Derivatives & Interest Rate Swaps

McQueen Financial Advisors

The following document is provided to help you understand derivatives and their use and options to mitigate interest rate risk. Please consult with your CPA firm before entering any derivative contract as there are accounting rules that need to be clearly understood.

What is a derivative?
A derivative is a contract whose value is dependent upon one or more underlying assets. Its price is determined by fluctuations in that asset. There are several types of derivatives in the market. Interest Rate Swaps, or simply swaps are the most common derivative that financial institutions use.

Swaps are a tool that can be used to protect a financial institution from the effects of falling interest rates or rising interest rates. The swap transfers value between two parties. One party pays a fixed interest rate on a notional amount and another party pays a floating interest rate on the same notional amount.

- One party pays a fixed rate and receives a floating rate.
- The other party pays a floating rate and receives a fixed rate.
- Typically, the parties true up on payments on a quarterly basis.

Why are derivatives and specifically swaps being discussed in the market today?
If a financial institution is having a significant interest rate risk issue, a swap can help reduce interest rate risk by adding additional income in a rising interest rate environment. To do this, you must take the floating rate side of the swap. At first, this will lower your income as you will pay a fee for the swap. Also, you will have to pay a higher fixed rate compared to the floating rate initially. If interest rates rise over a certain threshold (and you recover from your lost income and expenses) it will then improve your income. The process can help offset negative convexity in significantly rising interest rates. It is imperative to understand that interest rates must rise enough to breach the break-even threshold.

"There are several types of derivatives"

One important point that needs to be carefully reviewed is the cost of a swap. The cost is composed of - five points:

- The cost to enter a swap is normally a fixed fee or a percentage of the notional amount.
- The difference that you will pay between the floating rate and the fixed rate on the notional amount initially.
- The term length of the swap contract (ex: 7-year fixed-to-floating period).
- As interest rates rise and fall you may be in a net positive or net negative income position.
- The income change will affect your financials for the life of the swap (not just one year).

Costs can be quite expensive, especially when we are in a rising interest rate environment. One can compare the cost rising in a rising rate environment to buying insurance on a house near a forest fire.

Normally, the value of a swap is marked to market monthly. This change in value can also help or hinder your equity position. For example, if you take the floating rate side of a swap and pay a fixed rate and interest rates decline, you will have a negative effect to income and the value of the swap will decline. Conversely, if interest rates rise you will see a positive value to the swap and additional income. This value change (and income effect) is for the term of the swap. There can be significant value and income change with a swing in interest rates.

"A swap has several parts to make it work"

A Swap Has Several Parts To Make It Work

- Financial institution: You
- Counterparty: Large bank or brokerage firm – JPM, etc.
- Documents: Counterparty or ISDA Master Agreement (International Swaps & Derivatives Association)
- Notional Amount: The amount that the payments are based on (such as $10 million)
- Term of the swap: Normally in the range of 3 to 7 years
- Fixed rate: The fixed interest rate one party pays
- Floating rate: The index (and resulting interest rate) the other party pays (such as SOFR + 300 bps)
- Reserve: The amount of cash each party must have on deposit to protect the other party

One Year Simulation

				Floating Rate				
				2.75%	3.75%	4.75%	5.75%	6.75%
Notional Amount	$ 50,000,000			**Base**	**UP100**	**UP200**	**UP300**	**UP400**
Pay Fixed	4.50%	Expense	$	(2,250,000)	$ (2,250,000)	$ (2,250,000)	$ (2,250,000)	$ (2,250,000)
Receive Float	2.75%	Income	$	1,375,000	$ 1,875,000	$ 2,375,000	$ 2,875,000	$ 3,375,000
		Net Before Fee	$	(875,000)	$ (375,000)	$ 125,000	$ 625,000	$ 1,125,000
Fee	$ 20,000	Fee	$	(20,000)	$ (20,000)	$ (20,000)	$ (20,000)	$ (20,000)
		Net	**$**	**(895,000)**	**$ (395,000)**	**$ 105,000**	**$ 605,000**	**$ 1,105,000**

The example above displays a $50 million notional amount and a fixed rate of 4.50% and a beginning floating rate of 2.75%. In the base case (current interest rates) the net position is a loss of $895,000. The example swap above breaks even if rates increase somewhere over 1.75%. This is a simple example, and not to be used in modeling, as interest rates, credit and term make up a substantial component of an actual quote.

When thinking about a swap, what should we do?

Step 1: Quantify The Problem

The first step we need to take is to quantify the risk we have. The qualification should include the current interest rate environment and if interest rates rise or fall. The best location for this data is your MFA ALM report. We should focus on the two major tests.

- Income simulation – Risk to Net Income or Net Interest Income and the potential decline.
- Net Economic Value of Equity – Risk of equity declining as a ratio.

Once we have quantified the risk, we need to then determine if the risk is too high. Also, we need to understand if the risk is a short-term issue or a long-term situation. This step is critical to understanding the options to move forward.

"We need to quantify the risk we have"

If the risk is too high, and it is for a longer term, we need to look at possible solutions. As we look at possible solutions we need to:

- Quantify the desired solution
- Quantify the range of outcomes if interest rates rise or fall
- Understand the term needed for the solution

Step 2: Solutions To Look At

- **Restructure Investments:** We work with you to run an analysis and look at the opportunities to sell investments and shorten the duration of the investment portfolio. This analysis needs to include the loss up front on sales, and the future income enhancements. Once we have run several sale and reinvestment options, we need to select the best option and add it to our comparison analysis.
- **Sell Loans:** We work with you to run an analysis to see what we can do to reduce the risk position by selling loans. An example of this would be to look at selling a pool of long-term 30-year mortgages. Once we have determined a reasonable pool to sell, we will determine a reinvestment strategy to enhance earnings and shorten the duration. We then will add this to our comparison analysis.

- **Borrow FHLB Advances:** We will work with you to look at the option of adding a ladder of borrowings and or amortizing borrowings to reduce future interest rate risk by lengthening liabilities. This option will include determining a reinvestment strategy to shorten assets and provide improved earnings in a rising interest rate environment. Additionally, we need to look at FHLB advances that include giving us the option to pay off advances early. This option provides us with positive convexity. We will then add this to the comparison analysis.
- **Interest Rate Swap:** If the above options do not solve the situation and or we want another option, we can work with a partner to develop interest rate swap options. We will look at several scenarios and determine which is the best to solve the issue. We will then add this to the comparison analysis.

Step 3: Compare The Solutions

Once we have completed the analysis of the options to solve the risk problem, we need to compare the options. The comparison needs to include :

"We need to compare the options"

- Document the costs of each solution (current and ongoing)
- Document the risks today and for the term of the solution
- Interest rate risk improvement
- Income
- NEVE
- Outcome of the solutions in different interest rate environments
- Understand the term or commitment of the solution

Upon completion of the comparison, we will select the best outcome. After the selection of the best outcome, we will:

- Provide a full ALM run with the selected option
- Attend your ALCO meeting and or Board meeting to discuss the solutions
- Implement the chosen option

Before entering a swap, education on the accounting rules and process need to be carefully discussed with you CPA firm.

We are your advisors providing you advice to best position your financial institution for today and the future.