Adjustable Rate Loans using SOFR

Adjustable Rate Loans Using SOFR

Learn about using Strategy to service SOFR loans.

Strategy supports the use of the SOFR index for daily reviewable rates, Compounded in Advanced or Forward-Looking tenured rates, or calculating compound interest in arrears.

The session will cover the different Adjustable Methods used to calculate interest using spread adjustments and floors. The McCracken team will review changes that have been made to support compounding in arrears and provide tips to assist with the transitioning of existing loans from LIBOR to SOFR.

SOFR Interest Methods

THE 4 INTEREST METHODOLOGIES RECOMMENDED BY THE ARRC

SOFR Interest Methodologies

The 4 recommended methodologies to calculate interest

- Forward Looking SOFR Term Rate

- Daily Simple SOFR in Arrears

- SOFR Compounded in Advance

- SOFR Compounded in Arrears

Spread Adjustment

- An adder to an existing Libor loan converting to SOFR

Forward Looking SOFR Term Rate

- Forward Looking SOFR Term Rate
  - Does not exist today
  - First choice in methods by most market participants
  - Expected to work like LIBOR today – no development anticipated
  - Referencing a new index/rate
  - Would allow for the rate to be known at the start of the period
  - Looking to have by the end of 2021

  - Formula
    - Balance * Rate /Interest Basis Code* Number of Days

Daily Simple SOFR in Arrears

Daily Simple SOFR in Arrears

- Strategy supports daily reviewable simple interest loans – No development needed
- Referencing new rate/index
- Require the interest rate to be determined at the end of the accrual period

- Formula
  - Balance * Rate /Interest Basis Code * Number of Days

SOFR Compounded in Advance

SOFR Compounded in Advance

- Strategy Handles this today – No development needed
- A new SOFR rate/index is published by the Federal Reserve Bank of New York in tenors of 30, 90, and 180 days.
- Would allow for the rate to be known at the start of the period
- Fannie Mae and Freddie Mac has chosen this SOFR methodology

- Formula
  - Balance * Rate /Interest Basis Code * Number of Days

SOFR Compounded in Advance GSE

⬜ Fannie Mae announced on February 5th, their intention to begin taking Adjustable Rate Mortgage Loans with embedded caps indexed by SOFR (SOFR Capped ARM Loans) no later than the fourth quarter of this year. Fannie Mae will confirm that they will use an index based on a 30-day average of the SOFR, which is to be published by the Federal Reserve Bank of New York. Fannie Mae promises more details about the SOFR Capped ARM Loans are to follow. The rate adjustments for Fannie Mae's SOFR Capped ARM Loans are supported by Strategy today.1

⬜ Freddie Mac also made an announcement on Apr 27, 2020 · LIBOR Transition - Freddie Mac to Use 30-day Average for SOFR.e In February, we announced we're transitioning from using the London Interbank Offered Rate (LIBOR) as an index to calculate interest for floating rate debt to the Secured Overnight Financing Rate (SOFR).

SOFR Compounded in Arrears

SOFR Compounded in Arrears

- Interest rate to be determined at the end of the accrual period
- Various ways to calculate Compounding in Arrear
  - Compounding the Rate
  - Compounding the Balance
- ARRC is not dictating which method to use

- We have developed both interest methods – in the SOFR Patch

- This method will require contractual, operational and systems changes

SOFR Compounded in Arrears

One of the Proposed Interest in Arrears Methods

- SOFR Compounded in Arrears
    - Compounding the Rate
        - Original math that is published in the "A User's Guide to SOFR"
        - Assumes the Principal is constant

- Formula
    - Effective Rate
        - # of days * SOFR Rate/360
    - Compounded Rate
        - ((1 + the Effective Rate) * (1 + prior day Compounded Rate)-1) * Principal Balance

SOFR Compounded in Arrears

One of the Proposed Interest in Arrears Methods

- SOFR Compounded in Arrear
  - Compounding the Balance
    - Does not assume Principal will be constant

  - Formula
    - Effective Rate
      - # of days * SOFR Rate/360
    - Compounded Balance
      - Principal Balance * Effective Rate + (1 + Effective Rate) * Prior days Total Interest

Spread Adjustment

Spread Adjustment

- It is recommended that legacy loans that "fall back" from LIBOR to SOFR use a spread adjustment published/recommended by either the ARRC or ISDA for the appropriate tenor (e.g., 3M LIBOR to 3M SOFR).
- For loans that use the optional "opt-in" trigger, the spread adjustment would be reset at the beginning of each interest period at the corresponding day's indicative spread adjustment until the announcement of LIBOR cessation or that LIBOR is non-representative and the final spread adjustment is fixed.
- For legacy LIBOR loans falling back to a Daily Compounded SOFR, the daily SOFR rates would be compounded while the spread adjustment and the loan margin would be treated as simple interest added to the compounded rate.

Strategy and SOFR

TIPS TO ASSIST WITH THE TRANSITIONING OF EXISTING LOANS FROM LIBOR TO SOFR.

