Interest Rate Swaps

Session 3 / 3:
Prepayment & Structuring

CBRE

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July 15, 2021

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Financial Risk Management Solutions That Take Your Organization Further

Since 1991, Chatham Financial has delivered financial risk management advisory and technology solutions to organizations across industries and around the world — helping companies maximize value in the capital markets.

$2+ billion average daily notional hedged

3,000+ clients around the world

200,000+ daily valuations

3,000+ ISDAs reviewed annually

Seven global offices

600+ employees

Learning Objectives

Today is the third of three sessions on interest rate swaps, where we'll cover pricing, legal documentation (ISDA Agreements), and **prepayment & structuring/strategy**.

Today's training will provide an understanding of:

- Swap prepayment costs, including how it's calculated and how it compares to yield maintenance and defeasance on a fixed rate loan
- Strategies for reducing/eliminating prepayment risk on a swap
- Considerations for swapping loans with floors

As financial instruments distinct from their underlying loan, swaps provide a great deal of structuring flexibility to better align the financing structure with the underlying asset strategy

Agenda

- Swap Prepayment
- Swaps On Loans With Floors
- Key Takeaways And Additional Resources

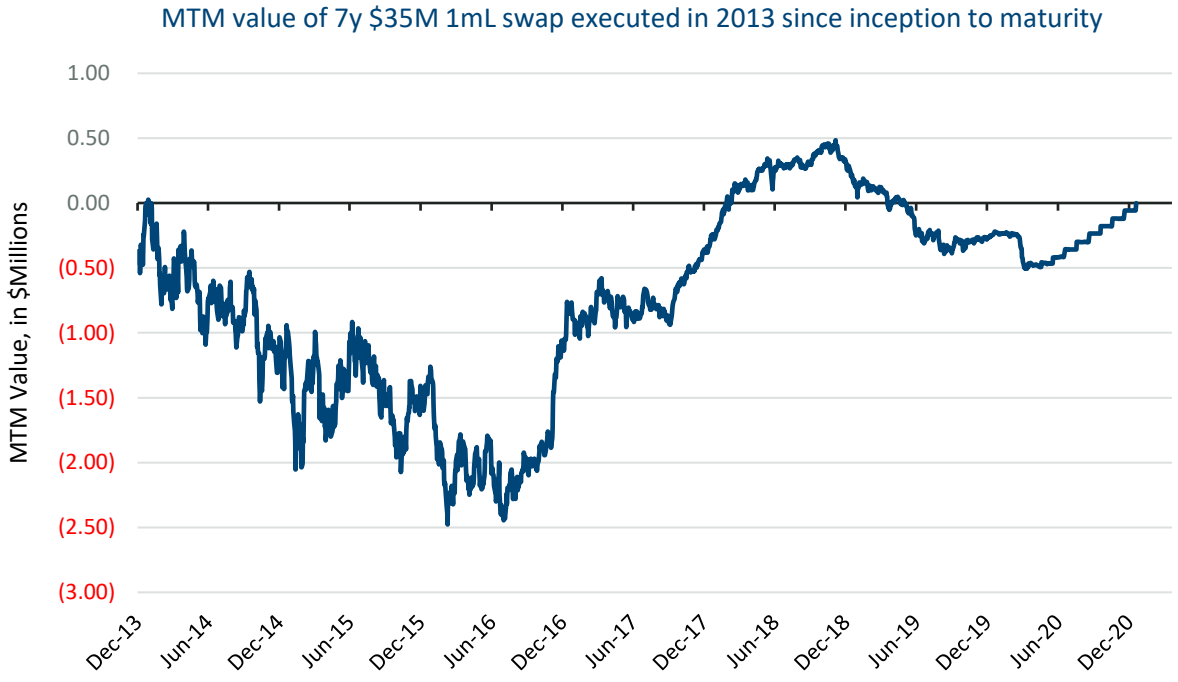
Swap Prepayment

Prepayment and Breakage

Swap Breakage Overview

Swaps have prepayment risk if terminated ("broken") early.

