

Tools for Interest Rate Risk Management: Structured Advance Solutions Federal Home Loan Bank of Boston Webinar

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February 13, 2013

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Agenda

- Solutions by Interest Rate Outlook
- Structured Product Overview
- Structured Products:
 - ◆ Flipper advance
 - ◆ Classic Plus Cap advance
 - ◆ Symmetrical Prepayment advance
 - ◆ Expander advance
- Summary of Key Features
- Frequently Asked Questions

Solutions by Interest Rate Outlook

	Interest Rate Outlook			
	Falling Rates	Rates Unchanged	Rising Rates	Yield Curve Shape
Fixed Rate	<ul style="list-style-type: none"> S/T Classic S/T Amortizer Member Option 	<ul style="list-style-type: none"> HLB Option 	<ul style="list-style-type: none"> L/T Classic L/T Amortizer Symmetrical Prepay HLB Option Plus Cap Knockout Expander Classic Plus Cap 	
Floating Rate	<ul style="list-style-type: none"> LIBOR Floater DN Auction Floater Slider 	<ul style="list-style-type: none"> Flipper 	<ul style="list-style-type: none"> Capped Floater Collar Corridor 	<ul style="list-style-type: none"> Curve Flattener Curve Steepener

Structured Product Overview

- Members choose structure of advance
 - ◆ Final maturity, lockout period, notional amount, strike rate on caps or spread to LIBOR
- Available with maturities out to 20 years
- Some products contain an option where FHLB Boston holds the opportunity to cancel the advance prior to maturity.
- Conversely, some products provide the member with the option to increase the outstanding amount of advance.
- More details on each advance product can be found in the Bank's [Products and Solutions Guide](#)

Flipper Advance

Problem :

Asset yields declining faster than funding costs

- Starts as a sub-LIBOR floating rate advance during lockout period
 - ◆ Member chooses negative spread to 3mL
- After lockout period, FHLB Boston has option to cancel advance
- If the advance is not cancelled then...
 - ◆ “Flips” to a fixed-rate advance until final maturity
 - ◆ Rate at which the advance would “flip” is predetermined at disbursement

How it Works - Flipper Advance 5Y/2Y “Euro”

- Initial rate 1 bp, 3mL less 29 bp, 1.81% if “flipped”
- Advance reprices quarterly at 3mL less 29 bp during the lockout period
- FHLB Boston has a one time option to cancel the advance, two years from now
- If FHLB Boston *does not cancel*, the advance “flips” to a 3-year, fixed-rate advance at 1.81%
- If FHLB Boston *cancels* the advance, you can refinance into a new advance at market rates

Note: 5-year Classic advance rate 1.36%

3-year Classic advance rate 0.81%

Flipper Advance

- Flipper advance pricing is determined by:
 - ◆ Maturity
 - ◆ Lockout period
 - ◆ Negative spread to 3mL during the lockout period
- Fixed rate is calculated based on structure and negative spread to 3mL during lockout period
- Generally, the greater the negative spread to 3mL during the lockout period – the higher the rate the advance could “flip” to

Flipper Advance – Potential Rate Reset Below Zero

Structure	Spread to 3mL (bp)	Initial Rate	Current Rate	Rate if Flipped
4Y/1Y	-46	0.00585	-0.15950	1.43
4Y/1Y	-46	0.00585	-0.15850	1.38
5Y/2Y	-46	0.00685	-0.15000	1.95
5Y/2Y	-46	0.00510	-0.14600	1.72
5Y/2Y	-45	0.00510	-0.14800	1.69
5Y/2.5Y	-46	0.00685	-0.15000	2.51
6Y/2Y	-45	0.00510	-0.14700	2.72
5Y/2Y	-35	0.00250	-0.04500	1.63
7Y/2.5Y	-36	0.00025	-0.05200	2.25

Flipper Advance

Opportunities	Risks
<p>Sub-LIBOR funding opportunity for duration of lockout period, with an initial rate set as low as 1 bp</p>	<p>If rates rise, the advance will likely be called by the Bank at the lockout date</p>
<p>Potential to reset to a NEGATIVE rate</p>	<p>If rates stay flat or decrease, the advance will likely “flip” to a fixed-rate advance for the remaining term at a predetermined rate</p>
	<p>A disconnect in the global markets could cause changes in LIBOR without corresponding increase in U.S. rates</p>
	<p>Basis risk could be more significant when markets are in crisis</p>

Classic Plus Cap Advance

Problem:

Exposed to rising rates, but want to continue to take advantage of low short-term interest rates as part of a barbell funding strategy

- Classic advance with an embedded LIBOR-indexed, interest-rate cap
- Members choose term, strike level of cap, index, notional amount of cap
 - ◆ Cap available on 1- or 3-month LIBOR
 - ◆ Cap is in effect for the full term of the advance
 - ◆ Cost of cap included in the advance rate
 - ◆ Notional amount of cap available at 1x, 2x, or 3x amount of advance
 - ◆ Cost of cap based on term, strike rate, notional amount, and market expectations towards forward rates

Classic Plus Cap Advance

- Maximum advance rate is established at disbursement
- Advance rate is fixed at the initial advance rate, but
 - ◆ If LIBOR exceeds the cap strike rate then the initial advance rate will be reduced until next reset date
 - ◆ If LIBOR is *below* the cap strike rate then the advance rate reverts to the initial advance rate
- LIBOR is compared to cap strike rate on rate adjustment dates, i.e. monthly or quarterly
- Advance rate could reprice as low as ZERO in a rising rate environment, depending on CAP structure

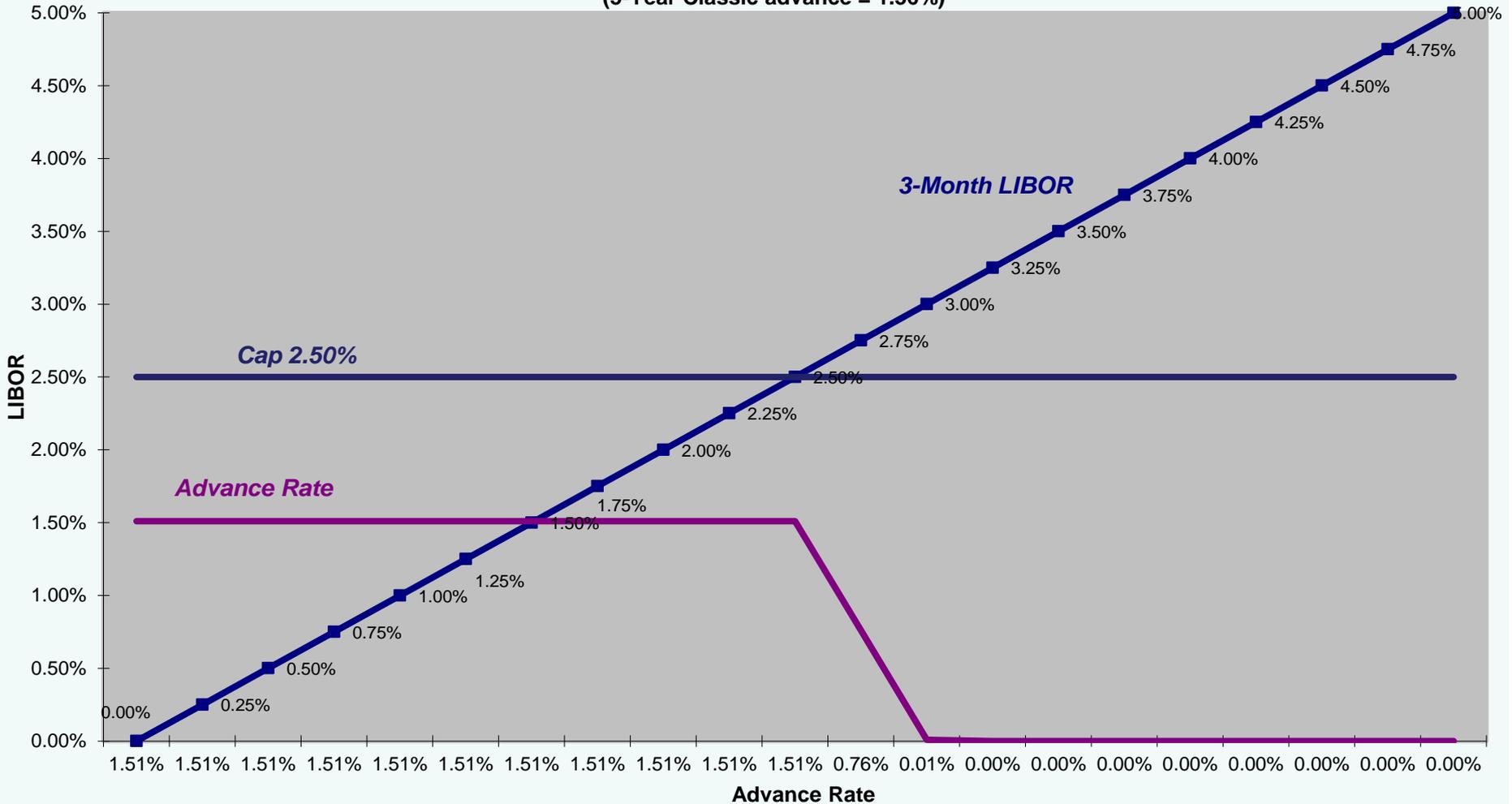
How it Works – Classic Plus Cap Advance

5 Yr. Term; Cap Strike Rate 2.50%; 3x Notional, Initial Advance Rate 1.51%

- If LIBOR exceeds the cap strike rate then the initial advance rate will be reduced until next reset date
- Adjusted advance rate = initial advance rate – cap factor x (LIBOR – cap strike rate)
 - Adjusted advance rate = $1.51\% - 3 \times (2.75\% - 2.50\%)$
 - Adjusted advance rate = $1.51\% - 3 \times (0.25\%)$
 - Adjusted advance rate = $1.51\% - 0.75\%$
 - Adjusted advance rate = 0.76%

Note: 5-year Classic advance rate 1.36%

Classic Advance Plus Cap 5-Years
Cap Strike @ 2.50% (3x Notional); Initial Advance Rate = 1.51%
(5-Year Classic advance = 1.36%)



Embedded in the advance is a purchased, or "long" interest-rate cap.

Classic Plus Cap Advance

Opportunities	Risks
<p>For a slight premium over a Classic advance of like maturity, the embedded cap has the potential to reduce the advance rate on reset dates, and could reset as low as ZERO, if rates rise above the strike level</p>	<p>If LIBOR never exceeds the strike rate no value will be derived from the cap</p>
