scheduled for 2017.

---

<sup>8</sup> For details on the discussion of Working Group on Sterling Risk-free Reference Rates, see: <http://www.bankofengland.co.uk/markets/Pages/benchmarks/rfr.aspx>

<sup>9</sup> For details on the reform of SONIA, see: <http://www.bankofengland.co.uk/markets/Documents/soniareformmcp1016.pdf>

<sup>10</sup> For details on the discussions of National Working Group on Swiss franc Reference Rates, see: [http://www.snb.ch/en/ifor/finmkt/fnmkt\\_benchn/id/finmkt\\_reformrates](http://www.snb.ch/en/ifor/finmkt/fnmkt_benchn/id/finmkt_reformrates)

**(Reference 2) Preliminary study on developing the GC repo benchmark as the JPY risk-free rate**

This subsection outlines the outcome of a preliminary study on developing the GC repo benchmark as the JPY risk-free rate.

Currently, when it comes to the statistics about GC repo rate in Japan, the Tokyo Repo Rate<sup>11</sup> is calculated and published by the Japan Security Dealers Association (JSDA); however, this is not based on the actual transactions. Accordingly, a new GC repo benchmark should be developed in order to be used as a risk-free rate.

The Study Group has proposed two methodologies for calculating a rate which can be used as a risk-free rate:

- A rate calculated based on the reference institutions' submissions.

A rate would be calculated as a volume-weighted mean or by using other methodologies, based on actual transaction data submitted by reference institutions, which are major participants in the repo market.

- A rate calculated by central counterparties (CCPs).

A rate would be calculated by CCPs as the volume-weighted mean or by using other methodologies based on data on cleared and one-day maturity repo transactions made through the CCP. Although not so many repo transactions are processed through CCPs at present, it is projected that sufficient volume of the transactions will be settled through CCPs after healthy developments in the new GC repos under the subsequent collateral allocation method, which will be introduced in 2018 along with the shortening of the JGB settlement cycle to T+1.<sup>12</sup>

The details of the two methodologies are as follows (Chart4).

Chart 4: the potential GC repo benchmarks as the JPY risk-free rate

Elements of design	A rate calculated based on the reference institutions' submissions.	A rate calculated by central counterparties (CCPs)
Calculation methodology	The volume-weighted mean by using data submitted by reference institutions	The volume-weighted mean by using data on cleared and one-day maturity repo transactions through

<sup>11</sup> For details on the terms and conditions for publication of the Tokyo Repo Rate, see: <http://www.jsda.or.jp/en/statistics/bonds/trr/>

<sup>12</sup> For details on the consideration of the shortening of the JGB settlement cycle, see: [http://market.jsda.or.jp/shiraberu/saiken/kessai/jgb\\_kentou/English\\_gaiyoubann.pdf](http://market.jsda.or.jp/shiraberu/saiken/kessai/jgb_kentou/English_gaiyoubann.pdf)

		the CCPs
Transactions	GC repos (transactions under repurchase agreements and securities lending against cash collateral)	New GC repos (transactions under repurchase agreements under the subsequent collateral allocation method <sup>13</sup> )
Use of CCPs	— (Depends on the reference institutions)	All the cleared transactions
Maturity	Overnight for a risk-free rate	
Settlement timing	T+1 T+0 (After the shortening of the JGB settlement cycle to T+1 in 2018)	T+0
Captured transactions	Reference institutions' transactions	CCP participants' transactions settled through CCPs

Based on the details above, the Study Group's findings about suitability and feasibility of the GC repo rate as a risk-free rate are as follows.

- With respect to the benchmark, while it is desirable that the GC repo rate exclude the credit risk of parties to transactions because of the nature of secured transaction, the following points should be taken into consideration.

The GC repo rate

- ✓ has a tendency to have larger swings at quarter-ends than other candidates.
  - ✓ is influenced by supply and demand of the bond market.
  - ✓ includes skewed rates caused by a particular type of transaction such as GC-SC spread transactions.<sup>14</sup>
- Regarding market depth, for both methodologies, it is indispensable to assess the influence of new GC repos under the subsequent collateral allocation method, which will be introduced in the first half of 2018 along with the introduction of the shortening of the JGB settlement cycle to T+1.

<sup>13</sup> A basket will be selected depending on the transactions. As a method, one possible way is calculating a volume-weighted mean of all the baskets excluding the baskets of inflation-indexed government bonds. Another is using the rate of the basket with the largest volume such as U.S. GCF repo rates.

<sup>14</sup> A transaction aiming to earn spread between SC repos (bond lending side) and GC repos (cash lending side) by combination of these two types of repo as one set.

- With regard to ease of use, since there is currently no market using this new GC repo rate for financial transactions like derivatives, new measures should be prepared so that the use in derivatives can be increased; market for interest rate swap referencing these new rates should be nurtured.
- Regarding feasibility, there remain many practical problems to be solved for both rates. For example, as for a rate calculated based on the reference institutions' submissions, reference institutions may have to prepare so that their system could extract GC repo transactions used for submission from all transactions. Regarding a rate calculated by CCPs, accumulation of transaction data and assessment of development in the repo market after the shortening of JGBs settlement cycle to T+1 in the first half of 2018 would be necessary.

In view of these points, the Study Group has concurred that the GC repo rates cannot be identified as a JPY risk-free rate at present.

## Next Steps

The Study Group has been working on (i) identification of risk-free reference rates and deliberation on their administrators and (ii) market practices and contract design regarding risk-free rates that are based on expected usage of the chosen rates.<sup>15</sup>

As mentioned, the Study Group has identified the uncollateralized overnight call rate calculated and published by the Bank of Japan as the JPY risk-free rate, so hereafter, the Study Group will continue its investigation by focusing mainly on the (ii) above. More specifically, it will further consider how to implement the reforms to OIS market conventions suggested in the public consultation paper published in March 2016 and the following issues to make better use of the JPY risk-free rate, referring to developments abroad.

- ✓ Implementation of the reforms to market conventions suggested in the public consultation paper
- ✓ Means other than the reforms to market conventions to activate the OIS market referencing the uncollateralized overnight call rate, including end-user outreach
- ✓ Monitoring and discussing developments of the IRS market to examine if market participants are able to choose the fit-for-purpose reference rates.
- ✓ Follow-up on developments of the study on the risk-free rates abroad and of the considerations on the JPY GC repo rate by relevant institutions

The Study Group intends to continue its study by taking into account comments from a wide range of market participants. As stated in the Terms of Reference, the membership of the Study Group will remain to be financial institutions and other related organizations that are potential users of the risk-free reference rate. The Study Group welcomes opinions on this report and intention to participate to the activities of the Study Group in the future. For those, please contact the following e-mail address:

The Study Group Secretariat

Bank of Japan, Market Infrastructure Division, Financial Market Department

post.fmd33@boj.or.jp

---

<sup>15</sup> For the Terms of Reference of the Study Group, see:  
<http://www.boj.or.jp/en/paym/market/sg/rfrterms.pdf>