

Introduction

Interim Report and Consultation

The Alternative Reference Rates Committee

Alternative Rates

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Criteria for Potential Alternative Reference Rates

- **Benchmark Quality)** The degree to which the benchmark design ensures the integrity and continuity of the rate. The underlying market was evaluated according to its liquidity, transaction volume, and resilience.
- **Methodological Quality)** The degree to which the benchmark construction could satisfy the IOSCO Principles for soundness and robustness, including standardized terms, transparency of data, and availability of historic data.
- **Accountability)** Evidence of a process that ensures compliance with the IOSCO Principles.
- **Governance)** Evidence of governance structures that promote the integrity of the benchmark.
- **Ease of Implementation)** Assessed ease of transitioning to the rate, including:
 - Anticipated demand for and relevance to hedging/trading
 - Existence of, or potential for a term market in the underlying rate

Alternative Rates – Rates Considered and Evaluation Process

Less Suitable

- Policy Rates
- T-Bill or Bond Rates
- Term OIS Rates
- Term Unsecured Rates

More Suitable

- Overnight Unsecured lending rates (OBFR)
- Secured Lending Rates (GC Repo)

Alternative Rates – Rates Considered and Evaluation Process

OBFR

- Ample liquidity and transaction volumes
- \$70bn in Fed Funds *plus* \$240bn in Overnight Eurodollar transactions
- Over 150 banks involved

Secured Lending (GC Repo)

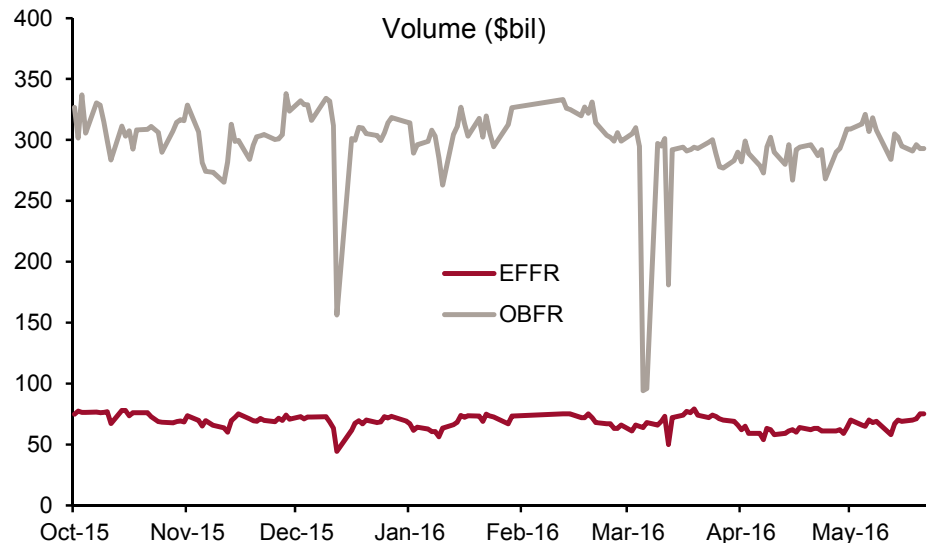
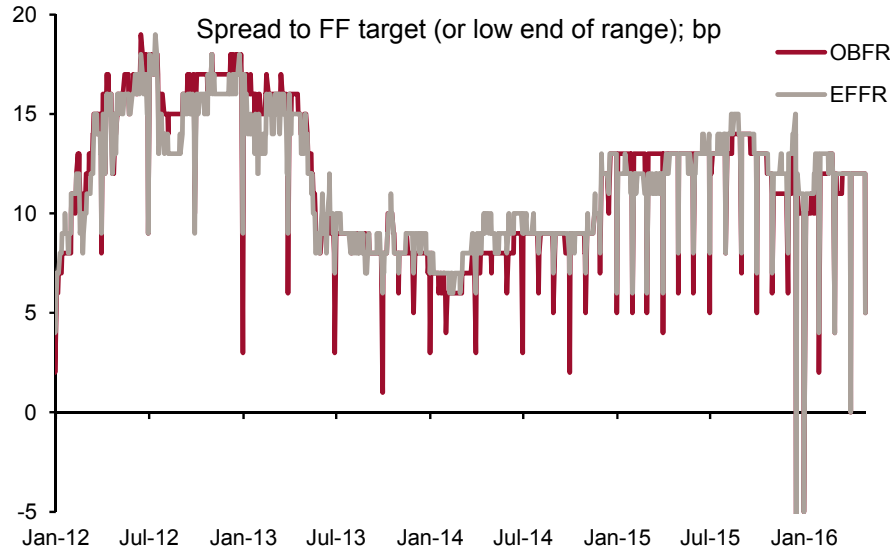
- Huge number of transactions
- Relevant funding source for a wide set of market participants
- ~\$1.5tn tri-party outstanding
- ~\$300bn/day in o/n Treasury tri-party