Changes

CHANGES NEEDED FOR ALL LOANS TRANSITIONING FROM LIBOR TO SOFR FOR ALL SOFR INTEREST METHODS

Preliminary Activities
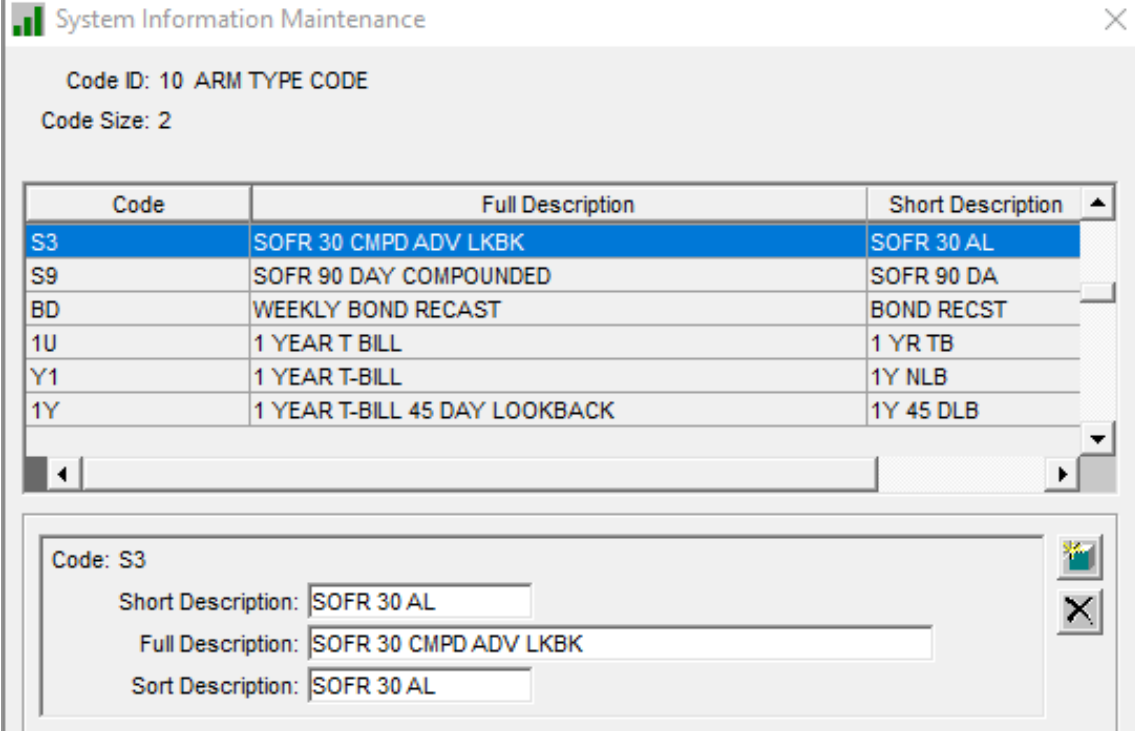
- Create New SOFR values Associated with Adjustable Loans
  - Used to delineate the types of SOFR products and the SOFR index values
    - ARM Type Code or Adjustable Loan Desc.
    - Adjustable Loan Indexes

- Review the Adjustable Methods to be used for SOFR
  - SOFR Interest Method
    - New Loan
    - Transitioning Loan with Spread Adjustment

SOFR ARM TYPE CODE

STRATEGY System Information Table ID 10

◦ Customer Defined

◦ 2 Position Identifier

Easily identify the different SOFR products in portfolio

SOFR Indices

STRATEGY System Information Table ID I2
◦ Customer Defined
◦ 2 Position Identifier

Adjustable Loan Indexes

Index	Index Description
BO	WEEKLY BOND RECAST
CF	COST OF FUNDS
CH	COLORADO HOUSING BOND
99	CONVERSION
FR	FREDDIE MAC REF BILL-30 DAY
L6	LIBOR - 2 DAYS PRIOR TO 15TH
LD	LIBOR-DAILY-30DAY
MD	MOODYS
PM	PRIME
DC	STRATEGY
L3	STRATEGY
MP	STRATEGY
32	STRATEGY
36	STRATEGY
SF	SOFR
S3	SOFR 30 DAY LOOKBACK
1T	1 YEAR T-BILL-WEEKLY
1U	1 YEAR T-BILL-DAILY
A1	1Y TB MONTHLY AVERAG

Adjustable Loan Index Rates

Index Description: S3 SOFR 30 DAY LOOKBACK

Base Index Low %: .1000000000000   Base Index High %: 15.0000000000000

Effective Date	Index Rate%
01/01/2020	3.2500000000000

SOFR Adjustable Method Codes

Interest Method	Adjustable Method Code	Description	Purpose
Simple SOFR in Arrears & SOFR Compounding in Advance & Forward Looking Term SOFR	A	Standard ARM Loan – Margin is added	New Loan
	P	Two Ops – Allows for 2 Margins & Operators	Transitioning Loans with Spread Adjustment
Rate I – Compounding the Rate	6	Standard Compound % 1 Simple Margin	New Loan
	T	Two Ops Compound % 1 Simple Margin	Transitioning Loans with Spread Adjustment
Rate II – Compounding the Balance	7	Standard Compound % 2 Simple Margin	New Loan
	3	Two Ops Compound % 21 Simple Margin	Transitioning Loans with Spread Adjustment

