Swaps and Derivatives Part I: Introduction and Applications

Client Training

May 1, 2025

Presented By

George Hu

PFM Swap Advisors LLC

1735 Market Street
42nd Floor
Philadelphia, PA 19103

(215) 567-6100
(215) 567-4180 fax
pfm.com

Thank you for joining us!

Friendly Reminders

- **This Session is Being Recorded**
- **Automatically Muted on Entry**
  - You are automatically muted when you join the call
  - Please unmute yourself to participate
  - Minimize Background Noise – re-mute when you are done speaking
- **CPE Credits Available for This Session**
  - Attend this session in its entirety
  - Answer all poll questions provided
  - Survey **must** be completed
  - Certificates are sent 6 weeks after the conclusion of the seminar
- **Please Complete the Survey for This Session**
- **Send specific questions for me to simmonsc@pfm.com**

Agenda

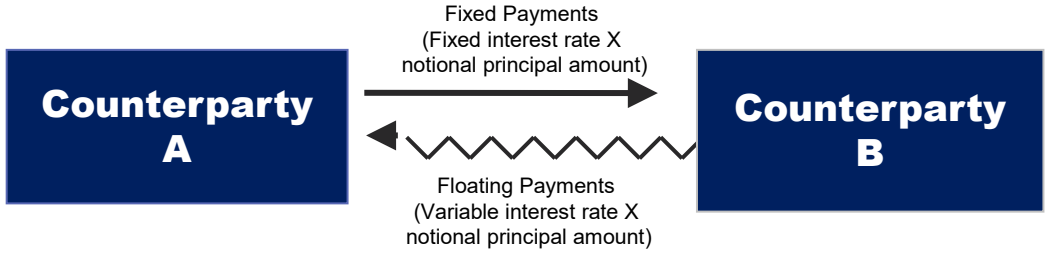
SWAPS AND DERIVATIVES

- Interest Rate Swaps Overview
- Swap Pricing and Valuation
- Commodity Hedging
- General Considerations for Swaps
- Dodd-Frank Act
- Summary
- Overview of PFMSA

Interest Rate Swaps Overview

Interest Rate Swaps in General

- An interest rate swap is a contract between two parties (“counterparties”) to exchange interest rate payments at specified dates in the future.
- The interest rate payments for a given counterparty equal the product of an interest rate (swap rate) and a principal amount.
- Usually, the swap rate for one counterparty is a fixed rate, while the swap rate for the other counterparty is a variable rate.
- The principal amount in a swap is “notional”, i.e. it is not actually exchanged but is only used to calculate interest payments
- Swaps historically traded “over the counter”, but the Dodd-Frank Act will move most swap trading to exchanges or central clearinghouses



Why Use Swaps?

- Exploit Attractive Synthetic Financing Opportunities
  Swaps and other derivatives can allow issuers to opportunistically create cheap synthetic variable-rate or fixed-rate debt
- Issuers can arbitrage the prices paid for certain financial instruments in different markets, e.g.
  - monetization of “in-the money” bond call options in swaptions market
- Synthetic variable-rate debt (fixed-rate bond + swap) can allow issuers to conserve valuable credit/liquidity facilities
- Risk Management
- By hedging, issuers improve asset/liability management and reduce cashflow variability

Who Uses Swaps?

- Financial Institutions, e.g. banks, mutual funds, hedge funds
- Corporations, e.g. General Electric, Coca-Cola
- Sovereign Governments, e.g. the Government of Canada, the Kingdom of Sweden (the U.S. Government doesn't use swaps)
- Municipalities, e.g. cities, states, airports
- Not-For-Profits, e.g. universities, hospitals, museums

Examples of Hedging Products Applications

Hedge Product	Strategies	Underlying Obligation
Floating-to-fixed Swap	• Opportunistically create cheap synthetic fixed-rate debt • Hedge variable rate exposure • Enhance investment yield	• VRDB's • Commercial Paper • Bank Loan • Debt service fund
Fixed-to-floating Swap	• Opportunistically create cheap synthetic variable-rate debt • Manage liquidity and refinancing risk	• Fixed-rate Bonds
Forward Swap	• Synthetic advance refunding • Hedge future interest rate risk	• Fixed-rate Bonds not currently callable • Anticipated bond issuance
Callable Swap/Swaption	• Bond Call monetization	• Callable Fixed-rate Bonds

Key Terms of Interest Rate Swaps

- Notional principal amount
- Effective date
- Termination (Maturity) date
- Fixed-Rate Payer
- Floating-Rate Payer
- Floating index, e.g. LIBOR, SIFMA, SOFR
- Index Reset Frequency, e.g. daily, weekly, 1-month, 3-month
- Payment Dates, e.g. monthly, semi-annually (normally made in arrears)
- Day basis (e.g. 30/360, Actual/365)

Swap Floating-Rate Indices

- Percentage of LIBOR
  - The variable swap rate received by an issuer equals a percentage of the London Inter-Bank Offered Rate (LIBOR). LIBOR is an average calculated by the British Bankers' Association that is derived from banks that submit daily borrowing quotes. The top and bottom quartile is eliminated and an average of the remaining quotations calculated to arrive at the rate fixing.
  - After 6/30/2023, USD LIBOR was replaced by SOFR

- SIFMA
  - A weekly high grade market index comprised of 7-day tax exempt variable rate demand notes produced by Municipal Market Data Group. Actual issues are selected from MMD's database of more than 10,000 active issues.