Alternative Rates – OBFR

- ARRC believes the best unsecured rate alternative would be the Overnight Bank Funding Rate (OBFR). The OBFR is calculated from the FR 2420 collection using overnight federal funds transactions of domestic banks and US branches and agencies of foreign banks (those used to calculate the Effective Federal Funds Rate), as well as certain overnight Eurodollar transactions.
 - These Eurodollar transactions are unsecured borrowings of US dollars booked at international banking facilities and offshore branches managed by a US banking office
- The OBFR is calculated as a volume-weighted median
- Regular publication of the OBFR began on March 2, 2016, and in addition to the volume-weighted median rate, the New York Fed publishes the dollar amount of transactions, and the volume-weighted 1st, 25th, 75th, and 99th percentiles

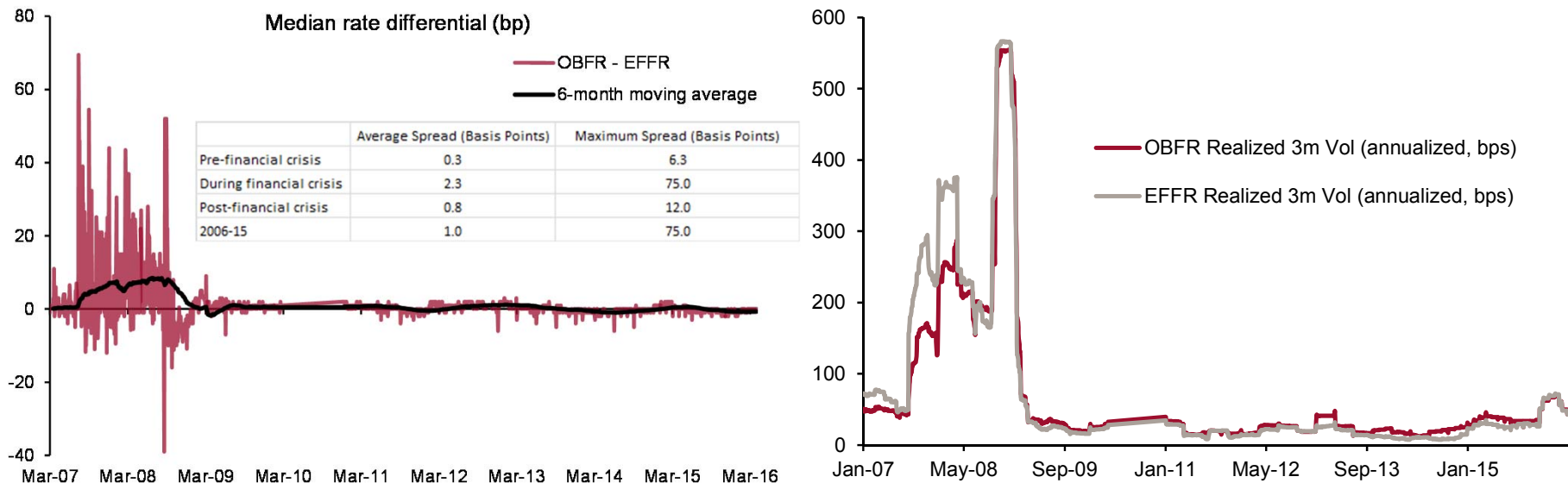
Alternative Rates – OBFR (cont'd)