Adjustable Loan Record

General changes for all Interest methods

- Existing loans will need to be maintained to update the Adjustable Loan Desc. to the new SOFR value
- Update the SOFR Index value on the Adjustable Loan Info screen
- Lookback days – only need to change if the number of days are different from the existing LIBOR loan terms
  - Use Business Days for review
- Rate Change Date – only needs to change if the date is different than the existing Rate Change Date
  - STRATEGY will recalculate the Review Date based on the Lookback Days

Adjustable Loan Record

If a Spread Adjustment is needed

◦ Adjustable Methods = P, T, & 3 (Two Ops)

- ◦ Math Operator 1/Margin 1 % must be populated
- ◦ Math Operator 2/ Margin 2 % must be populated for the spread adjustment

Additional Changes

CHANGES NEEDED FOR SIMPLE SOFR IN ARREARS AND COMPOUNDING IN ARREARS

Additional Changes

- The following changes need to be made for existing loans transitioning from a LIBOR monthly P&I to daily interest loans which includes
  - Daily Simple SOFR in Arrears
  - Compounding In Arears

- Loan Administration Master File (If Pmt Type = P)

Field	Old Value	New Value
Payment Type	P	G
Neg Amortization %	Blank	Greater than 100%
Payment String	Any Value other than N	N
Business Calnedar		SIFMA Business Calendar

Adjustable Loan File

Field	New Value
Monthly or Daily field	D (Daily)
Rate Frequency	1

- Set up a new business calendar on the tool bar of the ARM file using the SIFMA calendar
- Make any necessary changes to the other fields based on the agreement

Summary of Changes

SUMMARY OF CHANGES MADE TO STRATEGY FOR THE COMPOUNDING IN ARREARS METHODS

New Loan Adjustable Methods

- New Adjustable Loan Methods have been added to the Adjustable Loan window in Strategy to allow loans to be setup to use Compounding in Arrears.
  - These new codes have been added to the System Information Table 'AF' (PINFO).
  - These codes will control the calculation of interest for the accrual and receivable.

Rate I – Compounding the Rate		
Adj Method Code	Description	Purpose
6	STANDARD COMPOUND %1 SIMP MARG	New Loans
T	TWO OPS COMPOUND % 1 SIMP MARG	Transitioning Loan with Spread Adj
Rate II – Compounding the Balance		
Adj Method Code	Description	Purpose
7	STANDARD COMPOUND %2 SIMP MARG	New Loans
3	TWO OPS COMPOUND % 2 SIMP MARG	Transitioning Loan with Spread Adj

New Interest Calculations

In place of the existing calculation that is done in Strategy to calculate the interest for the accrual and receivable, a new program is being called to do the calculation for loans using the Compounding in Arrears Formula Codes. This involves changes to programs that do the following:

- Create the Receivable when a new loan is passed and at the start of a new accrual period
- Process an ARM Review
- Process a Global Backdated Rate Change
- Daily Accrual
- Create receivable interest adjustments and accrual adjustments
- Process a Curtailment, Loan Advance, Curtailment or Loan Advance Reversal, Backdated Payment
- Standard StrategyCS Payoff Quote
- Bill in Full at Maturity
- Balloon
- Investor Service Fee, Guarantee Fee and Net Yield

New Calculations

Notes for the calculations below:

- The Margin calculations will only be done if a Margin was entered in the Interest Rate Margin % field or the Margin # 1% field. If both fields are blank or zero, the Simple Margin Accrued Interest will be zero
- The Spread Adj calculations will only be done if a Spread Adj is entered in the Margin # 2 % field. If no Spread Adj was entered, the Spread Adj Accrued Interest will be zero
- For calculations below, the Interest Basis Code in the Master file will be used to calculate the Rates:

Code	No of Days in Year	Days in Month	Recognize Leap Year
B65	360	Actual	N
B66	360	Actual	Y
A65	365	Actual	N
A66	365	Actual	Y

How Business Days is Determined

- For the calculations below, the # of Business Days is determined as follows:
  - Compound Interest: Interest is compounded on business days, but not weekends or holidays; the previous business day's rate is applied over weekends or holidays, weighted by the number of calendar days until the next business day.
  - Each week Monday through Thursday, is weighted as 1 day and the interest is compounded (4/1/2019-4/4/2019; 4/8/2019-4/11/2019)
  - Each Friday preceding a normal 2-day weekend is weighted as 3 to apply Friday's interest to Sat and Sun (4/5, 4/12, 4/26)
  - Each day preceding a three-day weekend is weighted as a 4 to apply that day's interest rate to the following non-business days (4/19 a Friday, is a holiday for this loan, Thursday is given the weight of 4 to apply that rate
  - The SOFR Rate is published by the Federal Reserve Bank of New York at 8 am ET every US business day using the SIFMA calendar

