AFP 2019

BOSTON | OCTOBER 20-23

LIBOR-SOFR Transition Panel

Monday, October 21st 8:30 a.m.

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Speakers

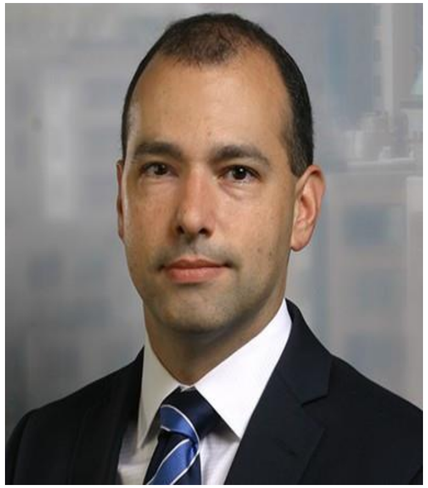
Moderator

Amol Dhargalkar
Chatham Financial

Panelists

Jennifer Earyes, CTP
Navient

Rob Mangrelli
Chatham Financial



Jeff Vitali
EY

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- Defeasance and yield maintenance
- Debt and derivatives analytics
- Financial risk management technology

LIBOR-SOFR Transition

Overview

1. Panelist Introductions
2. IBOR-RFR Transition
3. Preparing For The Transition
4. Panel Discussion
5. Closing

Panelist Introductions

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Jennifer Earyes, CTP

Jennifer Earyes is the director of corporate development and head of Navient's LIBOR Transition Office. As part of her role, she develops and directs the execution of a strategy to transition LIBOR-based business across Navient to alternative reference rates.

Ms. Earyes is responsible for ensuring that Navient is appropriately represented on industry groups and regulatory committees related to the LIBOR transition. She is a champion for financial market stability, and believes sensible transitions are possible when industry participants and regulators work together to develop solutions.

Ms. Earyes serves on the Commodity Futures Trading Commission's Interest Rate Benchmark Reform Subcommittee, the LIBOR Steering Committee of the Structured Finance Association and the LIBOR Roundtable for the Association for Financial Professionals. She is also a member of the Alternative Reference Rate Committee Securitization Working Group and Consumer Products Working Groups where she is the Chairperson of the Student Loan subgroup.

Ms. Earyes has over a decade of experience in corporate treasury, capital markets, and contract negotiation. She is a corporate finance industry leader skilled in launching divisions from the ground up. Previously, she established the treasury risk division of Navient where she was responsible for driving the company's compliance with all derivative and securitization regulations resulting from the Dodd-Frank Act. Prior to that, Jennifer was in charge of the capital markets back and middle offices where she managed the teams supporting an over $200 billion derivative hedge portfolio.

She joined Sallie Mae in 2007 where she held several buy-side roles and was responsible for overseeing the transition of derivative contracts during Sallie Mae's spin-off to Navient in 2014. Ms. Earyes was awarded a Bachelor of Science with Distinction in Finance from the School of Business at George Mason University and is designated as a Certified Treasury Professional (CTP).