- Secured Overnight Financing Rate (SOFR)
  - SOFR is a secured, short-term (overnight) borrowing rate based on U.S. Treasury repurchase (repo) agreements and general collateral financing (GCF) data. It has been selected by the U.S. Alternative Reference Rates Committee (ARRC) as the replacement for LIBOR after June 2023.

Sources:
https://www.bloomberg.com/professional/solutions/regulation/libor-resource-center/
https://www.sifma.org/resources/general/about-the-municipal-swap-index/
https://www.newyorkfed.org/arrc

The Demise of LIBOR:

- On 3/5/2021, the U.K. Financial Conduct Authority (“FCA”) made a formal announcement regarding the future of LIBOR:
  - It declared that USD one-week and two-month LIBOR and all non-USD tenors would cease or become non-representative after 12/31/2021
  - The remaining five USD LIBOR settings, including one-month and three-month USD LIBOR, would continue to be published on a representative basis until 6/30/2023
  - The same five settings would either cease or become non-representative after 6/30/2023
- The FCA’s announcement constituted an Index Cessation Event and fixed the fallback rate spread adjustments
- Since 7/1/2023, USD LIBOR in legal contracts has now been replaced by SOFR by compounding SOFR over the respective tenor, e.g. one month for 1-month LIBOR, and adding a spread adjustment. The spread adjustment is based on the median 5-year historical difference between LIBOR and SOFR compounded over each corresponding period
  - One-month LIBOR will fallback to compounded SOFR plus 11.448 basis points
  - Three-month LIBOR will fallback to compounded SOFR plus 26.161 basis points

Source: https://www.bloomberg.com/professional/solutions/regulation/libor-resource-center/

Poll Question 1

- What are some of the swap indices that exist today?

  A. LIBOR

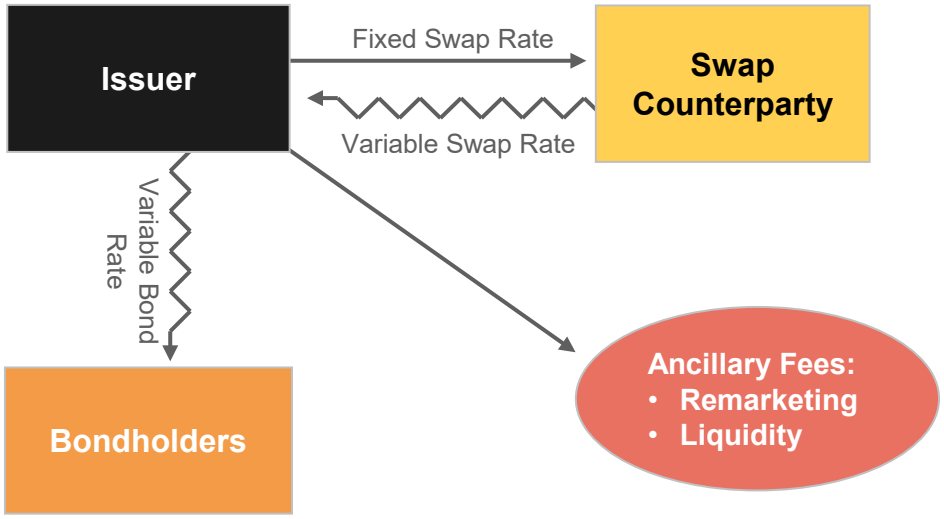
  B. SIFMA

  C. SOFR

  D. All of the above

Floating-To-Fixed Swap ("Synthetic Fixed")

- A floating-to-fixed interest rate swap allows an issuer to effectively convert all or a portion of its variable (floating) rate debt to a "synthetic" fixed rate
- The issuer becomes a "fixed rate payor", receiving a floating rate payment from a counterparty and paying a predetermined fixed rate
- To the extent the variable rate received by the issuer exactly offsets the variable rate paid by the issuer to bondholders, the issuer's debt cost equals the fixed swap rate plus any ancillary fees



30-Yr Synthetic Fixed Example	
Pay Fixed Swap Rate:	2.54%
Rec Floating Swap Rate:	(SIFMA)
Pay VRDB Rate:	SIFMA
Pay Credit Support:	0.50%
Net:	3.04%

For Illustrative Purposes Only

Synthetic Fixed-Rate Debt vs. Direct Issue

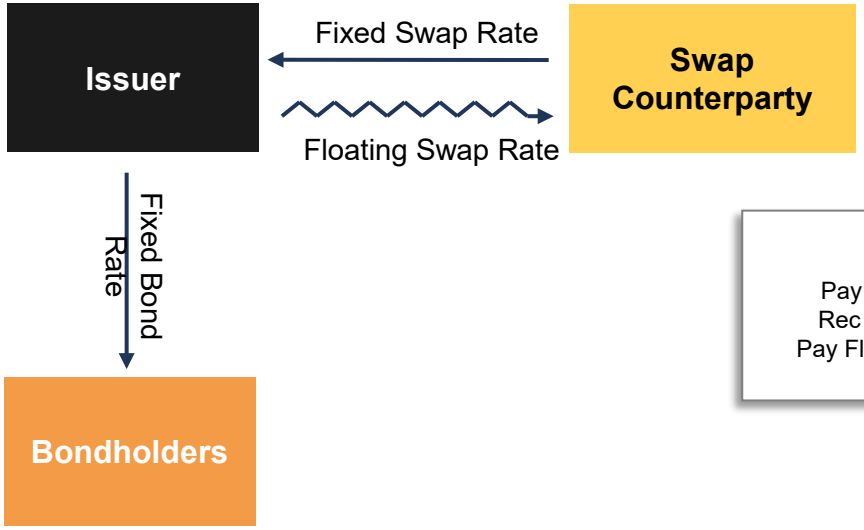
- Issuers should compare the all-in cost of traditional non-call fixed-rate debt to synthetic fixed-rate debt (including credit support)
- In certain cases, it may be cheaper to create synthetic fixed-rate debt through VRDO's or indexed bank loan hedged with a floating-to-fixed swap