Rate I Calculations – Compounding the Rate

- **Compounding Rate I Simple Margin:**   Adjustable Method Code '6' STANDARD COMPOUND %1 SIMP MARG

- **Compounding Rate I Simple Margin with Spread:**   Adjustable Method 'T' TWO OPS COMPOUND % 1 SIMP MARG

Result	Calculations
Effective Rate	# of Business Days * SOFR Rate /Interest Basis Code
Compounded Rate	((1 + (Effective Rate/100)) * (1 + (Prior day Compounded Rate/100)) – 1) * 100
Compounded Rate Accrued Interest	(Unpaid Principal Balance * Compounded Rate) / 100
Effective Margin Rate	# of Business Days * Margin Rate /Interest Basis Code
Simple Margin Accrued Interest	((Effective Margin Rate * Unpaid Principal Balance) / 100)/# of Business Days
Effective Spread Adjustment Rate	# of Business Days * Spread Adjustment Rate /Interest Basis Code
Spread Adjustment Accrued Interest	((Effective Spread Adjustment Rate * Unpaid Principal Balance) / 100)/# of Business Days
Total Accrued Interest on Compounding Rate, Margin and Spread Adjustment	(Simple Margin Accrued Interest * #days) + Compounded Rate Accrued Interest + (Spread Adjustment Accrued Interest * # of Business Days)
Daily Compounded Rate Accrued Interest	(Compounded Rate Accrued Interest - Compounded Rate Accrued Interest of Prior Day)/# of Business Days
Total Daily Accrued Interest	Simple Margin Accrued Interest + Spread Adjustment Accrued Interest + Daily Compounded Rate Accrued Interest

Rate II Calculations – Compounding the Balance

- **Compounding Rate II Simple Margin:**   Adjustable Method '7' STANDARD COMPOUND %2 SIMP MARG
- **Compounding Rate II Simple Margin with Spread:**   Adjustable Method '3' TWO OPS COMPOUND %2 SIMP MARG

Result	Calculations
Effective Rate	# of Business Days * SOFR Rate /Interest Basis Code
Compounded Rate Accrued Interest	(Unpaid Principal Balance *(Effective Rate/100)) + ((1+ (Effective Rate/100)) * Accrued Interest of Prior Day)
Effective Margin Rate	(# of Business Days * Margin Rate) /Interest Basis Code
Simple Margin Accrued Interest	((Effective Margin Rate * Unpaid Principal Balance)/100) # of Business Days
Effective Spread Adjustment Rate	(# of Business Days * Spread Adjustment Rate)/Interest Basis Code
Spread Adjustment Accrued Interest	((Effective Spread Adjustment Rate * Unpaid Principal Balance)/100)/# of Business Days
Total Accrued Interest on Compounding Rate, Margin and Spread Adjustment	Compounded Rate Accrued Interest + (Effective Margin Accrued Interest * # of Business Days) + (Effective Spread Adjustment Accrued Interest * # of Business Days)
Daily Compounded Rate Accrued Interest	(Compounded Rate Accrued Interest – Compounded Rate Accrued Interest of Prior Day)/# of Business Days
Total Daily Accrued Interest	Simple Margin Accrued Interest + Spread Adjustment Accrued Interest + Daily Compounded Rate Accrued Interest

New File and Portal Widget

There is a new file named PCMPNDSOFR

- This file will contain a record for each day's accrual for any Compounding in Arrears loan

- The file contains calculated fields and factors used in the interest calculation

- The Rate fields (ie: Effective Rate, Compounded Rate, Effective Margin Rate, Effective Spread Adjustment Rate are formatted/stored in the file as percentages.

- Information from this file will be displayed in a new widget in the Portal.

- The option to enter the 'Business Calendar' code to be used for Compounding in Arrears is accessed via this new widget. ARRC recommends the SIFMA calendar.

Portal Widget

Compounding SOFR Interest

Compounding SOFR Widget

The first page of the application is the loan search page; this is the same loan search used in many other web applications. When a loan is selected the user will be redirected to the Compounding SOFR Interest page.

