



Understanding AMERIBOR[®] Futures Brochure

By American Financial Exchange, LLC

OVERVIEW

This brochure provides an introduction to the Cboe Futures Exchange's (CFE) 7-Day and Three-Month AMERIBOR[®] futures contracts.

Section 1 describes the background of the American Financial Exchange and the AMERIBOR[®] benchmark interest rate underlying AMERIBOR[®] futures contracts.

Section 2 provides a high level overview of the contract specifications for CFE's 7-Day and Three-Month AMERIBOR[®] futures contracts.

Section 3 discusses the complementarity of AMERIBOR[®] 3-Month and 7-Day futures contracts and unique design features of the 7-Day contract.

Section 4 provides two examples of hedging interest rate risk using AMERIBOR[®] futures contracts.

SECTION 1 Background of AFX and the AMERIBOR[®] Benchmark Interest Rate

The American Financial Exchange[®] (AFX) is a centralized, electronic, self-regulated and fully transparent exchange that was launched in partnership with Cboe Global Markets, Inc. (Cboe) in 2015 to directly reflect the true unsecured funding costs for a nationally broad base of U.S. banks and financial institutions in the private sector. Cboe hosts the AFX electronic exchange and provides market surveillance and compliance services.

The American Interbank Offered Rate, or AMERIBOR[®] is a transaction based benchmark interest rate and is calculated as the volume weighted average interest rate directly from the overnight unsecured borrowing and lending transactions on the AFX electronic exchange.

AMERIBOR[®] is calculated at the end of each trading day and is compliant with IOSCO benchmark standards. AMERIBOR[®] is quoted on actual/360 day-count, following business day convention, rounded to the fifth decimal place and is published by Cboe under ticker symbol AMERIBOR[®].

AMERIBOR[®] reflects the true cost of overnight unsecured funding of a broad base of banks and financial institutions across all 50 states and the territory of Puerto Rico and provides a new alternative benchmark interest rate for assets and liabilities and enables its users to optimize asset-liability management (ALM).

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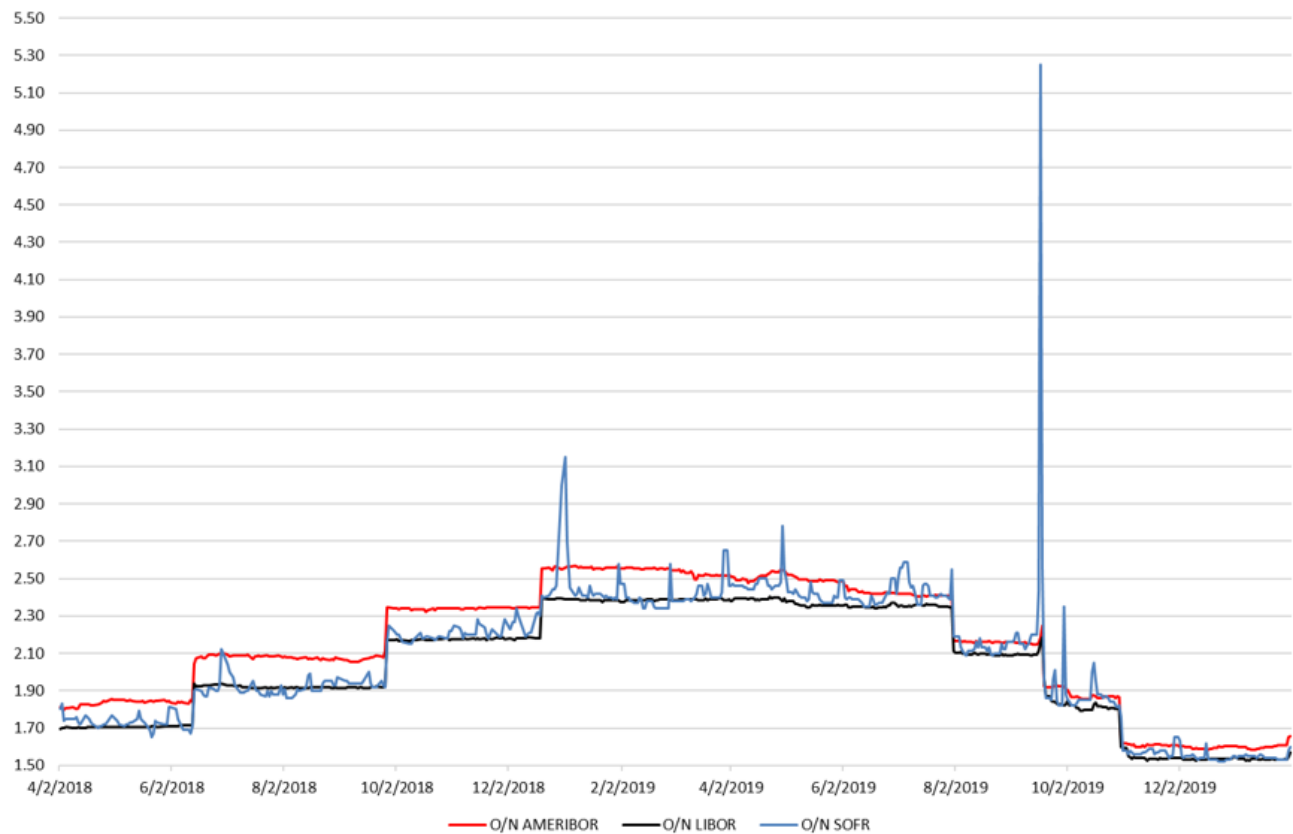
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The following table and graph compares AMERIBOR® with alternative interest rate benchmarks.

