FHLB Chicago

Federal Home Loan Bank of Chicago

FHLBC Solutions

Residential Lending Strategies: Funding Mortgages

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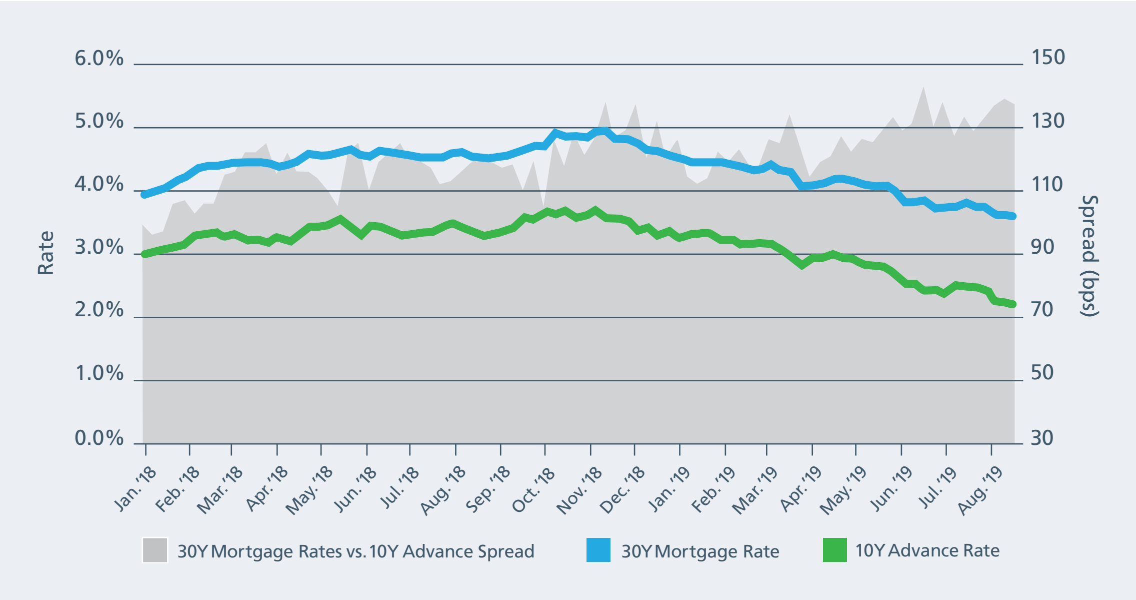
Overview

The 30-year mortgage rate, according to Freddie Mac data, has fallen since the start of 2019. The Federal Home Loan Bank of Chicago's (FHLBank Chicago's) 10-year advance rate has fallen even more, and thus, the spread between the two has risen (see Figure 1). With increased spreads, it is a great time for members to consider holding mortgages on their balance sheet.

Figure 1: 30Y Mortgage Rate vs. 10Y Advance Rate



Source: Freddie Mac and FHLBank Chicago

In this paper, we will examine hedging both a 15-Year and 30-Year mortgage portfolio with advances. Please note that our summaries on net interest margin (NIM) use forward rates in all scenarios, including the base case. Forward rates are trending upward in the short term, but are downward medium to long term. All rates are as of August 22, 2019.

15 Year Mortgage Example

In this example, the portfolio is made up of 15-year mortgages at a rate of 2.90% reduced by 13 basis points for servicing costs. The funding solution includes a ladder of fixed rate advances, as well as, deposits. See Tables 1 and 2 for more information about the portfolio, such as how it's funded, the 10Y average NIM, return on equity and assets, and duration.

Table 1: Mortgage Portfolio Detail – 15Y

Mortgage Portfolio Detail	
Transaction Size	10,000,000
Portfolio Yield	3.03%
Servicing Cost	0.13%
Net Portfolio Yield	**2.90%**

Table 2: Funding Solution – 15Y

Structure	Percentage	Funding	All-In Dividend*	Duration
1Y Fixed	10%	$1,000,000	1.88%	1Y
2Y Fixed	10%	$1,000,000	1.65%	2Y
3Y Fixed	10%	$1,000,000	1.60%	3Y
4Y Fixed	10%	$1,000,000	1.59%	4Y
5Y Fixed	30%	$3,000,000	1.58%	5Y
7Y Fixed	10%	$1,000,000	1.76%	7Y
Deposits	20%	$2,000,000	1.16%	5Y
Total / Average	**100%**	**$10,000,000**	**1.55%**	**4.2Y**

*Represents advance rate encompassing Class B1 stock dividend as a reduction to the rate based upon: 5.00% dividend rate paid in Q3 2019, an opportunity cost of buying stock (estimated to be Q3 2019 average of U.S. Federal Funds Effective Rate of 2.15%), and 4.5% advance capitalization.