180080101	Search	**Welcome, Karen Peterpaul**
		Compounding SOFR Interest

Search

Loan Search Results

Loan Number	Associated Name	Monthly Payment	Current Principal Balance ▲	Loan Name	Active Status	Name ID	MCA #	Credit Facility #
180080101	Emmerich Inc	0.00	10,000,000.00	SOFR Rate 1 plus margin Independent Accr	Y	624	0	0

| | RWD | SOFRKP | 19E | SD: 05/02/2019 | 09/25/2020 | |

Compounding SOFR Interest

- Click on the loan you want to view
- Able to do a date range for the daily interest
- Update the Business Calendar to be used

Cancel	Select SOFR Calendar

Filter Results

Loan Number   180080101
Review Date From 04/28/2019   Review Date To 05/01/2019

Review Date ▲	Number of Days	Adjustable Method	Index Description
04/28/2019	3	STANDARD COMPOUND %1 SIMP MARG (6)	SH
04/29/2019	1	STANDARD COMPOUND %1 SIMP MARG (6)	SH
04/30/2019	1	STANDARD COMPOUND %1 SIMP MARG (6)	SH
05/01/2019	1	STANDARD COMPOUND %1 SIMP MARG (6)	SH

Compounding SOFR Interest

Clicking on a row in the results grid will populate the detail section with all the fields for that record.

04/29/2019	1	STANDARD COMPOUND %1 SIMP MARG (6)	SH
04/30/2019	1	STANDARD COMPOUND %1 SIMP MARG (6)	SH
05/01/2019	1	STANDARD COMPOUND %1 SIMP MARG (6)	SH

Compounding Interest Detail

Loan Number	180080101	Review Date	04/30/2019		
Number of Days	1	Index Description	SH	Adjustable Method	STANDARD COMPOUND %1 SIMP MARG (6)
Interest Basis Code	B66	Index	2.76	Margin	0.5 Spread Adjustment
Effective Rate	0.00766666666667	Effective Margin	0.00138888888889	Effective Spread Adjustment	0
Compounded Rate	0.20636514767942	Scheduled Balance	10,000,000.00		
Index Accrual Amount	20636.514767942284	Margin Accrual Amount	138.88888888888889	Spread Adjustment Accrual Amount	0
Daily Compounded Accrued Interest	768.19	Total Daily Compounded Accrued Interest	907.08		

Restrictions for Compounding in Arrears

- The following restrictions will exist for ARM loans that are to be setup to use Compounding in Arrears. Payment Type must
    - Negative Amortization Allowed (G)
    - Interest Only (I);
    - Fixed Principal plus Interest (Q)
  - Cannot use Due Date Bill (Billing Cycle cannot be 'D')
  - Cannot be Interest Basis Code A60 (30/360)
  - Must be a Daily Reviewable Adjustable Rate Loan, (Monthly Daily Review = 'D') with a Rate Change Frequency of 1.
  - Cannot use Rate Review Increase/Decrease Cap, Min Rate Adj Allowed
  - New Loan Setup: When using Compounding in Arrears, an Index must be entered in the ARM record in the New Index % field

Ongoing research/Development

The following features in Strategy are currently being reviewed to determine if changes are needed to accommodate Compounding in Arrears:

- Interest Rate Floor/Ceiling

- Deferred Revenue and Expense

- Addition of edits to the Edit Report for Compounding SOFR in Arrears. The report is executed from Loan Entry or the StrategyCS Reports window

- The addition of fields for Pending Adjustable Loans and a Mapping Tool Template for the Pending Adjustable Loan file (PARMX)

Tools

Mapping Tool

We are creating a Mapping Tool template for PARMX

We are expanding PARMX (ARM Pending File) to include most of the ARM fields to aid in transitioning loans from LIBOR to SOFR

Testing

We have put together test templates to assist in the testing of the Compounding in Arrears Interest methods:

Rate I – Compounding the Rate

Rate II – Compounding the Balance

Compounding the rate Template

draft

SOFR Compounded in Arrears – Rate I

Compounding the Rate Simple Margin
Adjustable Method to be used: System Info table 'AF' (Formula Code), New Code '6' STANDARD COMPOUND %1 SIMP MARG

Test Case Description:Compound Rate 1 with Simple Margin Interest Only B66

*for compounding # of days will need to be adjusted for weekends & holidays-remove sat/sun change Friday to 3

This is the expected result at the end of the accrual period of 4/1/19 thru 4/30/19 for the 5/1/19 receivable with rate changes. Adjusted for Holidays & weekends