- OBFR has historically behaved similarly to the EFR, with comparable (though typically slightly larger) declines around month and quarter-end dates
- Critically, the volume of transactions used in calculating the OBFR is some 4-5x that used in calculating the EFR



Alternative Rates – OBFR (cont'd)

- The addition of Eurodollar transactions does suggest scope for divergence in times of stress, as can be seen in behavior of the rate from mid-2007 through 2008 (using data from a subset of brokers to calculate OBFR over the period)*
- However, volatility in the two rates is typically comparable, and was actually somewhat lower in the OBFR in the early part of the crisis



*Pre October 2015 OBFR data calculated using broker data for Fed Funds and Eurodollar transactions
Source: New York Fed, the BLOOMBERG PROFESSIONAL™ service, Credit Suisse

Alternative Rates – GC Repo

- ARRC believes the best secured rate alternative would be comprised of “hybrid” data sources for treasury general collateral (rate is currently not in existence).
- The secured rate was assessed to be favorable due to the following attributes:
 - perceived robustness
 - high notional volume and number of transactions
 - relevance as a funding source to diverse set of market participants
- Secured market is evolving rapidly and administrator should retain flexibility to modify sources as market structure shifts.

Alternative Rates – GC Repo (Cont'd)

Data Source	Volumes	Description	Comments
DTCC GCF	\$55 Billion	<ul style="list-style-type: none"> Overnight treasury collateral BNY and JPM 	<ul style="list-style-type: none"> Unknown outcome from BNY/JPM GCF bifurcation, for now, business as usual.
Tri-Party	\$250 Billion	<ul style="list-style-type: none"> Overnight treasury collateral BNY and JPM Non GCF 	<ul style="list-style-type: none"> Exclude FED RRP balances
Bilateral	Est. \$200-350 Billion*	<ul style="list-style-type: none"> Dealer to dealer Dealer to client 	<ul style="list-style-type: none"> Exclude official institution RRP Would need method to filter for “specials”
Cleared Repo	NA	<ul style="list-style-type: none"> Trades with clients clearing at CCP 	<ul style="list-style-type: none"> Because this market is still in development, should delay inclusion to index until a minimum threshold volume is achieved

*These estimates are based on the OFR/Federal Reserve Study “The U.S. Bilateral Repo Market: Lessons from a New Survey” (2016).

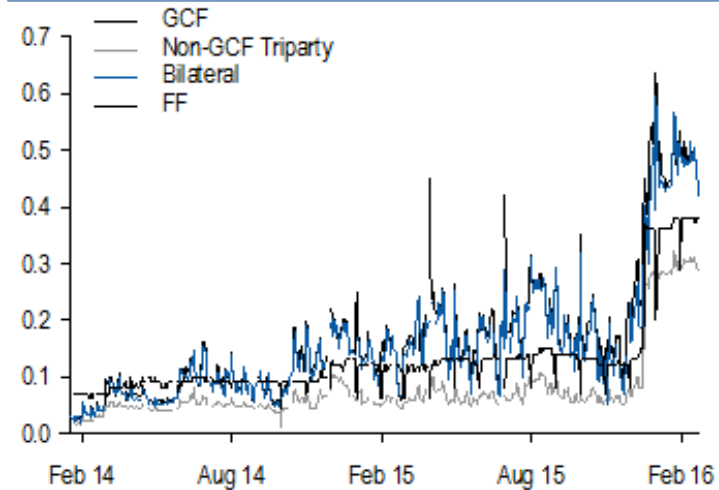
Alternative Rates – GC Repo (Cont'd)

Summary statistics for alternative GC repo rates; 1/16/14-2/22/16; bp

	Mean	Min	Max	Std. Dev.
GCF	16.7	1.8	63.9	11.7
Non-GCF Triparty	7.8	1.1	32.2	6.7
Bilateral	15.7	1.7	59.9	11.2
Wtd Triparty	10.0	1.3	38.3	7.8
Wtd Triparty/Bilateral	13.5	1.7	50.3	9.8
FF Effective	13.0	6.0	38.0	7.6