AMERIBOR®	LIBOR	Fed Funds	SOFR
Unsecured	Unsecured	Unsecured	Secured
Transaction Based	Expert Opinion	Federal Reserve Target	Transaction Based with Expert Judgement
Overnight	Overnight and 90-day	Overnight	Overnight
Transparent	Not Transparent	Transparent	Transparent
Regulated	Unregulated	Regulated	Unregulated
Volume Weighted Mean	Mean	Volume Weighted Mean	Median

AMERIBOR® vs. Alternative Benchmark Interest Rates

April 02, 2018 - January 31, 2020



SECTION 2 AMERIBOR® Futures Contracts Specifications

The pricing convention for AMERIBOR® futures contracts is similar to the pricing convention used by other STIR contracts except that AMERIBOR® futures contracts use a multiplier of 100 (i.e., 10,000 – (Final Settlement Rate X 100)). For e.g., the settlement price for an AMERIBOR® futures contract with a final AMERIBOR® settlement rate of 2.45% would be: 10,000 – (2.45 X 100) = 9755.00.

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	7-Day AMERIBOR Futures	3-Month AMERIBOR Futures
Contract Unit	Average daily American Interbank Offered Rate ("AMERIBOR") interest during futures contract delivery week, such that each basis point of interest per annum = \$35 per contract	Compounded daily American Interbank Offered Rate ("AMERIBOR") interest during futures contract Reference Quarter, such that each basis point of interest per annum = \$25 per contract
Price Convention	10,000 - (Rate X 100)	10,000 - (Rate X 100)
Contract Notional	\$18,000,000	\$1,000,000
Value of 1.0 Basis Point per Annum	\$35	\$25
Minimum Price Fluctuation	1/4 basis point per annum equal to \$8.75 per contract	1/4 basis point per annum equal to \$6.25 per contract
Listed Contracts	18 contracts	5 contracts
Detailed Contract Specifications	https://cfe.cboe.com/products/Cboe-AMERIBOR-7-Day-Futures_SPECS.pdf	https://cfe.cboe.com/products/Cboe-AMERIBOR-3-Month-Futures_SPECS.pdf

SECTION 3 Complementarity of AMERIBOR® 3-Month and 7-Day Futures Contracts

Prior to the start of the AMERIBOR® 3-Month futures contract's Reference Quarter the "Rate" portion of the "10,000 minus (Rate X 100)" contract price reflects market expectations of business-day-compounded AMERIBOR® rates during the Reference Quarter, expressed as an interest rate per annum. After the nearby 3-month contract enters its Reference Quarter, the contract rate becomes a combination of (1) the known AMERIBOR® rates (i.e., the published AMERIBOR® values for all the days from the start of the Reference Quarter to the present), and (2) the market's expectations of AMERIBOR® values for the remaining days in the Reference Quarter between the present and the end of the Reference Quarter.

As the expiring 3-Month contract progresses through its Reference Quarter, the forward-looking expectational component of the final settlement price will play a diminishing role in the fair valuation of the contract. In general, the progressively decreasing uncertainty about the contract's final settlement price results in steady decrease in the volatility of the contract price as the contract approaches the final settlement date. This type of decreasing price volatility as the contract approaches final settlement is common to all STIRs contracts that use the method of compounding daily interest rates to determine the final settlement price.

The AMERIBOR® 7-Day futures contract was designed to provide a STIRS contract to meet the following market needs:

1. Enable banks to efficiently hedge the interest rate exposure of their bi-weekly Federal Reserve System reserve requirements by using futures strips comprised of two or more consecutive AMERIBOR® 7-Day futures contracts;
2. Serve as a complement to the AMERIBOR® 3-Month contract by providing a futures strip of 7-Day contracts for market participants who desire more granularity in trading the expectations for future AMERIBOR® rates;
3. Provide a hedging vehicle for Federal Open Market Committee (FOMC) meeting dates, quarterly and year-end market volatility.