comments (rate changes, changes to principal balance, etc)	Interest Period Dates	# of days (n_i)	Lookback Days	Date of Applicable Rate	Balance	Index	Basis	Effective Index Rate	Compounded Effective Index Rate	Margin or (Margin #1 %)	Simple Effective Margin	Spread Adj (Margin #2 %)	Effective Spread Adjustment	Simple Margin Accrued Interest	Spread Adjustment Accrued Interest	Compounded Rate I Accrued Interest	Daily Accrued Interest on Compounded Rate	Daily Accrued Interest plus Margin & Spread (Per diem)	Cumulative Margin+Spread	Total Cumulative Accrual
	Monday, April 1, 2019	1	2	Saturday, March 30, 2019	10,000,000.00	2.46000%	360	0.0068333%	0.0068333%	0.5000000%	0.0013889%		0.0000000%	138.88888889		-	683.3333333	683.3333333	822.22	138.89	822.22
	Tuesday, April 2, 2019	1	2	Sunday, March 31, 2019	10,000,000.00	2.46000%	360	0.0068333%	0.0136671%	0.5000000%	0.0013889%		0.0000000%	138.88888889		-	1,366.7133611	683.3800278	822.27	277.78	1,644.49
rate change	Wednesday, April 3, 2019	1	2	Monday, April 1, 2019	10,000,000.00	2.47000%	360	0.0068611%	0.0205292%	0.5000000%	0.0013889%		0.0000000%	138.88888889		-	2,052.9182439	686.2048828	825.09	416.67	2,469.58
rate change	Thursday, April 4, 2019	1	2	Tuesday, April 2, 2019	10,000,000.00	2.46000%	360	0.0068333%	0.0273639%	0.5000000%	0.0013889%		0.0000000%	138.88888889		-	2,736.3918600	683.4736161	822.36	555.56	3,291.95
	Friday, April 5, 2019	3	2	Wednesday, April 3, 2019	10,000,000.00	2.46000%	360	0.0205000%	0.0478695%	0.5000000%	0.0041667%		0.0000000%	416.66666667		-	4,786.9528204	2,050.5609603	2,467.23	972.22	5,759.18
	Monday, April 8, 2019	1	2	Saturday, April 6, 2019	10,000,000.00	2.46000%	360	0.0068333%	0.0547061%	0.5000000%	0.0013889%		0.0000000%	138.88888889		-	5,470.6132621	683.6604418	822.55	1,111.11	6,581.72
rate change	Tuesday, April 9, 2019	1	2	Sunday, April 7, 2019	10,000,000.00	2.45000%	360	0.0068056%	0.0615154%	0.5000000%	0.0013889%		0.0000000%	138.88888889		-	6,151.5441233	680.9278612	819.82	1,250.00	7,401.54
	Wednesday, April 10, 2019	1	2	Monday, April 8, 2019	10,000,000.00	2.45000%	360	0.0068056%	0.0683252%	0.5000000%	0.0013889%		0.0000000%	138.88888889		-	6,832.5153254	680.9742021	819.86	1,388.89	8,221.40
rate change	Thursday, April 11, 2019	1	2	Tuesday, April 9, 2019	10,000,000.00	2.44000%	360	0.0067778%	0.0751076%	0.5000000%	0.0013889%		0.0000000%	138.88888889		-	7,510.7561959	678.2408705	817.13	1,527.78	9,038.53
	Friday, April 12, 2019	3	2	Wednesday, April 10, 2019	10,000,000.00	2.44000%	360	0.0203333%	0.0954562%	0.5000000%	0.0041667%		0.0000000%	416.66666667		-	9,545.6167163	2,034.8605204	2,451.53	1,944.44	11,490.06
rate change	Monday, April 15, 2019	1	2	Saturday, April 13, 2019	10,000,000.00	2.47000%	360	0.0068611%	0.1023238%	0.5000000%	0.0013889%		0.0000000%	138.88888889		-	10,232.3827628	686.7660465	825.65	2,083.33	12,315.72
	Tuesday, April 16, 2019	1	2	Sunday, April 14, 2019	10,000,000.00	2.47000%	360	0.0068611%	0.1091920%	0.5000000%	0.0013889%		0.0000000%	138.88888889		-	10,919.1959291	686.8131663	825.70	2,222.22	13,141.42
rate change	Wednesday, April 17, 2019	1	2	Monday, April 15, 2019	10,000,000.00	2.50000%	360	0.0069444%	0.1161440%	0.5000000%	0.0013889%		0.0000000%	138.88888889		-	11,614.3986510	695.2027219	834.09	2,361.11	13,975.51
add 4/19 to holiday calendar	Thursday, April 18, 2019	4	2	Tuesday, April 16, 2019	10,000,000.00	2.50000%	360	0.0277778%	0.1439540%	0.5000000%	0.0055556%		0.0000000%	555.55555556		-	14,395.4026506	2,781.0039996	3,336.56	2,916.67	17,312.07
rate change	Monday, April 22, 2019	1	2	Saturday, April 20, 2019	10,000,000.00	2.46000%	360	0.0068333%	0.1507972%	0.5000000%	0.0013889%		0.0000000%	138.88888889		-	15,079.7196698	684.3170192	823.21	3,055.56	18,135.28
	Tuesday, April 23, 2019	1	2	Sunday, April 21, 2019	10,000,000.00	2.46000%	360	0.0068333%	0.1576408%	0.5000000%	0.0013889%		0.0000000%	138.88888889		-	15,764.0834507	684.3637808	823.25	3,194.44	18,958.53
rate change	Wednesday, April 24, 2019	1	2	Monday, April 22, 2019	10,000,000.00	2.44000%	360	0.0067778%	0.1644293%	0.5000000%	0.0013889%		0.0000000%	138.88888889		-	16,442.9296830	678.8462323	817.74	3,333.33	19,776.26
rate change	Thursday, April 25, 2019	1	2	Tuesday, April 23, 2019	10,000,000.00	2.45000%	360	0.0068056%	0.1712460%	0.5000000%	0.0013889%		0.0000000%	138.88888889		-	17,124.6042712	681.6745883	820.56	3,472.22	20,596.83
rate change	Friday, April 26, 2019	3	2	Wednesday, April 24, 2019	10,000,000.00	2.46000%	360	0.0205000%	0.1917811%	0.5000000%	0.0041667%		0.0000000%	416.66666667		-	19,178.1148151	2,053.5105439	2,470.18	3,888.89	23,067.00
rate change	Monday, April 29, 2019	1	2	Saturday, April 27, 2019	10,000,000.00	2.48000%	360	0.0068889%	0.1986832%	0.5000000%	0.0013889%		0.0000000%	138.88888889		-	19,868.3248630	690.2100479	829.10	4,027.78	23,896.10
rate change	Tuesday, April 30, 2019	1	2	Sunday, April 28, 2019	10,000,000.00	2.76000%	360	0.0076667%	0.2063651%	0.5000000%	0.0013889%		0.0000000%	138.88888889		-	20,636.5147679	768.1899049	907.08	4,166.67	24,803.18
		30																		