- The breakage amount makes the swap provider whole if the borrower is paying a fixed rate higher than the current market rate
- Breakage amount is driven by the difference between the contracted swap rate and the market swap rate for the remaining term
- Swaps are subject to two-way breakage and can become assets (liabilities) to the borrower, resulting in payment received (owed) from (to) the dealer bank if terminated early
- The breakage amount fluctuates over the life of the swap as rates move and the swap approaches expiry; this fluctuating value is known as the swap's **"mark-to-market"**



Breakage calculation example:

A borrower breaks a 7-year, $35M swap with a contract rate of 2.3% with 3 years remaining and the then current 3-year replacement swap rate is 1.4%.

Breakage = PV [notional x (replacement rate less contract rate) x remaining term]

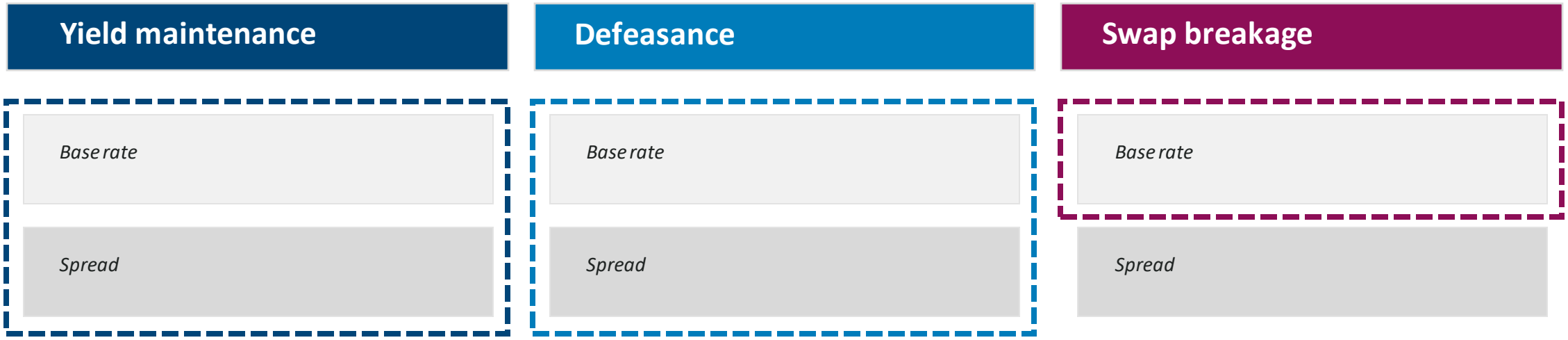
Breakage = ~$35M x (1.4% - 2.3%) x 3 years = **~$950,000 liability**

Prepayment and Breakage

Swap Breakage Versus Yield Maintenance and Defeasance

Swap breakage is more economically efficient than yield maintenance and defeasance. The cost differential drives much of the variance between the fixed and swapped-to-fixed strategies.

- When a loan is prepaid with YM, remaining *loan* payments (base rate + spread) are discounted and subject to a min penalty
- When a loan is defeased, remaining *loan* payments (base rate + spread) are discounted
- When a swapped loan is broken, remaining *swap* payments (**base rate only**) are discounted
- In order to defease at a discount, the replacement Treasury rate must be higher than the loan's coupon



Prepayment and Breakage

Methods For Reducing Prepayment Risk in Swaps | **Cancelable Swaps**

A cancelable swap is a swap where the borrower pays a premium in the form of a higher swap rate in order to secure prepayment flexibility at a predetermined, future date.

For example, a common structure may involve purchasing an open prepayment window during the last 1-3 years of the swap, often to line up with an expected disposition or refinance.

The pricing of these "cancelability features" are subject to volatility in a way that vanilla swaps are not.

Example pricing[1]:
7y $50M 1mL swap

	Vanilla swap	Open Y4	Open Y5	Open Y6	Open Y7
Vanilla mid swap rate	1.26%	1.26%	1.26%	1.26%	1.26%
Cancel premium	--	0.21%	0.14%	0.09%	0.05%
Credit charge	0.10%	0.10%	0.10%	0.10%	0.10%
Swap rate	**1.36%**	**1.56%**	**1.50%**	**1.45%**	**1.41%**

[1] Assumes rates and market conditions as of April 27, 2021

Prepayment and Breakage

Swap Breakage Versus Yield Maintenance and Defeasance

Let's take a deeper look at this cost differential…

Our example uses a 7y $50M loan with all-in coupon of 4.00%. The loan closed in July 2016 and Borrower is now exiting early at EOY5. The table compares the penalty Borrower incurs under four different prepayment mechanisms assuming three different rate environments.