Term	BVAL AA Yields	SIFMA Swap	68%*SOFR Swap*
3 Y	3.260%	3.041%	2.670%
5 Y	3.360%	3.213%	2.700%
10 Y	3.730%	3.651%	2.870%
20 Y	4.540%	4.001%	3.030%
30 Y	4.850%	4.077%	2.960%

Based on rates from Bloomberg Terminal and Refinitiv Eikon™ as of 4/28/2025; includes 36 bps liquidity.

Fixed-to-Floating Swap ("Synthetic Variable")

- A fixed-to-floating interest rate swap allows an issuer to effectively convert all or a portion of its fixed rate debt to a variable rate
- The issuer becomes a "floating rate payer", receiving a fixed rate payment from a counterparty and paying a floating rate set based on a pre-determined index
  - For new issues, the all-in cost of swapped ("synthetic variable") and traditional variable-rate debt should be compared to the cost of VRDO's and indexed bank loans



5-Yr Synthetic Variable Example	
Pay Fixed Bond Rate:	2.00%
Rec Fixed Swap Rate:	(2.20%)
Pay Floating Swap Rate:	SIFMA
Net:	SIFMA - 0.20%

Synthetic Variable-Rate Debt vs. Direct Issue

- Issuers should compare the all-in cost of VRDB's (including credit support costs) or indexed bank loans to synthetic floaters
- In certain cases, synthetic variable-rate debt (fixed-rate bond issue + fixed-to-floating swap) may be a cheaper alternative to traditional variable-rate bonds or bank loans

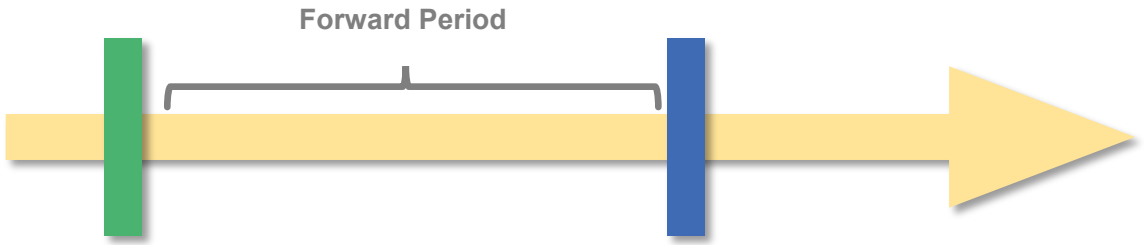
Term	BVAL AA Yields	SIFMA Swap	Margin to SIFMA Index
Weekly		3.620%	
3 Y	3.260%	2.761%	0.499%
5 Y	3.360%	2.933%	0.427%
10 Y	3.730%	3.371%	0.359%
20 Y	4.540%	3.721%	0.819%
30 Y	4.850%	3.797%	1.053%

Based on rates from Refinitiv TM3® and Refinitiv Eikon™ as of 4/28/2025; swap rates include 8 bps dealer spread.

Source: Bloomberg Finance L.P.

Cash-Settled Forward Swap (Synthetic Advance Refunding)

- A forward or delayed-starting interest rate swap (Synthetic Advance Refunding) allows an issuer to take advantage of current low interest rates and achieve debt service savings based on the current rates, while allowing for a future current refunding of outstanding bonds (when an advance refunding is not permitted)
- A forward swap is executed based on current rates and terms determined and agreed upon today that become effective on a pre-determined future date (e.g., in 6 months, in 1 year, etc.).
  - The fixed payer rate (to be paid by the issuer), variable swap index (to be paid by the counterparty) and fees are negotiated at the time that the forward swap is agreed to (Commitment Date).
- With a *cash-settled* forward swap, on the Effective Date (when net exchange of cashflows normally begins), the issuer terminates the swap and sells fixed-rate bonds.
  - The swap termination payment (paid or received by the issuer depending on rate movements) offsets higher or lower bond yields at issuance, providing an all-in cost similar to rate levels existing on the Commitment Date

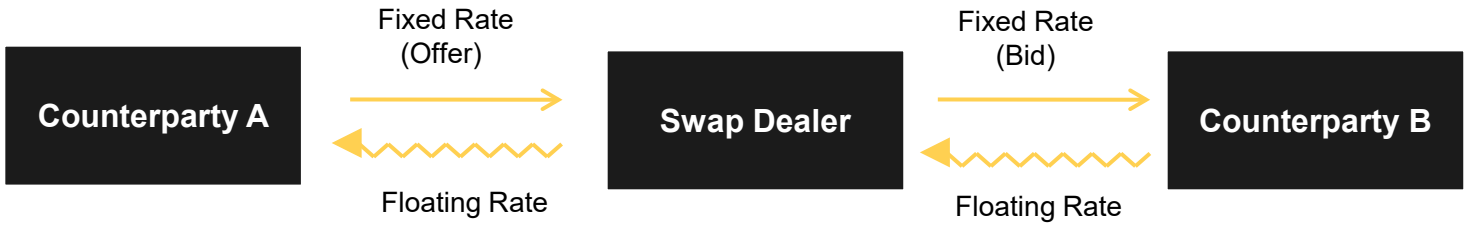


Swap Commitment Date:
- Execute Forward Swap Agreement setting terms of future swap – no payments exchanged

Swap Effective Date:
- Terminate swap and issue fixed-rate current refunding bonds

How Do Swap Dealers Make Money?