Column notes (from header):
- # of days (n_i): *
- Date of Applicable Rate: Calculated: Current Date - Lookback days
- Effective Index Rate: Calculated: # of days* Index/basis
- Compounded Effective Index Rate: Calculated: (1 + Effective Rate) * (1 + Prior day Compounded Rate) - 1
- Simple Effective Margin: Calculated: # of days* Margin/basis
- Effective Spread Adjustment: Calculated: #Days *Spread/basis
- Simple Margin Accrued Interest: Calculated: Balance* Simple Effective Margin
- Spread Adjustment Accrued Interest: Calculated: Balance* effective spread adjustment
- Compounded Rate I Accrued Interest: Calculated: Balance* Compounded Effective Index Rate
- Daily Accrued Interest on Compounded Rate: Calculated: Accrued Interest (col O) today minus yesterday
- Daily Accrued Interest plus Margin & Spread (Per diem): Calculated: Daily Accrued Interest On Compounded Rate + Margin Accrued interest + Spread
- Cumulative Margin+Spread: Calculated:(today's margin+spread)+(Prior margin+spread)
- Total Cumulative Accrual: Calculated: Compounded Accrued Interest+ Cumulative Margin & Spread

Compounding the Balance Template

draft

SOFR Compounded in Arrears – Rate II

Compounding Rate II Simple Margin

Formula Code to be used: System Info table 'AF' (Formula Code), New Code '7' STANDARD COMPOUND %2 SIMP MARG

Example Compound Rate 2 with Simple Margin Interest Only B66

*for compounding # of days will need to be adjusted for weekends & holidays-remove sat/sun change Friday to 3

This is the expected result at the end of the accrual period of 4/1/19 thru 4/30/19 for the 5/1/19 receivable with rate changes. Adjusted for Holidays & weekends