Prepayment mechanism	**Discounted at**	**Penalty** *Current rates*	**Penalty** *Current rates - 100 bps*[1]	**Penalty** *Current rates + 200 bps*[1]
Yield maintenance	2y UST yield	**(3,896,000)**	(4,961,000)	(1,833,000)
Defeasance	~2y UST yield	**(3,899,000)**	(4,963,000)	(1,835,000)
Swap breakage: Vanilla *assumes 1.60% swap rate*	2y mid swap rate	**(1,420,000)**	(2,400,000)	480,000
Swap breakage: Cancellable at EOY5 *assumes 1.75% swap rate*	2y mid swap rate	**0**	0	330,000

[1] Estimated penalty assuming parallel shocks to the current forward / yield curve

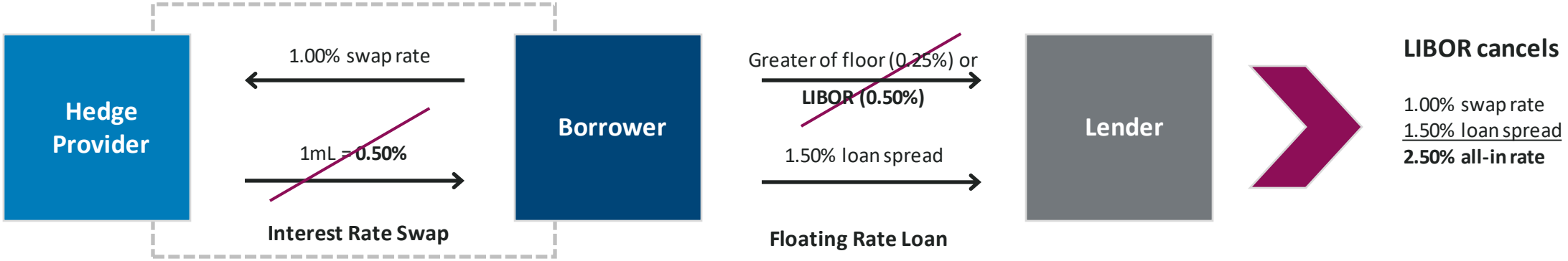
Swap on Loans With Floors

Swaps on Loans With Floors

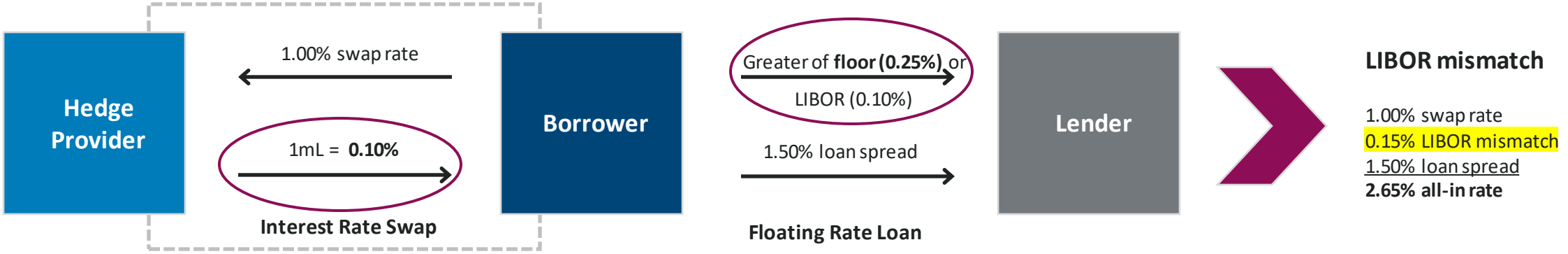
Floor Mismatch

Many lenders include floors in floating rate loans to establish a minimum yield via protection against rates falling below a certain threshold. In the below example we evaluate a loan with a 0.25% floor that is swapped without a matching floor

Scenario 1: 1 mo. LIBOR is ***0.50%***.



Scenario 2: 1 mo. LIBOR is ***0.10%***.