Table 3: 5Y NIM Summary – 15Y

Rate Scenarios	-100	0	100
Avg. Yield	2.85%	3.03%	3.03%
Liability Cost	2.50%	1.86%	2.07%
NIM	0.56%	1.24%	0.65%
Average NIM	**0.82%**		

Table 4: Net Income Summary

Rate Shock	Year 1	Year 2	Year 3	Year 4	Year 5
-100	$89,391	$28,990	$4,430	-$5,637	-$9,221
0	$113,749	$88,992	$77,270	$64,960	$51,621
100	$112,193	$78,309	$67,618	$54,967	$39,712

Table 5: Ratios – 15Y Example, Q2 2019

	Before	1Y Horizon			3Y Horizon		
Metric	**IL & WI Avg.**	**-100**	**0**	**+100**	**-100**	**0**	**+100**
Net Income / P&L (000s)	$5,646	$5,564	$5,773	$5,478	$5,826	$6,042	$5,744
Risk-Weighted Assets (000s)	$362,788	$364,237	$364,550	$364,506	$363,509	$364,082	$364,102
ROAA	1.22%	1.21%	1.25%	1.19%	1.24%	1.25%	1.23%
ROAE	10.43%	10.28%	10.66%	10.12%	10.54%	10.67%	10.49%
Risk Based Capital Ratio	14.89%	14.74%	14.71%	14.71%	14.81%	14.76%	14.75%
Return on Risk-Based Capital	10.45%	10.30%	10.69%	10.14%	10.56%	10.70%	10.51%

As you can in Table 1, holding residential mortgages on an institution's balance sheet would yield 2.90%. Using a ladder of fixed advances with some deposits, funding would cost 1.55% after ac-counting for the FHLBank Chicago's dividend benefit. This strategy could produce 135 basis points of income for the member or $113,749 in a 1 year base case scenario. The 10-year average NIM spread is 64 basis points, averaged across three different rate-shock scenarios. However, it's important to consider how holding 15 year mortgages on your balance sheet will affect your capital ratios. According to Basel III guidelines, mortgages are weighted at 50% for risk-weighted asset calculations. In the example described above, the institution has taken an 18 basis points reduction on the total risk-based capital ratio over 1 year, assuming rates have remained unchanged. However, return on risk-based capital increased by 24 basis points, more than making up the difference.

30 Year Mortgage Example

In this example, the portfolio is made up of 30Y mortgages at a rate of 3.43% reduced by 13 basis points for servicing costs. The funding solution includes a ladder of fixed rate and putable advances, along with deposits. See the tables below for more information about the portfolio, such as how it is funded, 5 year average NIM, income, and duration.

Table 6: Mortgage Portfolio Detail – 30Y

Mortgage Portfolio Detail	
Transaction Size	$10,000,000
Portfolio Yield	3.56%
Servicing Cost	0.13%
Net Portfolio Yield	**3.43%**

Table 7: Funding Solution – 30Y

Structure	**Percentage**	**Funding**	**All-In Dividend***	**Duration**
1Y Fixed	10%	$1,000,000	1.88%	1Y
2Y Fixed	10%	$1,000,000	1.65%	2Y
3Y Fixed	10%	$1,000,000	1.60%	3Y
4Y Fixed	10%	$1,000,000	1.59%	4Y
5Y Fixed	20%	$2,000,000	1.58%	5Y
10YNP1Y BERM Fixed	20%	$2,000,000	1.13%	10Y**
Deposits	20%	$2,000,000	1.16%	5Y
Total / Avg		**$10,000,000**	**1.45%**	**5Y**

*Represents advance rate encompassing Class B1 stock dividend as a reduction to the rate based upon: 5.00% dividend rate paid in Q3 2019, an opportunity cost of buying stock (estimated to be Q3 2019 average of U.S. Federal Funds Effective Rate of 2.15%), and 4.5% advance capitalization.

**10np3mo could be put after 1 year, and every 3 months thereafter.

Table 8: 5Y Average NIM Summary – 30Y

Rate Scenarios	-100	0	100
Avg. Yield	2.84%	3.55%	3.55%
Liability Cost	2.36%	2.04%	2.44%
NIM	0.48%	1.51%	1.11%
Average NIM	**1.03%**		

Table 9: Net Income Summary – 30Y

Rate Shock	Year 1	Year 2	Year 3	Year 4	Year 5
-100	$99,661	$39,232	$14,672	$4,606	$1,049
0	$175,789	$127,335	$114,390	$98,548	$79,143
100	$170,119	$99,559	$85,920	$68,464	$45,685

Table 10: Ratios – 30 Year Example, Q2 2019

	Before	1Y Horizon			3Y Horizon		
Metric	**IL & WI Avg.**	**-100**	**0**	**+100**	**-100**	**0**	**+100**
Net Income / P&L (000s)	$5,646	$5,652	$5,832	$5,032	$5,788	$6,082	$5,733
Risk-Weighted Assets (000s)	$362,788	$364,520	$364,647	$364,577	$363,509	$364,082	$364,102
ROAA	1.22%	1.23%	1.26%	1.09%	1.23%	1.26%	1.23%
ROAE	10.43%	10.44%	10.77%	9.29%	10.52%	10.70%	10.48%
Risk Based Capital Ratio	14.89%	14.71%	14.70%	14.71%	14.81%	14.76%	14.75%
Return on RBC	10.45%	10.46%	10.80%	9.32%	10.54%	10.72%	10.51%

Using a ladder of fixed and putable advances with some deposits, funding would cost 1.45% after accounting for the FHLBank Chicago's dividend benefit. This strategy could yield 198 basis points of income for the member or $175,789 in a one year base case scenario. Another effect of this strategy on your institution's balance sheet is related to risk-based capital. As previously mentioned, mortgages must be held at 50% weights, according to Basel III guidelines. In this example, the institution's total risk-based capital ratio has taken a 19 basis point reduction, but after one year its return on risk-based capital will have improved by 35 basis points in the base case.

To Learn More

If your institution would like more specific information about part or all of this strategy, please feel free to reach out to Member Strategy and Solutions team or your Sales Director at membership@fhlbc.com.

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