SECTION 4 Hedging Examples

Hedging Example #1

A bank needs to borrow \$360 million at overnight AMERIBOR[®] for two weeks to meet its bi-weekly Federal Reserve System reserve requirements. The current AMERIBOR[®] interest rate is 2.50%. The bank sells a strip of two consecutive 7-day AMERIBOR[®] futures contracts to hedge against the risk of an increase in interest rates. The bank determines the number of AMERIBOR[®] 7-day futures contracts needed to hedge the loan: $\$360\text{MM} / \$18\text{MM per contract} = 20$ contracts. The bank sells 20 AMERIBOR[®] 7-day futures contracts for week #1 at 9750.00 (i.e., $10,000 - (2.50 \times 100)$) and 20 AMERIBOR[®] 7-day futures contracts for week #2 at 9750.00 (i.e., $10,000 - (2.50 \times 100)$).

During the first week the arithmetic average AMERIBOR[®] interest rate increases from 2.50% to 2.75% and the bank repurchases the first set of 20 contracts at 9725.00 (i.e., $10,000 - (2.75 \times 100)$).

During the second week the arithmetic average AMERIBOR[®] interest rate increases from 2.50% to 2.80% and the bank repurchases the second set of 20 contracts at 9720.00 (i.e., $10,000 - (2.80 \times 100)$).

Week	Loss due to increase in borrowing cost	Profit on futures hedge
#1	$\$360\text{MM} \times (0.25\%/100 \times 7/360) = \$17,500$	$(9750.00 - 9725.00) \times 20 \text{ contracts} \times \$35 \text{ per basis point} = \$17,500$
#2	$\$360\text{MM} \times (0.30\%/100 \times 7/360) = \$21,000$	$(9750.00 - 9720.00) \times 20 \text{ contracts} \times \$35 \text{ per basis point} = \$21,000$
Total	$\$17,500 + \$21,000 = \$38,500$	$\$17,500 + \$21,000 = \$38,500$

This example is hypothetical and is meant for illustrative purposes only.

Hedging Example #2

A bank issues a \$40 MM fixed rate six month loan and will fund the loan by borrowing in the overnight unsecured AMERIBOR[®] cash market for six months. The current AMERIBOR[®] interest rate is 2.50%. The bank sells a strip of two consecutive AMERIBOR[®] 3-Month futures contracts to hedge against the risk of an increase in interest rates. The bank determines the number of AMERIBOR[®] 3-Month futures contracts needed to hedge the loan: $\$40\text{MM} / \$1\text{MM per contract} = 40$ contracts. The bank sells 40 AMERIBOR[®] Sep 3-Month futures contracts at 9750.00 (i.e., $10,000 - (2.50 \times 100)$) and sells 40 AMERIBOR[®] Dec 3-Month futures contracts at 9750.00 (i.e., $10,000 - (2.50 \times 100)$).

During the first quarter the 90-day daily compounded AMERIBOR[®] interest rate increases by 25 basis points from 2.50% to 2.75% and the bank repurchases the first strip of 40 Sep contracts at 9725.00 (i.e., $10,000 - (2.75 \times 100)$).

During the second quarter the 90-day daily compounded AMERIBOR[®] interest rate increases by 10 basis points from 2.50% to 2.85% and the bank repurchases the second strip of 40 Dec contracts at 9715.00 (i.e., $10,000 - (2.85 \times 100)$).

Qtr	Loss due to increase in borrowing cost	Profit on futures hedge
Sep	$\$40\text{MM} \times (0.25\%/100 \times 90/360) = \$25,000$	$(9750.00 - 9725.00) \times 40 \text{ contracts} \times \$25 \text{ per basis point} = \$25,000$
Dec	$\$40\text{MM} \times (0.35\%/100 \times 90/360) = \$35,000$	$(9750.00 - 9715.00) \times 40 \text{ contracts} \times \$25 \text{ per basis point} = \$35,000$
Total	$\$25,000 + \$35,000 = \$60,000$	$\$25,000 + \$35,000 = \$60,000$

This example is hypothetical and is meant for illustrative purposes only.