comments	Interest Period Dates	Weighting (n,)	Lookback Days	Date of Applicable Rate	Balance	Index	Basis	Effective Index Rate	Margin or(Math # 1 %)	Simple Effective Margin	Spread Adj (Math # 2 %)	Effective Spread Adjustment	Simple Margin Accrued Interest	Spread Adjustment Accrued Interest	Compounded Rate II Accrued Interest	Daily Accrued Interest	Daily Accrued Interest plus Margin & Spread (Per diem)	Cumulative Margin & Spread	Total cumulative Accrual
	Monday, April 1, 2019	1	0	Monday, April 1, 2019	10,000,000.00	2.46000%	360	0.0068333%	0.5000000%	0.0013889%		0.0000000%	138.88888889	-	683.3333333	683.3333333	822.2222222	138.8888889	822.22
	Tuesday, April 2, 2019	1	0	Tuesday, April 2, 2019	10,000,000.00	2.46000%	360	0.0068333%	0.5000000%	0.0013889%		0.0000000%	138.88888889	-	1,366.7133611	683.3800278	822.2689167	277.7777778	1,644.49
rate change	Wednesday, April 3, 2019	1	0	Wednesday, April 3, 2019	10,000,000.00	2.47000%	360	0.0068611%	0.5000000%	0.0013889%		0.0000000%	138.88888889	-	2,052.9182439	686.2048828	825.0937717	416.6666667	2,469.58
rate change	Thursday, April 4, 2019	1	0	Thursday, April 4, 2019	10,000,000.00	2.46000%	360	0.0068333%	0.5000000%	0.0013889%		0.0000000%	138.88888889	-	2,736.3918600	683.4736161	822.3625050	555.5555556	3,291.95
	Friday, April 5, 2019	3	0	Friday, April 5, 2019	10,000,000.00	2.46000%	360	0.0205000%	0.5000000%	0.0041667%		0.0000000%	416.66666667	-	4,786.9528204	2,050.5609603	2,467.2276270	972.2222222	5,759.18
	Monday, April 8, 2019	1	0	Monday, April 8, 2019	10,000,000.00	2.46000%	360	0.0068333%	0.5000000%	0.0013889%		0.0000000%	138.88888889	-	5,470.6132621	683.6604418	822.5493307	1,111.1111111	6,581.72
rate change	Tuesday, April 9, 2019	1	0	Tuesday, April 9, 2019	10,000,000.00	2.45000%	360	0.0068056%	0.5000000%	0.0013889%		0.0000000%	138.88888889	-	6,151.5411233	680.9278612	819.8167501	1,250.0000000	7,401.54
	Wednesday, April 10, 2019	1	0	Wednesday, April 10, 2019	10,000,000.00	2.45000%	360	0.0068056%	0.5000000%	0.0013889%		0.0000000%	138.88888889	-	6,832.5153254	680.9742021	819.8630910	1,388.8888889	8,221.40
rate change	Thursday, April 11, 2019	1	0	Thursday, April 11, 2019	10,000,000.00	2.44000%	360	0.0067778%	0.5000000%	0.0013889%		0.0000000%	138.88888889	-	7,510.7561959	678.2408705	817.1297594	1,527.7777778	9,038.53
	Friday, April 12, 2019	3	0	Friday, April 12, 2019	10,000,000.00	2.44000%	360	0.0203333%	0.5000000%	0.0041667%		0.0000000%	416.66666667	-	9,545.6167163	2,034.8605204	2,451.5271871	1,944.4444444	11,490.06
rate change	Monday, April 15, 2019	1	0	Monday, April 15, 2019	10,000,000.00	2.47000%	360	0.0068611%	0.5000000%	0.0013889%		0.0000000%	138.88888889	-	10,232.3827628	686.7660465	825.6549354	2,083.3333333	12,315.72
	Tuesday, April 16, 2019	1	0	Tuesday, April 16, 2019	10,000,000.00	2.47000%	360	0.0068611%	0.5000000%	0.0013889%		0.0000000%	138.88888889	-	10,919.1959291	686.8131663	825.7020552	2,222.2222222	13,141.42
rate change	Wednesday, April 17, 2019	1	0	Wednesday, April 17, 2019	10,000,000.00	2.50000%	360	0.0069444%	0.5000000%	0.0013889%		0.0000000%	138.88888889	-	11,614.3986510	695.2027219	834.0916108	2,361.1111111	13,975.51
add 4/19 to holiday calendar	Thursday, April 18, 2019	4	0	Thursday, April 18, 2019	10,000,000.00	2.50000%	360	0.0277778%	0.5000000%	0.0055556%		0.0000000%	555.55555556	-	14,395.4026506	2,781.0039996	3,336.5595552	2,916.6666667	17,312.07
rate change	Monday, April 22, 2019	1	0	Monday, April 22, 2019	10,000,000.00	2.46000%	360	0.0068333%	0.5000000%	0.0013889%		0.0000000%	138.88888889	-	15,079.7196698	684.3170192	823.2059081	3,055.5555556	18,135.28
	Tuesday, April 23, 2019	1	0	Tuesday, April 23, 2019	10,000,000.00	2.46000%	360	0.0068333%	0.5000000%	0.0013889%		0.0000000%	138.88888889	-	15,764.0834507	684.3637808	823.2526697	3,194.4444444	18,958.53
rate change	Wednesday, April 24, 2019	1	0	Wednesday, April 24, 2019	10,000,000.00	2.44000%	360	0.0067778%	0.5000000%	0.0013889%		0.0000000%	138.88888889	-	16,442.9296830	678.8462323	817.7351212	3,333.3333333	19,776.26
rate change	Thursday, April 25, 2019	1	0	Thursday, April 25, 2019	10,000,000.00	2.45000%	360	0.0068056%	0.5000000%	0.0013889%		0.0000000%	138.88888889	-	17,124.6042713	681.6745883	820.5634772	3,472.2222222	20,596.83
rate change	Friday, April 26, 2019	3	0	Friday, April 26, 2019	10,000,000.00	2.46000%	360	0.0205000%	0.5000000%	0.0041667%		0.0000000%	416.66666667	-	19,178.1148151	2,053.5105439	2,470.1772105	3,888.8888889	23,067.00
rate change	Monday, April 29, 2019	1	0	Monday, April 29, 2019	10,000,000.00	2.48000%	360	0.0068889%	0.5000000%	0.0013889%		0.0000000%	138.88888889	-	19,868.3248630	690.2100479	829.0989368	4,027.7777778	23,896.10
rate change	Tuesday, April 30, 2019	1	0	Tuesday, April 30, 2019	10,000,000.00	2.76000%	360	0.0076667%	0.5000000%	0.0013889%		0.0000000%	138.88888889	-	20,636.5147679	768.1899049	907.0787938	4,166.6666667	24,803.18

The Patch

The SOFR Patch is out at a client in test.

States that is it looking good!

Questions ?