* Source: JPMorgan, BNY Mellon

GC Treasury repo and Fed funds rate; %



Summary statistics for GC overnight repo rate based on last two years of data

- Non-GCF triparty data sourced from JPM and BNY-Mellon index; volume weightings are approximate. Bilateral data from limited market data (dealer to dealer) and should be viewed as indicative only
- The average volume weighted Triparty rate since 2014 equals 10 bp or 3 bp below the Effective Federal Funds Rate; the average volume weighted GC repo rate (including Triparty and bilateral) equals 13.5 bp or 0.5 bp above EFR.
- GCF and bilateral repo rates are more volatile than EFR; standard deviation equals 11.7 bp for GCF, 11.2 for bilateral repo and 7.6 for Fed funds effective

Alternative Rates – Consultation Questions

1. The ARRC has narrowed its focus to two potential alternative rates, the Overnight Bank Funding Rate (OBFR) and an overnight Treasury general collateral repo rate. Do you have a preference between these two rates? If so, why?
2. Is there another potential rate that you believe should be considered by the ARRC?
3. With respect to an overnight Treasury general collateral repo rate, the ARRC itself has expressed a preliminary preference for a rate that included both cleared and uncleared triparty and bilateral transactions. Recognizing that no entity has committed to producing such a rate, would you prefer a repo rate that includes only triparty transactions or both triparty and bilateral? Would the inclusion or exclusion of bilateral data materially influence your preference for a repo rate as a benchmark or cause you to prefer a repo rate to the OBFR?
4. What concerns, if any, do you have that the alternative reference rates identified by the ARRC might be subject to manipulation if they were adopted? Are there concerns that the underlying markets, at times, could be highly concentrated or not sufficiently deep to discourage collusion? How do any concerns compare to similar concerns regarding already existing USD reference interest rates?

Stage I - Paced Transition Plan

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Paced Transition Plan - Objectives

Paced Transition Plan – Outline

1. Nominate New Rate

- OBFR or Overnight Treasury GC Repo
- Requirement: Consultation with Market Participants

2. New Rate Futures and New Rate OIS

- New Rate OIS are bilateral uncleared
- Requirement: Preparation by derivatives dealers, exchanges, and CCPs

3. Cleared New Rate OIS

- CCPs accept New Rate OIS for clearing similar to other IR swaps
 - EFRR remains basis for PAI
 - Valued and margined on basis of EFRR OIS term structure
- Requirement: Adequate price/rate history to permit CCPs to set margins

Paced Transition Plan – Outline (cont'd)

4. New Rate PAI

- CCPs accept swap contracts in which PAI is based on New Rate
 - LIBOR reference plain vanilla IRS
 - LIBOR reference MAC
 - EFRR OIS
 - New Rate OIS
- CCPs continue to accept new swap contracts that specify EFRR PAI
- Users may choose PAI basis: EFRR or New Rate
- Swaps are cleared within same guarantee fund, regardless of PAI basis
- Requirement: General acceptance of New Rate as gauge of financing cost of settlement variation

Paced Transition Plan – Outline (cont'd)

5. CCPs stop accepting new swaps with EFRR PAI

- CCPs accept new swaps with EFRR PAI only if submitted to close out or reduce outstanding risk in extant swaps with EFRR as PAI
- Extant swaps with EFRR PAI are maintained until maturity or close-out
- Swaps are cleared within same guarantee fund, irrespective of PAI basis
- Requirement: Broad consensus that New Rate represents financing cost of settlement variation

6. New Rate OIS as basis for discounting

- Similar to market adoption of EFRR OIS discounting in place of LIBOR discounting
- Requirements:
 - Broad acceptance of New Rate term structure among CCP users
 - Sufficient trading flows in New Rate futures/OIS to ensure valid daily marks

Paced Transition Plan – CCP Perspective

Paced Transition Plan – Dealer Perspective

As financial markets look to transition to an alternative reference rate, there are a number of issues that the ARRC and end users will need to jointly consider in planning for the various stages of the transition. Among some of the issues identified by ARRC members are the following:

Economic

- During the introduction of one or more alternative rate benchmarks, we are almost certain to see an increase in the economic cost of managing positions alongside the emergence of new basis risks.
 - Robust market structures for hedging these bases will be needed to aid in a smooth transition and to support liquidity, and will require the support of ARRC members and all major market participants. Details on the timing and trading protocols involved will need to be worked out.
- Counterparties will also likely seek to adjust the interest on collateral specified in their bilateral CSAs to the new rate.
 - This would take a longer period of time. Agreements must be negotiated on a case-by-case basis, and market participants will have to focus on other issues at the same time, for example the implementation of the uncleared derivatives margin rules that are being put in place across multiple jurisdictions.

Operational/Reputational

- With major internal interdependencies in developing new curves and models, the number of steps involved in coordinating readiness to trade are complex and will need to be well coordinated or else could involve increased risk of a trade error and orphaned trades.
- Regulatory acceptance to changes in capital model/VAR analysis will need to adapt to the new reference rates, with possibly a short historical dataset to calibrate against.
- Transition needs to be handled in close cooperation with clients in order to help avoid legal disputes, anti-trust concerns, and reputational risks if the transition to the new benchmark is not handled smoothly.

Paced Transition Plan – Consultation Questions

5. Would the paced transition plan preliminarily outlined in the interim report lead you to seek to trade instruments and hedge risk linked to the new rate chosen by the ARRC?
6. Are there considerations, such as the existence of a basis market between the new rate ultimately chosen by the ARRC (new rate) and the effective fed funds rate (EFFR) that would aid in smoothing a paced transition for your firm? Are there potential disruptions that would concern you under such a plan? What are your biggest concerns relating to the paced approach outlined in this paper?
7. Under the paced transition plan, if markets referencing the new rate were sufficiently liquid would you:
 - a. Be willing and able to trade to convert legacy contracts referencing EFFR as the floating index in your swaps to reference the new rate, and receive/pay any transparent at-market price change, given a basis market?
 - b. Be willing to amend your CSA to reference the new rate as the interest rate for cash collateral and receive/pay any transparent at-market price change due to change in discount regime?
 - c. Be willing to migrate cleared positions that had PAI based on the EFFR to contracts that had PAI based on the new rate, assuming you would be compensated for price changes?
8. Could you transition only certain segments of your EFFR trading? If so, which segments would be easier to transition and what share of your trading do they comprise?
9. If you could not transition certain segments of your trading, what would need to change to allow you to do so (external factors, internal systems, etc.)?

Next Steps

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The Consultation Process and Stage II

Next Steps – Efforts in Other Jurisdictions

GBP WG has preliminarily selected two O/N candidate rates: reformed SONIA and gilt repo

Current recommendations

- unsecured: reformed SONIA now administered by BoE
- secured: gilt repo – one index currently administered by ICAP; another initiative in development
- key trade-off is between ease of implementation and depth of market
 - reformed SONIA easier to implement (simply replaces current SONIA); gilt repo would probably require “big bang” for new and legacy contracts
 - gilt repo has greater volumes (~ £75B/day vs reformed SONIA ~ £40B/day) and could prove more robust over the long term

Two stage implementation strategy – first establish RFR in OIS market, then encourage trading in RFR-referenced OIS across yield curve

- Transition path for OIS market dependent on RFR choice
 - Reformed SONIA straight-forward – SONIA already established as reference rate for sterling OIS
 - Secured RFR more complex – would require transition of existing SONIA-referenced OIS)
- Adoption of RFR as a Libor alternative voluntary and market-led

CHF WG has been considering two O/N candidate rates: TOIS fixing and SARON

Efforts to continue to improve the TOIS fixing (t/n unsecured lending rate to banks) have been de-prioritised

- participation and underlying volume in TOIS fixing have dwindled in recent years despite efforts to reform & strengthen the benchmark

Focus is on strengthening SARON (Swiss Average Rate Overnight based on data from the CHF repo market) and transition issues