Swaps On Loans With Floors

Swaps With Matching Embedded Floors

Borrowers may opt to purchase a matching floor in their swap for several reasons:

- Risk tolerance
- View on rates
- Dealer bank's internal credit requirements
- Hedge accounting feasibility

Floors are option products – pricing is subject to volatility in a way that swaps are not. And like interest rate caps, the floor can only be an asset to the borrower once "purchased" in the swap. Floors can potentially reduce swap breakage owed by the borrower at early termination.

Example floor pricing[1]:
7y $50M 1mL swap

	No floor	0.00%	0.25%	0.50%
Vanilla mid swap rate	1.26%	1.26%	1.26%	1.26%
Floor price[2]	**--**	**0.14%**	**0.19%**	**0.28%**
Credit charge	0.10%	0.10%	0.10%	0.10%
Swap rate	**1.36%**	**1.50%**	**1.55%**	**1.64%**
Swap PV01	$34,000	$34,000	$34,000	$34,000

[1] Assumes rates and market conditions of March 29, 2021
[2] Assumes bank offers floor at ~2 bps over mid

Key Takeaways And Additional Resources

Key Takeaways

CRE Borrower Considerations In Swap Structuring

Prepayment

Swaps create prepayment risk on the associated financing, though swap prepayment is typically **more favorable than defeasance or yield maintenance on a fixed rate loan.**

Prepayment Flexibility

Swaps may be structured with prepayment flexibility, where the borrower pays a premium in the rate in exchange for an open window and/or a cap on prepayment expense; **this flexibility may be customized for each transaction.**

Swaps On Loans With Floors

Swaps on loans with floors (even 0% base rate floors, which are common) require careful consideration; if not appropriately structured the borrower is exposed to their **fixed rate increasing if base rate fall below their loan floor.**

Chatham advised on the execution of over 6,000 swaps in 2020; our market presence and transaction volume give us an unparalleled view into best practices for swap structuring.

Chatham's Role In Swaps

Chatham Analysis: Swap Memo

The analysis below is an example of the work we do when engaged by a borrower or their broker to assist with a swap, which provides a quantitative framework for evaluating prepayment risk and the cost/benefit of structuring for prepayment flexibility or around a floor.

ABC Company| Swap Indication
Upcoming Deal
November 19, 2020

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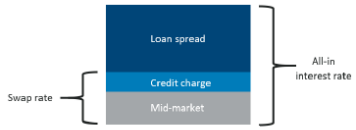
Interest Rate Swap Cash Flow Overview

- The typical swap structure for a commercial real estate loan is a **pay fixed, receive floating** swap, in which the Borrower pays a fixed rate in return for receiving variable payments tied to 1 mo. LIBOR.
- The variable payments received in the swap offset the variable index payments paid in the Loan, thereby **synthetically fixing** the rate for the Borrower at the Swap Rate plus the Loan Spread.

- Hedge Providers require collateral – in real estate secured SPE deals, this collateral will be the property that secures the loan. Swaps on mortgage debt that share the property as collateral **must be executed with the Lender**.

- **Pricing:** The fixed rate in the swap consists of the two components below. The borrower's synthetic fixed rate will be the sum of these components plus the loan spread.
  - **Mid-market rate:** A market driven rate based on current market expectations for LIBOR resets over the term of the swap.
  - **Credit charge:** Negotiated, deal-specific charge based on the perceived credit quality of the borrower as measured by the loan spread and the profit expectations of the lender's swaps desk (distinct from the loan returns).



Swap Breakage & Prepayment Risk

- **No upfront cost, but the swap can be a future liability and result in breakage costs if terminated early.**
- The amount of this "swap breakage" is the present value difference between the Borrower's contracted swap rate and the prevailing mid-market swap rate for the remaining swap term (the "**replacement rate**"). If the Borrower's rate is above (below) the replacement rate, the swap will be a liability (asset).
- Since the Borrower's swap rate includes the credit charge, swaps are a **liability immediately after closing.**
- **Swap breakage is always less than a typical yield maintenance penalty or defeasance** on a fixed rate loan because it does not include the present value of the loan credit spread.
- Swaps may be structured with open prepay windows (cancelability) in exchange for higher rates; some borrowers will use these structures to mitigate risk of a prepayment penalty if the asset is sold or refinanced before the loan maturity.