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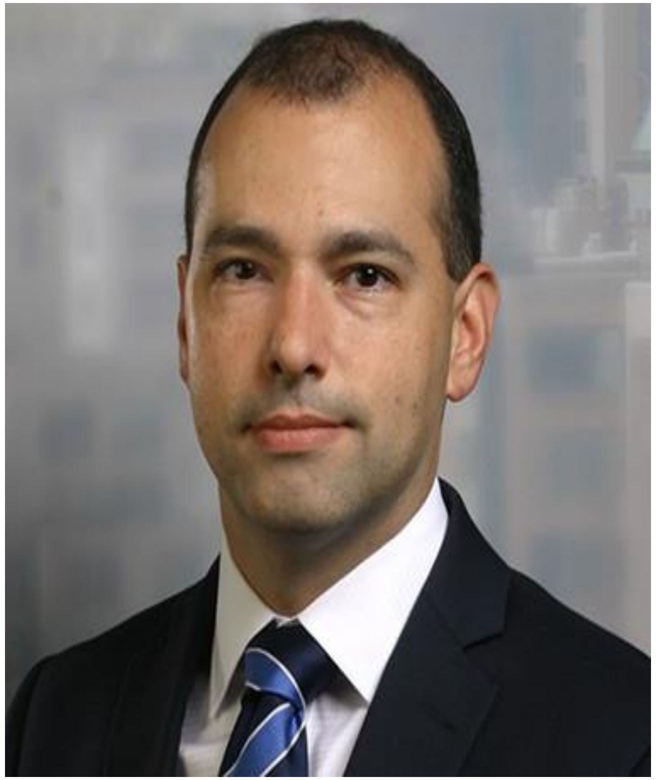
Rob Mangrelli

Chatham FINANCIAL

Rob is a director on Chatham's global real estate hedging and capital markets team. He joined Chatham in 2007 and advises clients ranging from publicly traded equity and mortgage REITs to specialty finance companies and debt funds on their interest rate and currency risk management strategies.

Prior to joining Chatham, Rob worked for EY in their Philadelphia office on audits of financial institutions. He is a CPA in the state of Pennsylvania and a CFA charter holder and graduated from the University of Delaware with a BS in Accounting and a minor in Management Information Systems.

Jeff Vitali



EY Building a better working world

Jeff Vitali is a Partner in EY's financial services practice and has 14 years of experience providing audit and advisory services to banking, broker dealer and asset management clients. Jeff is a leader on EY's IBOR solution campaign and currently leads several projects for both large global and domestic financial institutions to identify impacts across products, legal contracts, models, systems and processes. Jeff also co-led EY's national revenue recognition implementation campaign for financial services to assist clients understand and review legal contracts for major revenue streams (including retail, commercial and private banking, investment banking, brokerage, custody, wealth and asset management, and treasury services), and identify related process and control impacts.

Previously, Jeff worked in EY's on-call transactions group, focusing on assisting clients evaluate complex transactions involving financial instruments, LIBOR and OIS derivatives and hedging, debt restructuring, repos, securitization, securities lending, and VIE consolidation. He has also supported multiple global financial institutions implement the new FASB hedge accounting standard, focusing on enhancing LIBOR-based hedge strategies, identifying gaps in the firm's valuation methodology, and designing and testing hedge accounting regression tools.