- Dealers earn the bid/offer spread in the swaps market

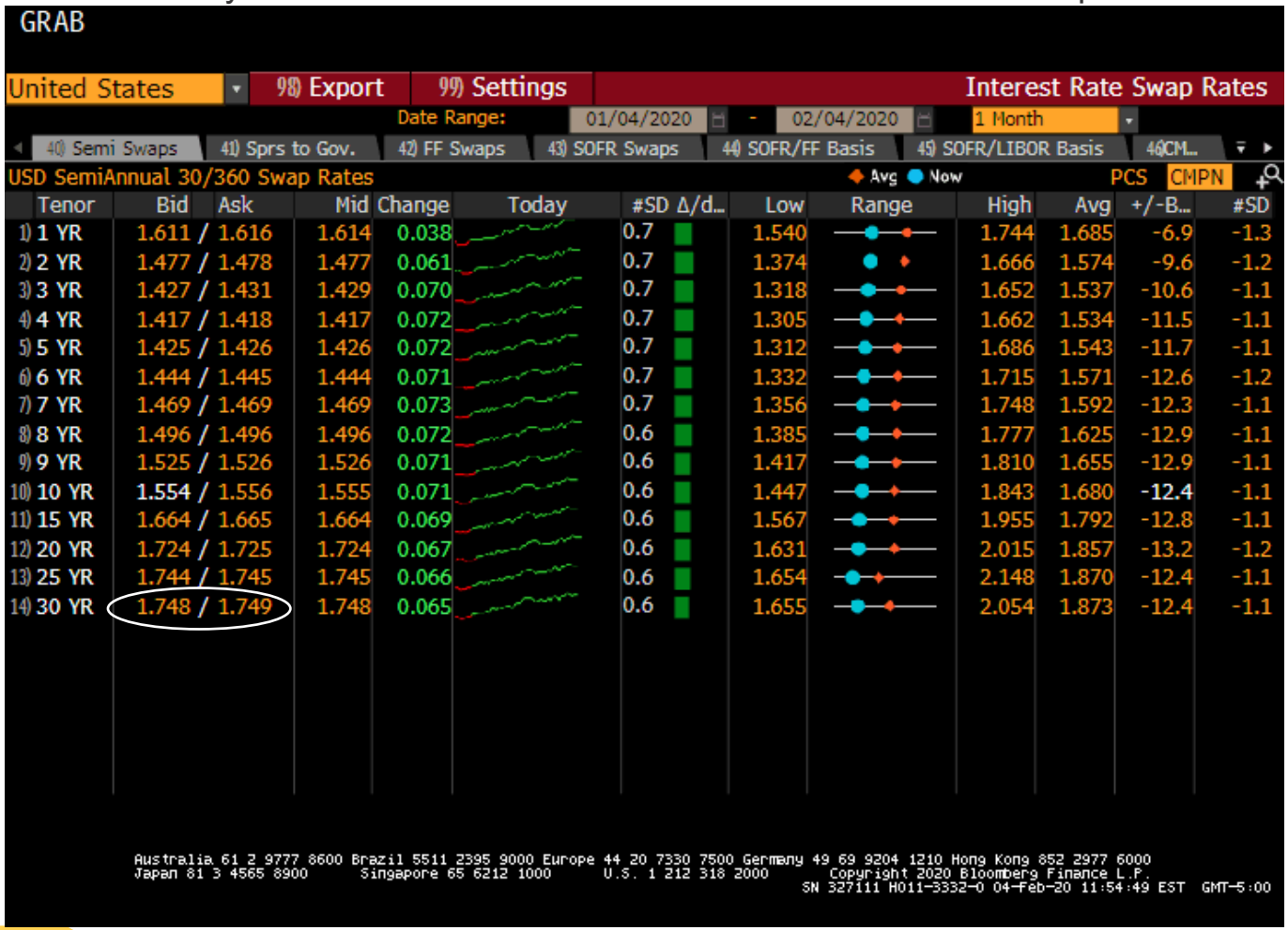


- The spread is larger for long-dated and complex products
- The spread compensates the dealer for market-making costs:
  - cost of hedging swaps portfolio, e.g. Treasurys bid/offer spread
  - residual risks, e.g. basis risk, tax risk, date mismatches
  - credit and regulatory capital reserves
  - equity cost of capital (shareholder profit)

For Illustrative Purposes Only

How Do Swap Dealers Make Money? (con't)

- There is an actively traded inter-dealer broker market for interest rate swaps



Source: Bloomberg Finance L.P. For Illustrative Purposes Only

Who Are the Major Swap Providers?