ISDA Documentation

- The ISDA Documentation (International Swaps and Derivatives Association) is the governing document of a swap covering various business and legal points. There are two components:
  - **ISDA Master Agreement:** Standardized (does not change), every swap will utilize the 1992 or 2002 ISDA Master Agreement.
  - **ISDA Schedule:** Transaction-specific, heavily negotiated document. The ISDA Schedule impacts how issues such as Events of Default, Additional Termination Events, and Guarantor covenants apply under the swap, all of which may be written to be more or less favorable to the borrower than those in the loan and may introduce additional default risk on the loan.

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Vanilla Swap	
Mid-Market Swap Rate	0.34%
Credit Charge	0.12%
	--
Borrower's Swap Rate	0.46%
Loan Spread	2.25%
Total All-In Coupon	2.71%

0.0% Floored Swap	
Mid-Market Swap Rate	0.34%
Credit Charge	0.12%
Floor Premium	0.13%
Borrower's Swap Rate	0.59%
Loan Spread	2.25%
Total All-In Coupon	2.84%

Structure Summary	
Closing Date	December 1, 2020
Index	1-month USD LIBOR
Maturity	December 1, 2025
Notional	$40,500,000
Amortization	Bullet
Prepayment	Standard

- You could enter a vanilla swap today at **0.46% for 5 years** based on the current mid-market swap rate of 0.34% and an estimated swap credit charge of 12 basis points. The mid-market swap rate may fluctuate while the credit charge is a fixed amount that will be negotiated with the bank prior to execution.
- Interest expense will increase if there is a floor in the loan but not the swap, and LIBOR falls below the floor strike.
- To match the loan's LIBOR floor of 0.0%, **a floor at 0.0% could be embedded in the swap for an increase in the rate of approximately 13 basis points, subject to change. The current value of the floor is ~$265,000.**
- The present value of a one basis point increase in credit charge (PV01) for the vanilla swap is **$20,500**. Based on a credit charge premium of 12 basis points, the swap will be a liability of **~$245,000** immediately after closing.

Swap breakage (without embedded floor)

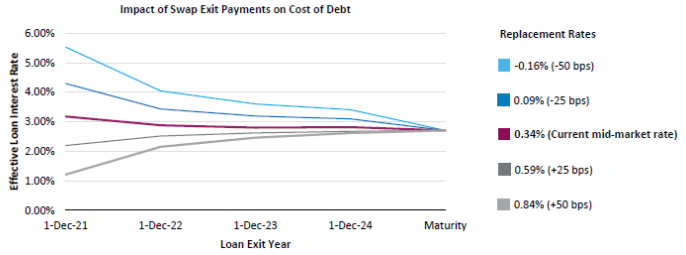
- If you exit the swap prior to maturity, you will face two-way prepayment based on your swap rate compared to the prevailing mid-market swap rate for the remaining term. For example, if the swap is terminated on December 1, 2023 and:
  a) the prevailing 2-year mid-market swap rate is 0.09%, you will have to pay **$305,000**.
  b) the prevailing 2-year mid-market swap rate is 0.59%, you will receive **$107,000**.

0.0% Floored Swap Breakage Projections

Replacement Rate	Δ in Rate	1-Dec-21	1-Dec-22	1-Dec-23	1-Dec-24	Maturity
-0.16%	-50 bps	(1,030)	(771)	(513)	(255)	0
0.09%	-25 bps	(611)	(458)	(305)	(152)	0
0.34%	0 bps	(197)	(148)	(99)	(49)	0
0.59%	+25 bps	213	160	107	53	0
0.84%	+50 bps	618	465	311	155	0
Expected Replacement Rate		0.38%	0.45%	0.54%	0.65%	--

Impact of swap breakage on effective borrowing rate (without embedded floor)

- Breakage payments impact the effective cost of debt. For example, if the swap is terminated on December 1, 2023 and:
  a) the prevailing 2-year mid-market swap rate is 0.09%, the annual effective interest rate will increase ~49 bps to 3.19%.
  b) the prevailing 2-year mid-market swap rate is 0.59%, the annual effective interest rate will decrease ~8 bps to 2.62%.