Contact Us

For more information about CFE's 7-day and 3-Month AMERIBOR[®] futures contracts please visit <http://cfe.cboe.com/cfe-products/ameribor-futures> and www.ameribor.net or contact

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APPENDIX

<http://www.cboe.com/products/futures/ameribor-futures>

AMERIBOR

Contract Specifications

Quote Vendor Symbols

Why Trade

Market Data

Trade on CFE

Cboe AMERIBOR Futures




Symbol	Expiration	Last	Change	High	Low	Settlement	Volume
AMB3Z19	03/18/2020	9837.25	-0.25	9838.25	9837.25	9837.5000	20
AMB3H20	06/17/2020	9844.00	0.00	0.00	0.00	9841.2490	0
AMB3M20	09/16/2020	9858.75	0.00	0.00	0.00	9852.0000	0
AMB3U20	12/16/2020	9865.75	0.00	0.00	0.00	9864.2490	0
AMB3Z20	03/17/2021	0.00	0.00	0.00	0.00	9875.7500	0

(DELAYED 10 MINUTES)

Symbol	Expiration	Last	Change	High	Low	Settlement	Volume
AMW1G20	02/06/2020	9835.00	0.00	0.00	0.00	9835.1250	0
AMW2G20	02/13/2020	9837.00	0.00	0.00	0.00	9835.6250	0
AMW3G20	02/20/2020	0.00	0.00	0.00	0.00	9835.7500	0
AMW4G20	02/27/2020	0.00	0.00	0.00	0.00	9835.7500	0
AMW1H20	03/05/2020	0.00	0.00	0.00	0.00	9835.5000	0
AMW2H20	03/12/2020	0.00	0.00	0.00	0.00	9835.5000	0
AMW3H20	03/19/2020	0.00	0.00	0.00	0.00	9835.5000	0
AMW4H20	03/26/2020	0.00	0.00	0.00	0.00	9838.8750	0
AMW1J20	04/02/2020	0.00	0.00	0.00	0.00	9838.8750	0
AMW2J20	04/09/2020	0.00	0.00	0.00	0.00	9838.8750	0
AMW3J20	04/16/2020	0.00	0.00	0.00	0.00	9838.8750	0
AMW4J20	04/23/2020	0.00	0.00	0.00	0.00	9838.8750	0
AMW5J20	04/30/2020	0.00	0.00	0.00	0.00	9838.8750	0
AMW1K20	05/07/2020	0.00	0.00	0.00	0.00	9842.3750	0
AMW2K20	05/14/2020	0.00	0.00	0.00	0.00	9842.3750	0
AMW3K20	05/21/2020	0.00	0.00	0.00	0.00	9842.3750	0
AMW4K20	05/28/2020	0.00	0.00	0.00	0.00	9842.3750	0

*Third Party Advertisement

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AMERIBOR Futures Trading Platform Alternatives

Quote Vendor Symbols

Cboe AMERIBOR 7-Day Futures

CFE Reporting Class - AMW1-W5

CFE Settlement Value - AMBWS

Vendor	Future - Aug '19 Example	Settlement Value	Benchmark Symbol	Overnight IR
Activ Financial	AMW3/19Q.CF	AMWS	AMBWX	AMERIBOR
Bloomberg	3OQ9 Comdty	3OA Comdty	AMBWX Index	AMERIBOR Index
CQG	AMBW3Q9	AMBWS	AMBWX	AMERIBOR
DTN IQ	@AM3Q19	AMBWS.XO	AMBWX.XO	AMERIBOR.XO
DTN ProphetX	@AM3Q19	AMBWS.X	AMBWX.X	AMERIBOR.X
Factset	AMW3-USA or AMW3-CBF	AMBWS	AMBWX	AMERIBOR
Interactive Data	F2:AMW3IQ19	I:AMBWS	I:AMBWX	I:AMERIBOR
LiveVol	AMW3Q19	^AMBWS	^AMBWX	^AMERIBOR
Morningstar	AMW39Q	AMBWS	AMBWX	AMERIBOR
Pico	/AMW3 19Q	\$AMBWS	\$AMBWX	\$AMERIBOR
REDI	ASW3Q9	.AMBWS	.AMBWX	.AMERIBOR
Refinitiv/Thomson Reuters - Eikon	ASW3Q9	.AMBWS	.AMBWS	.AMERIBOR
Refinitiv/Thomson Reuters - TDN (T1 & TDF)	AMW3/Q9	AMBWS-UT	AMBWX-UT	AMERIBOR-UT
Six-Group	AMW39Q or AMW3Q9	AMBWS	AMBWX	AMERIBOR
Tradestation	AMW3Q19	\$AMBWS.X	\$AMBWX.X	\$AMERIBOR.X
Trading Technologies	AMW3 Aug19	N/A	N/A	N/A
Vela	AMW3-Aug19 F	AMBWS	AMBWX	AMERIBOR

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