Major Municipal Swap Providers Long Term Debt/Counterparty ratings

Financial Institution	Rating	MOODY's	Watch	Outlook	S&P	Watch[2]	Outlook[3]	FITCH	Watch[4]	Outlook[5]
Bank of America NA	Aa1/A+/AA	Aa1		Neg	A+		Stable	AA		Stable
Bank of Montreal	Aa2/A+/AA-	Aa2		Stable	A+		Stable	AA-		Stable
Bank of New York Mellon/The	Aa1/AA-/AA	Aa1		Stable	AA-		Stable	AA		Stable
Barclays Bank PLC	A1/A+/A+	A1		Stable	A+		Stable	A+		Stable
Citibank NA	Aa3/A+/A+	Aa3		Stable	A+		Stable	A+		Stable
Deutsche Bank AG[1]	A1/A/A	A1		Stable	A		Stable	A		Stable
Fifth Third Bank	A3/A-/A-	A3		Stable	A-		Stable	A-		Stable
Goldman Sachs Bank	A1/A+/A+	A1		Stable	A+		Stable	A+		Stable
JPMorgan Chase Bank NA	Aa2/AA-/AA	Aa2		Neg	AA-		Stable	AA		Stable
Merrill Lynch & Co Inc	A1/A-/AA-	A1		Stable	A-		Stable	AA-		Stable
Morgan Stanley Capital Services LLC[2]	Aa3/A+	Aa3		Stable	A+		Stable			
PNC Bank NA	A2/A/A+	A2		Neg	A		Stable	A+		Stable
Royal Bank of Canada	Aa1/AA-/AA-	Aa1		Stable	AA-		Stable	AA-		Stable
SMBC Capital Markets Inc	A1/A/A	A1		Stable	A			A		
The Toronto-Dominion Bank	A2/A+/AA-u	A2		Stable	A+		Stable	AA-u		Neg
UBS AG	Aa2/A+/A+	Aa2		Neg	A+		Stable	A+		Stable
US Bank NA	A2/A+/A+	A2		Neg	A+		Stable	A+		Stable
Wells Fargo Bank NA	Aa2/A+/AA-	Aa2		Neg	A+		Stable	AA-		Stable

as of 4/29/2025

[1] Moody's Counterparty Rating for DB is A1
[2] Morgan Stanley Guarantor ratings are: A1/A-/A+

Watch	possible change in short-term	**Watch**	short-term trend placing rating under surveillance	**Watch**	resolved within 12 months
Outlook	likely direction over medium term	**Outlook**	potential direction over itermediate to longer term	**Outlook**	resolved beyond 1 to 2 years

Source: Bloomberg Finance L.P., April 2025

Interest Rate Swap Benefits

Floating-to-fixed Swap	Fixed-to-floating Swap

• Locks in fixed rate for term of financing
• Can be cheaper alternative to cash fixed-rate bond market
• Ability to terminate swap for gain if interest rates rise
	• Significant debt service savings, based on historical results
	• Can be cheaper alternative to VRDOs or other floating rate debt
	• Access to variable rates without:
	  • securing letter of credit
	  • paying remarketing/letter of credit fees
	  • restrictive letter-of-credit bank covenants
	  • risk of failed remarketing
	  • State/Sector-specific remarketing risk
	• Ability to terminate swap for gain if interest rates fall

Interest Rate Swap Risks

Floating-to-fixed SIFMA Swap	Fixed-to-floating SIFMA Swap
• Credit exposure to swap counterparty • Exposure to lower floating rates • Potential cost if swap is terminated early • Letter of Credit (LOC) renewal risk/increased credit support costs • Basis risk between VRDO cost and variable-rate swap index	• Credit exposure to swap counterparty • Exposure to higher floating rates • Potential cost if swap is terminated early • Potential swap loss if marginal tax rates cut (Tax Risk)

Poll Question 2

- An interest rate swap can **only** be structured in a way so that an issuer pays a fixed rate.

  A. True

  B. False

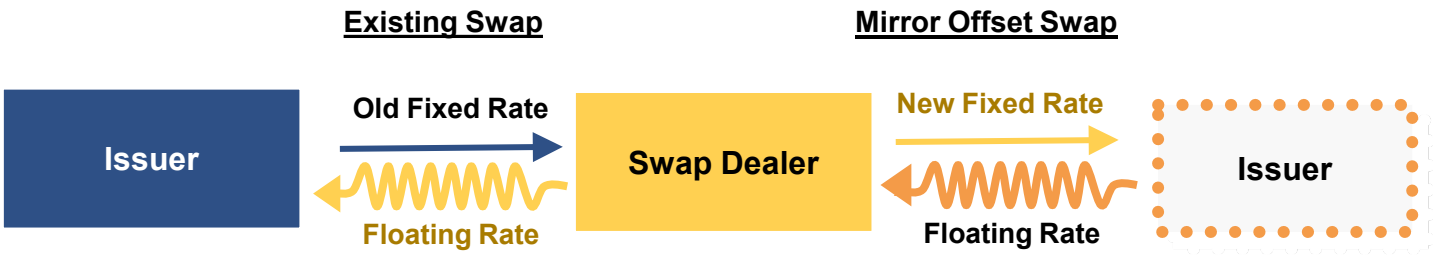
Swap Pricing and Valuation

Swap Pricing - Approach to Market Value

- Fixed swap rate is the breakeven rate that sets the present value of the fixed payments equal to the present value of the expected floating, e.g. SOFR payments
  - Expected floating payments are calculated using implied forward rates which can be derived from market SOFR swap rates
- Price or value of a swap = present value of fixed leg - present value of floating leg
- Price of an “at the market” swap = 0
- An “off market” swap has value to one party and requires an up-front cash payment to compensate for “off-market” rate
- Additional features, such as embedded caps, floors and swaptions, can be decomposed and independently valued.