IBOR-RFR Transition

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LIBOR Phase-Out Background

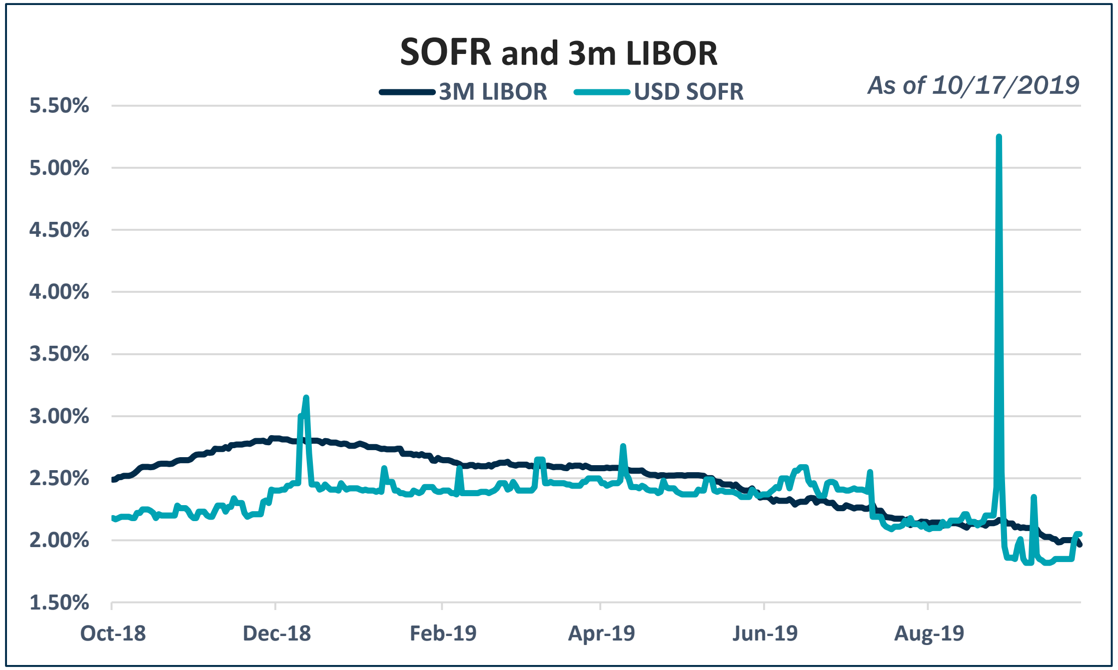
Cause	Effect	Remedy
Nonrepresentative	**Discontinuation**	**Replacement**
• LIBOR (London Interbank Offered Rate) is determined by banks submitting borrowing rates and is currently used as the benchmark rate for 100s of trillions of dollars worth of financial contracts • After the 2008 financial crisis, uncollaterized interbank lending significantly decreased causing banks to submit rates based on judgement without a reliable way to confirm the submitted rates were accurate • Recent scandals and billions of dollars in fines demonstrate that LIBOR is susceptible to manipulation	• U.K.'s Financial Conduct Authority (FCA) announced that banks would no longer be required to submit rates to LIBOR after 2021 • Regulators have signaled that continued reliance on LIBOR could present a systemic risk and announced it will be phased out.	• The NY Fed Alternative Reference Rates Committee (ARRC) was formed to identify an alternative to LIBOR and encourage voluntary adoption • SOFR was chosen as the replacement rate in the US • CME and LCH are planning to begin discounting cleared trades and calculating PAI using SOFR in July and October 2020, respectively

SOFR Overview

SOFR, Secured Overnight Financing Rate, is a transaction-based rate that represents the cost of borrowing cash (US dollars) overnight on a secured collateralized basis.

It is published at approximately 8am EST by the NY Fed for the previous trading day, rounded to the nearest 1 basis point.

SOFR
✓ Secured, robust underlying market
✓ Fully transaction-based
✓ Correlates closely with other money market rates
✓ Overnight, nearly risk-free reference rate
× No term lengths or credit risk component



https://rates.chathamfinancial.com/us-market/forward-curve.

2018 Trade Volume		
Index	OTC Derivatives	Notional
LIBOR	~600k	~$111 trillion
SOFR	52	$6.3 billion

LIBOR-SOFR Transition Issues

Liquidity
LIBOR has liquidity for both exchange-traded and OTC transactions while SOFR has little liquidity, especially for OTC

Payment Structure
LIBOR resets at the beginning of 1 of 7 interest periods while SOFR is an overnight rate that resets daily

Term Structure
SOFR is forward-looking, and the derivatives market has indicated a preference for backward-looking construction

Value Transfer
Adjusted RFRs will not match the relevant IBOR exactly which will likely lead to a value transfer

Fallback Provisions
ISDA intends to select fallback triggers, that will be automatically incorporated into new trades

Product Conventions
ARRC fallback language used for cash products may not apply or could apply differently to consumer products

Timeline of RFR Adoption In the US

Material SOFR issuance began in mid 2018. A few selected dates from the Paced Transition Plan (PTP), and market events, are noted below.

2014

Nov. 17th, 2014 FRBNY convenes ARRC to discuss and identify best practices for US alternative references rates.

2017

June 2017 ARRC identifies SOFR as the preferred alternative to USD LIBOR.