- assess fallback solutions in absence of transactions / quotes
- review methodology
- conduct outreach to broader group of market participants

Transition from TOIS fixing to SARON includes the following

- O/N rates in derivatives contracts will be migrated to new rate from TOIS fixing (no term rates – term liquidity will be market driven)
- collateral posted /received would earn SARON. This may impact valuation of collateralised CHF derivative instruments
- assuming the above priorities are achieved, WG would look for SARON to “go-live” as a new reference rate in Q4 2016
- a shift away from CHF Libor is not under consideration

Next Steps – Efforts in Other Jurisdictions (Cont'd)

The European Money Markets Institute (EMMI) is engaged in two work streams: EUR Repo and EONIA

EUR Repo Benchmark (secured)

- EMMI reviewed 9 years of euro repo transactions against ECB eligible collateral
- Collateral was GC or individual securities (specifics) executed on-screen and cleared through qualified CCPs
- EMMI to undertake a two-phased approach going forward:
 - continue to develop methodology in line with earlier data review
 - continue to assess viability of including voice-brokered and bilateral trades at a later stage
 - methodology blueprint anticipated by December 2016

EONIA (unsecured – European Overnight Index Average (EONIA))

- EMMI created EONIA Task Force to review governance and technical features of the benchmark. EMMI recommended two phases:
- Phase 1 (anticipated by end 2016)
 - code of conduct for Eonia aligned with the IOSCO Principles and the forthcoming EU Regulation on Benchmarks
 - high-level analysis of the benchmark rate, shifts in underlying transaction and submission activity
- Phase 2 (during 2017)
 - extensive data analysis exercise of unsecured overnight money market activity
 - propose any appropriate modifications to technical design / core methodology of benchmark to ensure representativeness and ongoing robustness

Next Steps – Efforts in Other Jurisdictions (Cont'd)

The JPY Study Group has identified a primary candidate (TONAR) and a secondary candidate (GC repo)

Primary candidate: uncollateralized overnight call rate - TONAR (Tokyo Overnight Average Rate)

- close to risk free
- considerable transaction volume, diversity of trading participants
- already calculated and published by BoJ
 - CSAs commonly use TONAR for interest rate payment calculations on JPY cash collateral
 - Japan Securities Clearing Corp (central clearing organisation for JPY IRS) also uses TONAR for interest payment on variation margin

Secondary candidate: GC RP rate

- excludes credit component but considered problematic: rate reflects supply / demand of bond market, larger quarter-end swings than TONAR
- underlying market has sufficient volume; govt bond settlement cycle expected to be shortened in 2018, may affect continuity
- Tokyo Repo Rate calculated by JSDA but not based on actual transactions, little track record in financial transaction: new benchmark would need to be developed

Ongoing work

- SG examining proposal on revisions of market conventions that would improve convenience of OIS referencing TONAR
- to conduct further investigation on robustness of TONAR taking into account BoJ negative rate policy

Next Steps – Consultation Questions

10. Could you and would you be willing to transition some or all of your derivatives trading currently referencing LIBOR into OIS or futures referencing an alternative rate chosen by the ARRC if the OIS and futures market were sufficiently liquid?
11. What criteria would you use to determine whether the OIS and futures markets referencing an alternative rate chosen by the ARRC were sufficiently liquid? (Bid/ask spread, price impact, trade size achievable, trade frequency, etc.?) Would you be willing to participate initially at wider bid/ask spreads and without a long history of swap volume in the new rate in order to support the transition of the market to a more robust benchmark? Are there other considerations besides liquidity that would influence your choice?
12. Could you transition only certain segments of your LIBOR trading and, if so, which segments would be easier to transition and what share of your trading do they comprise?
13. If you could not transition certain segments of your LIBOR trading, what would need to change to allow you to do so (external factors, internal systems, etc.)?
14. What concerns, if any, would you have to transitioning away from existing reset and payment conventions in OTC derivatives referencing LIBOR?
15. Do you think the paced transition would have an adverse impact on the corporate bond market, consumer loans, or securitizations? What would be needed for these types of products to reference the new rate?

Open Forum

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