Swap Termination Calculation Methodology

- For a plain-vanilla interest rate swap:
  - The existing swap is compared to a hypothetical at-market “mirror offset” swap with identical terms
  - Floating leg only re-valued to next reset date (value equals zero if calculated on a rate reset date)
  - Fixed leg value equals PV of difference between fixed payments on old and mirror swap
- All discounting is done at the dealer’s taxable cost of capital: SOFR or Overnight Index Swap (OIS) discount rates



A Sample Swap Valuation

- The issuer would be required to pay $1,903,864 to terminate this swap

Scenario: 8 years ago an issuer entered into a 10-year Pay Fixed swap

Notional Amount: $100,000,000
Existing Fixed Rate Paid by Issuer: 5.00%
Current Market Fixed Rate for 2-year swap: 4.00%

Period	Fixed Payments @ 5.00%	Fixed Payments @ 4.00%	Difference	Present Value
1	2,500,000	2,000,000	-500,000	-490,196
2	2,500,000	2,000,000	-500,000	-480,584
3	2,500,000	2,000,000	-500,000	-471,161
4	2,500,000	2,000,000	-500,000	-461,923
			Swap value =	(1,903,864)

Swap Termination Matrix

- A swap termination matrix can be used for sensitivity analysis

Swap Term (Years):	10.0
Notional Amount:	$100,000,000
Contract Swap Rate:	5.00%
Payment Frequency:	2
Issuer Pays:	Fixed

TERMINATION PAYMENT AMOUNT

Remaining Term of Swap (in Years)	Change in Swap Rate				
	-1.00%	-0.50%	0.00%	0.50%	1.00%
10	($8,175,717)	($3,990,928)	$0	$3,806,813	$7,438,737
9	($7,496,016)	($3,666,915)	$0	$3,512,192	$6,876,757
8	($6,788,855)	($3,328,158)	$0	$3,201,143	$6,280,551
7	($6,053,124)	($2,973,985)	$0	$2,872,752	$5,648,037
6	($5,287,671)	($2,603,695)	$0	$2,526,051	$4,977,002
5	($4,491,293)	($2,216,554)	$0	$2,160,019	$4,265,101
4	($3,662,741)	($1,811,796)	$0	$1,773,579	$3,509,846
3	($2,800,715)	($1,388,619)	$0	$1,365,592	$2,708,596
2	($1,903,864)	($946,185)	$0	$934,857	$1,858,549
1	($970,780)	($483,617)	$0	$480,106	$956,735

For Illustrative Purposes Only

Poll Question 3

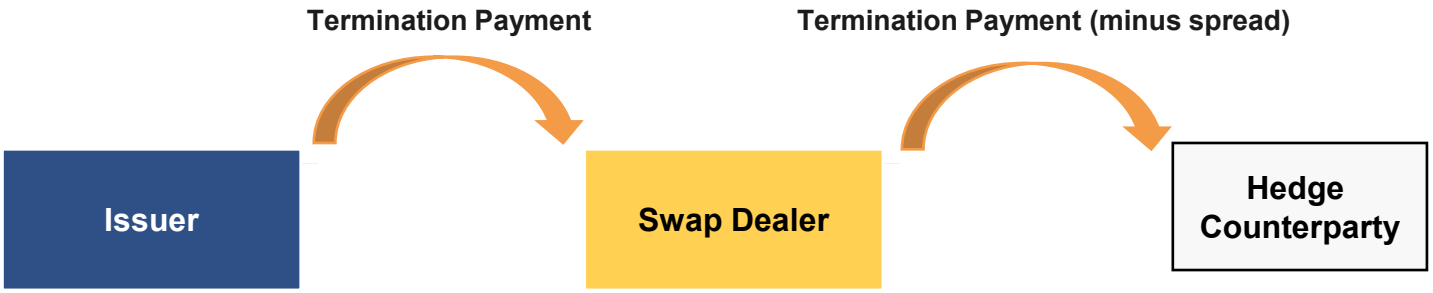
- The value of an interest rate swap stays at zero even if interest rates fluctuate.

  A. True

  B. False

Termination Payment Received From Issuer Offsets Payment Owed to Hedge Counterparty

- The payment received by a dealer upon the termination of a swap does not represent a "windfall gain" to the dealer
  - Any termination payment received (paid) by the dealer is offset by the amount paid to (received from) its hedge counterparty
- The dealer earns a small fee (bid/offer spread) on the termination
- If interest rates *rise* after an issuer enters into a pay-fixed swap, then it would *receive* a payment from the dealer upon termination



For Illustrative Purposes Only

Considerations for Swap Terminations

- Termination of a swap may require the issuer to make a buyout payment to the swap provider
- Potential termination payments can be significant
- A “gain” or “loss” on a swap will normally be offset by a “gain” or “loss” on the underlying bonds being hedged

- **Termination provisions should be specified in the Schedule**
  - (ISDA Master is “silent” regarding Issuer optional termination)
  - “Market Quotation” and “Second Method” should be specified in Schedule to the Master Agreement

Commodity Hedging

Why Consider a Fuel Hedge?

- Protects against unforeseen price increases
- Allows better budgeting certainty
- Allows the reduction of a budgetary fuel reserve
- Hedge term often coincides with the fiscal year
- Both producers and consumers of energy products can benefit from hedging

Fuel Hedging

- The purchase or sale of a futures contract (or swap contract) as a temporary substitute for a cash market transaction to be made at a later date.
- Most typical tools:

Futures:

- Financial hedging tool traded on an exchange

Swap:

- Customized financial hedging tool traded as an over-the-counter derivative

Physical Contracts:

- Often called a fixed price contract

Options:

- Options may be purchased (or sold) as either over-the-counter or exchange traded instruments. One typical option is a cap (call option) on the price of a commodity.