July 2017 The UK Financial Conduct Authority (FCA) announces that it will no longer compel banks to contribute to LIBOR beyond 2021.

2018

March 2018 ARRC expands its membership and working groups to include a larger group of market participants.

April 3, 2018 NY Fed begins publishing daily SOFR rates

May 7th, 2018 CME launches SOFR futures.

July 26th, 2018 Fannie Mae issues $6bn in SOFR indexed notes (6, 12, and 18m terms).

July 2018 ARRC issues guiding principles for fallback language.

August 2018 The World Bank issues a $1bn 2y floating rate note indexed to SOFR; Credit Suisse issues a $100M 6m SOFR indexed CD; Barclays issues $525M in SOFR indexed commercial paper; MetLife issues $1bn 2y note.

September 24th, 2018 ARRC releases proposed USD LIBOR contract language.

Oct 2018 CME begins clearing IRS using SOFR PAI & discounting; ICE launches SOFR futures.

2019

Q1 2019 Cumulative issuance of SOFR-linked debt reaches $65b; over 75% from GSEs.

Q1 2019 Indicative SOFR-based term reference rates under development; dialogue around compounding methods underway.

Mid 2019 Final recommendations on safer contract language for FRNs, business loans, and securitizations.

Mid 2019 ISDA consultation on fallbacks to USD-LIBOR expected.

Q2 2019 ARRC launched infrastructure and operating working group

Future

2020

Q1 2020 CCPs expected to provide members with a choice of clearing instruments using SOFR discounting and paying SOFR as interest on collateral.

Q1 2020 ICE Bank Yield Index (BYI) expected to launch, providing a banking credit-sensitive indicative rate.

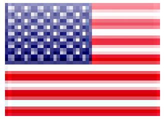
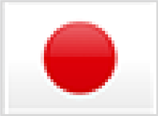
2021

Q2 2021 CCPs to end clearing contracts tied to EFFR for PAI and discounting.

EOY 2021 ARRC's target for a derivatives market with sufficient liquidity to generate a SOFR term structure.

EOY 2021 FCA will no longer compel banks to provide LIBOR submissions

RFR Adoption Global Overview

Jurisdiction	Alternative RFR	Rate Administration	Secured vs. Unsecured	Status
	Reformed Sterling Overnight Index Average (SONIA)	Bank of England	Unsecured	Transitioned in April 2018.
	Secured Overnight Financing Rate (SOFR)	Federal Reserve Bank of New York	Secured	The FED began publishing SOFR rates in 2018
	Euro Short-Term Rate (ESTER)	European Central Bank	Unsecured	€STR expected to be published 2nd Oct 2019.
	Swiss Average Rate Overnight (SARON)	SIX Swiss Exchange	Secured	Calculation details for SARON to be finalized.
	Tokyo Overnight Average Rate (TONA)	Bank of Japan	Unsecured	The Committee is still considering several options including compounding TONA, term rates derived from TONA, and using TIBOR.

Preparing for the Transition

Post-RFR Adoption Considerations

Potential for Higher Interest Payments

Depending on the terms of your credit agreement language, if LIBOR goes away you may revert to a fallback rate above the initially agreed upon rate

Economic Mismatch

If LIBOR is replaced in both the credit agreement and interest rate swap but the updated reference rate does not match, an economic mismatch will exist

Ongoing Hedging

As market participants begin adopting the new reference rate, liquidity will take time to develop. Additionally, understanding a new index creates an administrative burden for all parties involved

Next Steps

What companies can do now to prepare for the transition

Inventory

Inventory current LIBOR exposure under existing loans and derivatives with a focus on those maturing after 2021

Assess

Assess fallback language and understand what rate the debt would fallback to currently

Evaluate

Evaluate models and system impacts to learn what adjustments may be required based on a switch to SOFR

Understand

Understand the anticipated financing schedule for both refinancing existing debt and adding new debt

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