Chatham's Role In Swaps

Adding Value Every Step Of The Way

Ensure a more informed decision-making process

Apples-to-apples comparison of all-in rates and prepayment costs

Lender hedge requirements and associated costs / markups

Balance rewarding relationships with price transparency

Have transparent, unconflicted execution

2020: 6,300 IR swaps executed

Limit unintended consequences

Hold period alignment
Prepayment flexibility
LIBOR transition risk

Secure fair and consistent terms

2020: 3,400 ISDAs reviewed

Receive post-trade documentation support and ongoing valuations

Additional Resources

GUIDE

Why hire an advisor for a lender-required swap?

GUIDE

What will your swap actually cost at closing?

MARKET UPDATE

Rising yields and a steepening curve — U.S.

GUIDE

Interest rate swap FAQs for CRE investors

GUIDE

The hairy chart: Historical accuracy of LIBOR forward curves

GUIDE

What is an interest rate forward curve?

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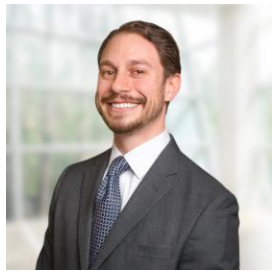

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Appendix

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Appendix

Case Study: Cancellable Swap

Client was closing a new 7-year, $57M, L+250 construction loan with their bank. The 50 bp LIBOR floor was waived if the client swapped with the lender. Client preferred to purchase a rate cap, meanwhile their JV partner preferred to enter a swap with the lender.

Key goals

- Mitigate IR risk in a way suitable to both partners
- Balance the partners' different hold strategies
- Reduce hedge prepayment risk upon early exit

Our Approach

- Price multiple, suitable strategies: caps, vanilla swaps, and cancellable swaps
- Utilize a forward-starting structure at 85% of projected balances to accommodate the uncertainty of draws
- Embed a cancellation feature exercisable at the earliest anticipated exit date

Results

- Executed a 2y forward-starting, 3y swap cancellable at EOY2
- Borrower is protected as of expected stabilization for three years with reduced prepayment risk

Cancellable Swap Indication

As of EOD 01/22/2021

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Swap Rate Composition	Vanilla Swap	Open 6/1/24
Vanilla Mid-Market Rate	0.64%	0.64%
Option Premium	-	0.25%
Credit Charge	0.18%	0.18%
Borrower's Swap Rate	**0.82%**	**1.07%**
Loan Spread	2.50%	2.50%
All-In Coupon	**3.32%**	**3.57%**

Structure Summary	
Effective Date	2/1/2023
Maturity Date	2/1/2026
Principal Amount	85% of Projected Loan Balances
Amortization	Accretion per Provided Draws
Index	1 mo. LIBOR
Loan Spread	2.50%
Floor	None

- The present value of a one basis point increase in credit charge (PV01) is around **$13,600**. Based on an 18 bp mark-up (including credit charge and trading costs) for the vanilla swap, the swap will be a **liability of approximately $244,800 immediately after closing**.

Appendix

Case Study: Swapping A Loan With A Floor

Client was closing a new 4-year loan that they intended to swap with the lender. The loan had a 0% LIBOR floor and the swaps desk pitched embedding a 0% floor in the swap to match the loan, so the client had to think through whether to match the loan and pay more in their swap rate to embed an analogous 0% LIBOR floor into the swap.

Key goals

- Mitigate IR risk in a way that achieves fixed rate profile
- Contemplate loan's LIBOR floor and effects on swap
- Be aware of prepayment risks in the event of early exit

Our Approach

- Price swap and analyze effects of embedding/not embedding 0% LIBOR floor
- Run prepayment sensitivity analysis on potential early exit and rate environment scenarios

Results

- Client decides not to embed the 0% LIBOR floor in the swap given their view on LIBOR not going negative, saving them 8 bps in their swap rate which amounts to ~$160k over the life of their swap
- By locking in a lower swap rate without the embedded floor, client also enhances their prepayment flexibility in the event of an early exit

Example cash flows—Vanilla swap, 0.0% loan floor, -0.15% LIBOR setting

Monthly interest expense sensitivity to LIBOR

- LIBOR must average an amount below the floor approximately equal to the floor premium to be better off embedding the floor in the swap.
  - *Example*: If the floor premium is 8 bps for a 0.0% floor, LIBOR must average less than -8 bps over the life of the swap.