Spot Prices, Futures Contracts and Swaps

- Futures Hedge - a series of successive contracts (calendar months) are bought or sold simultaneously
- Swap - floating index is normally a weighted average of monthly futures prices.

Gulf Coast ULSD
(dollars per gallon)

Month	Price	Month	Price
Apr25	2.0564	Oct25	2.0219
May25	2.0296	Nov25	2.0014
Jun25	2.0104	Dec25	1.9879
Jul25	2.0104	Jan26	2.0169
Aug25	2.0164	Feb26	2.0120
Sep25	2.0221	Mar26	2.0096

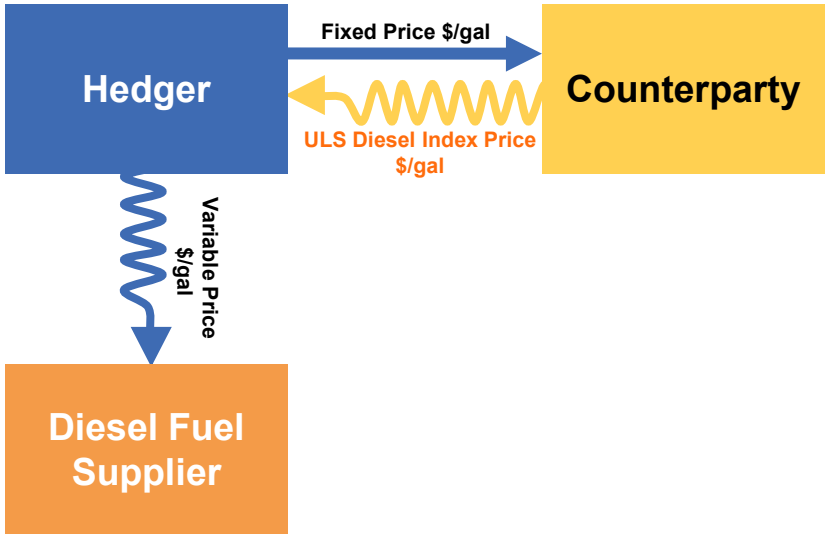
Source: Bloomberg, April 2025

Pros and Cons of the Hedging Methods

	Pros	Cons
Forward Contracts (Fixed Price with Supplier)		
	•Easy to implement and understand •No basis risk	•Credit risk to supplier (flexibility) •More expensive than alternatives
Exchange Trades (Futures Contracts and Options)		
Futures	•No counterparty credit risk •Efficient pricing •Timing flexibility	•Futures Margins (liquidity) •Administrative Burden •Basis risk •Size inflexibility (trade by 1000 Barrels)
Options	•No counterparty credit risk •Efficient pricing •Timing flexibility •Known cost for bought options	•Futures Margins (liquidity) •Administrative Burden •Basis risk •Size inflexibility (trade by 1000 Barrels)
Over-the-Counter (Swaps and options like caps)		
Swaps	•Efficient pricing •No margins •Limited Administrative burden	•Basis risk •Counterparty Credit Risk •2-way price risk
Options	•Efficient pricing •Timing flexibility •Known cost for bought options	•Basis Risk •Counterparty credit risk

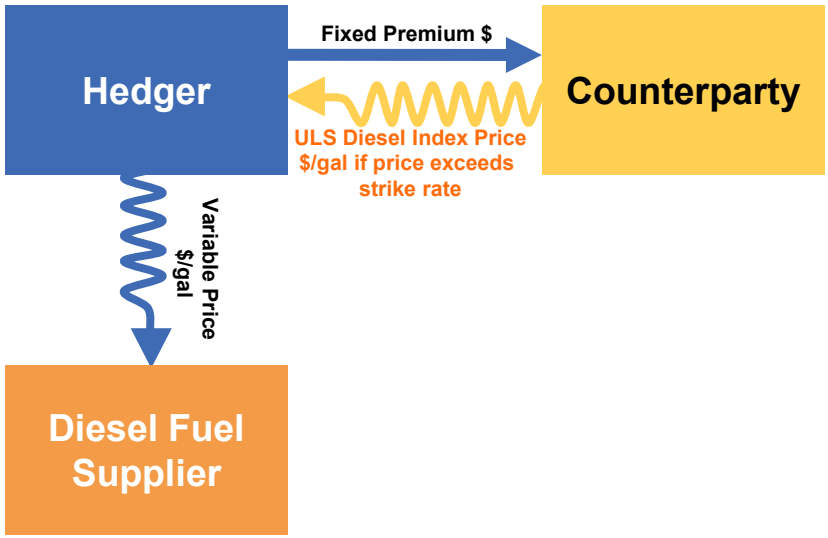
Mechanics of Fuel Price Swap

- Hedger is normally a “fixed rate (price) payer” on swap
- Floating index typically used in energy hedging is published price from an industry trade publication, e.g. Platt’s Oilgram, or the “near” (closest to expiration) futures contract
- Can specify physical or cash settlement on contract
  - Physical settlement exposes hedger to force majeure events



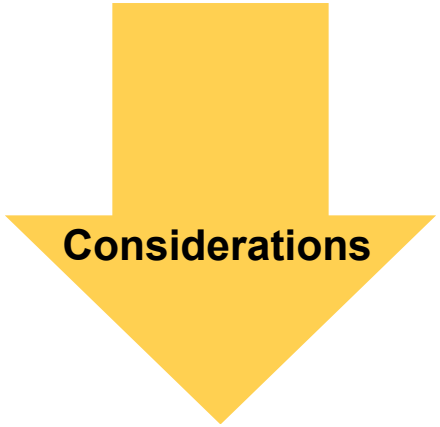
Mechanics of Fuel Price Cap

- Hedger pays premium up-front for the price protection
- Floating index typically used in energy hedging is published price from an industry trade publication, e.g. Platt's Oilgram, or the "near" (closest to expiration) futures contract
- Cap counterparty pays difference if index exceeds cap strike (rate)
  - For example, hedger buys a price cap at $2.50/gallon on ULSD
  - If ULSD is $2.00/gallon in a month, Hedger pays that rate for the fuel, no payments made on hedge
  - If ULSD is $3.00/gallon in a month, Hedger pays that for fuel, receives $0.50/gal. payment from Counterparty, reducing effective price to $2.50/gal.