<p>Depending on the embedded cap strike rate and the notional amount of the cap, the advance may provide accelerated relief from sharp increases in short-term interest rates</p>	<p>Basis risk could be more significant when markets are in crisis</p>
<p>Long-term protection against rising rates where the initial rate is the maximum advance rate</p>	<p>If rates decline, locked in fixed-rate funding</p>
<p>Cap prices are very attractive considering the general market sentiment towards rising rates</p>	
<p>A disconnect in the global markets could cause LIBOR to increase without corresponding increase in U.S. rates, which could benefit the member with a reduction in the advance rate</p>	

Symmetrical Prepayment Advance

Problem:

For strategic flexibility, need the ability to monetize a gain from long-term funding if rates have risen during the term of the advance

- Fixed-term, fixed-rate, non-amortizing advance
- Special prepayment feature that allows the member to prepay the advance at its approximate market value
 - ◆ Potential to monetize a gain in a rising rate scenario
 - ◆ Lower prepayment fee than corresponding Classic advance in all rate scenarios

Symmetrical Prepayment Advance Estimated Prepayment Table

7 Year FHLB Symmetrical Prepayment Advance

Start Date - 02/05/2013

Maturity Date - 02/05/2020

Rate 1.98%

Table 1

<i>Estimated Prepayment Fees</i>								
<i>(Subject to 10% termination value limitation, including prepayment fee differential)</i>								
Remaining Term	Prepayment Date	-150 bp	-100 bp	-50 bp	Base	+100 bp	+200 bp	+300 bp
7	2/5/2013	-10.62%	-7.00%	-3.50%	-0.13%	6.25%	9.88%	9.88%
6	2/5/2014	-9.36%	-7.47%	-4.43%	-1.48%	4.14%	9.41%	9.90%
5	2/5/2015	-7.80%	-7.58%	-5.02%	-2.52%	2.28%	6.83%	9.91%
4	2/5/2016	-6.24%	-6.24%	-5.05%	-3.03%	0.88%	4.62%	8.20%
3	2/5/2017	-4.68%	-4.68%	-4.43%	-2.91%	0.06%	2.93%	5.70%
2	2/5/2018	-3.12%	-3.12%	-3.12%	-2.23%	-0.24%	1.71%	3.60%
1	2/5/2019	-1.56%	-1.56%	-1.56%	-1.22%	-0.22%	0.77%	1.74%

Note: Estimated values based on parallel shifts of the swap curve. Negative amounts are due to FHLB, positive amounts are due to member. Expressed as a percent of principal amount prepaid.

7 Year FHLB Classic Advance

Start Date - 02/05/2013

Maturity Date - 02/05/2020

Rate 1.96%

Table 2

<i>Estimated Prepayment Fees</i>								
Remaining Term	Prepayment Date	-150 bp	-100 bp	-50 bp	Base	+100 bp	+200 bp	+300 bp
7	2/5/2013	-13.42%	-9.81%	-6.33%	-2.98%	0.00%	0.00%	0.00%
6	2/5/2014	-13.11%	-9.99%	-6.96%	-4.03%	0.00%	0.00%	0.00%
5	2/5/2015	-12.42%	-9.80%	-7.25%	-4.72%	0.00%	0.00%	0.00%
4	2/5/2016	-11.11%	-9.02%	-6.93%	-4.92%	-1.04%	0.00%	0.00%
3	2/5/2017	-9.10%	-7.54%	-5.97%	-4.46%	-1.52%	0.00%	0.00%
2	2/5/2018	-6.35%	-5.31%	-4.29%	-3.29%	-1.30%	0.00%	0.00%
1	2/5/2019	-3.32%	-2.82%	-2.31%	-1.81%	-0.82%	0.00%	0.00%

Note: Negative amounts are due to FHLB. Expressed as a percent of principal amount prepaid.

Symmetrical Prepayment Advance

Opportunities	Risks
<p>If rates rise, the member has the opportunity to monetize the gain in market value if the advance is prepaid</p>	<p>If rates stay flat or decrease, the member may never have the opportunity to prepay the advance at a gain</p>
<p>The gain may offset some or all of a loss on an investment deleveraging strategy</p>	
<p>The prepay fee would be less than a corresponding Classic advance in any rate environment, therefore if rates decrease further, the potential reduction in rate through Advance Restructure would be more beneficial to the member</p>	<p>Option expires worthless</p>

Expander Advance

Problem:

Want to reduce exposure to rising interest rates but want the ability to take additional funding, in the future, if you need it

- Fixed-term, fixed-rate, non-amortizing advance
- One-time opportunity to increase principal amount of advance by 100%
- Member chooses final maturity term and one-time expansion date
 - ◆ Expansion at the original interest rate
 - ◆ Maturities available from two- to 20-years
 - ◆ Expansion date from one- to 10-years from disbursement date

How it Works – Expander Advance 7Y/3Y

- 7-year/3-year Expander advance for \$10MM at 2.43%
 - ◆ The advance has a 7-year maturity and a 3-year expansion option date
 - ◆ The ‘embedded option’ allows the member to increase the balance of the advance on the 3rd anniversary date of disbursement by \$10MM at 2.43% for the remaining 4-year term.

Note: 7-year Classic advance rate 1.96%

4-year Classic advance rate 1.07%

3-year Classic advance rate 0.81%

Expander Advance

Opportunities	Risks
<p>Member has one-time opportunity to double the notional amount of the advance</p>	<p>If rates stay flat or decrease, the member will likely choose not to expand the advance and the option expires worthless</p>
<p>Expansion opportunity may be used to offset deposit outflows or fund the extension of average asset lives in a rising rate scenario</p>	

Summary of Key Features

	Flipper	Classic Plus Cap	Symmetrical Prepayment	Expander
Buyer or Seller of Embedded Options	Seller	Buyer	Buyer	Buyer
Can Initial Advance Rate Increase?	Yes	No	No	No
Can Initial Advance Rate Decrease?	Yes	Yes	No	No
Can Principal Amount be Increased Later?	No	No	No	Yes
Can Member Monetize Gain if Rates Rise?	No	No	Yes	No

Frequently Asked Questions

- Does FHLB Boston provide the membership with educational materials on structured advance products that could be presented to the Board of Directors or Senior Management?
 - ♦ Yes! Bank staff are available to make presentations to your Board, and help identify the advance products that will achieve your funding goals.
- Do I need to borrow the \$10 million minimum?
 - ♦ No. Contact the Money Desk and they will attempt to coordinate with other members who may have similar interest to achieve the aggregate minimum required by presenting a special offering to the membership.
- What opportunities do you see in the market?
 - ♦ Advance rates across the curve are near historic lows and CAPs are inexpensive considering the general market sentiment toward future rates.
- What are other members interested in?
 - ♦ The Flipper, Expander, Symmetrical Prepayment, and Classic Plus Cap advances are the most attractive structured products in the current environment or as you prepare for rising interest rates.