Pros and Cons of a Hedging Program

- Budget Stability
- Ability to more accurately budget (less need to reserve against increases)
- Transparency of income vs. expense

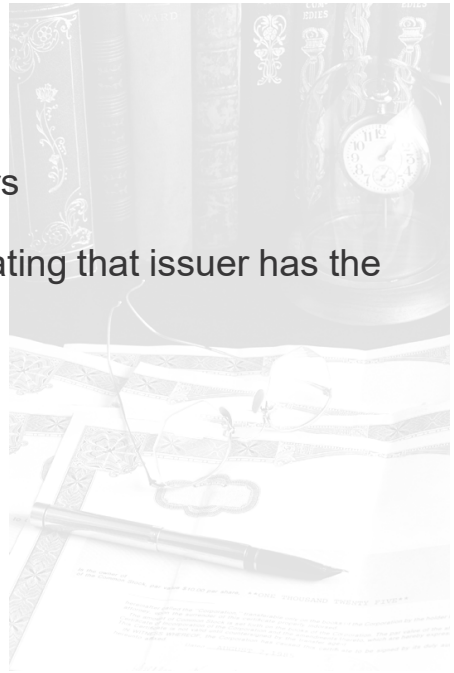


- Cost of implementing a hedge or hedging program
- Cost of forward contracts vs. spot
- "News management"
  - Speculation or hedging
  - Price movement (lower) during the hedge period

General Considerations for Swaps

Documentation

- Standardized documentation
- International Swaps and Derivatives Association
  - Master Agreement (the “pre-printed form”, i.e. boilerplate document)
  - Schedule to the Master Agreement (various “elections” to the Master Agreement can be made)
  - Confirmation (the “trade ticket”)
  - Credit Support Annex (governs posting of collateral)
- Documentation should be reviewed by legal counsel and/or advisors
- Swap providers often require legal opinion or other certifications stating that issuer has the legal authority to enter into a swap (“legal, valid and binding”)



Source: https://www.isda.org/

Swap Procurement

- Swaps can be procured via a competitive bid process or negotiated directly with a pre-selected swap provider
- Factors that influence procurement method
  - Complexity of transaction
  - Credit quality of issuer
  - Size of transaction
- Not recommended that issuers be locked into a specified procurement method by policy requirements
- Role of brokers, advisors and investment bankers
  - Fee disclosure

Interest Rate Swap Costs

- The costs of executing an interest rate swap include:
- Swap provider bid/offer spread
  - Typically ranges from 4 - 8 bps per annum added to (subtracted from) swap fixed rate paid (received) for long-term negotiated swaps
  - Normally less for competitively bid “plain-vanilla” swaps
- Legal fees*
  - Normally one-time flat fee to draft/review swap Master Agreement
  - Usually low due to standardized (ISDA) documentation
- Swap Advisory Fees*
  - Normally one-time flat fee that can range from 0.5 – 3.0 bps per annum depending on transaction size and complexity
- Monitoring/Reporting Fees
  - Usually small ongoing annual fee for swap monitoring/valuation/reporting

*fees can be paid by Provider via an adjustment to the fixed swap coupon or directly by issuer

Tax Considerations for Swaps and Hedges

Qualified Hedges

- In general, payments made or received under a qualified hedging transaction are included for purposes of determining a bond's arbitrage yield.
- Qualified hedges must generally be entered into no later than 15 days after the issue date of the bonds
- Qualified hedges generally must contain no significant investment element
  - Pre-paid Caps or options and "off-market" swaps may not be considered qualified hedges under the IRS regulations
- Issuers should consult their Tax Counsel for guidance

Sources: Treasury Regulations §1.148-4(h).

Additional Considerations

- Legal authority to execute swaps (Authorizing Resolution, compliance with swap policy etc.)
- Rating agency considerations
- Bond Covenants/Indenture
- New Financial Reform Law requirements for use of swaps by municipalities

Dodd-Frank Act

Dodd-Frank Act (DFA) Overview

- Dodd-Frank Wall Street Reform and Consumer Protection Act (DFA)
- An act created to promote the financial stability of the U.S.
- Improve accountability and transparency in the financial system
- End ‘‘too big to fail’’
- Protect the American taxpayer by ending bailouts
- Protect consumers from abusive financial services practices
- Commodity Exchange Act (CEA)
- Passed in 1936 and regulates the trading of commodity futures in the U.S.
- Section 731 of DFA amends the CEA
- Commodity Futures Trading Commission (CFTC)
- Created in 1974 by Congress as an independent agency with the mandate to regulate commodity futures and option markets in the U.S.
- CFTC’s mandate has been expanded most recently by the DFA
- Securities and Exchange Commission (SEC)
- Created in 1934 and holds primary responsibility for enforcing the federal securities laws and regulating the securities industry, the nation's stock and options exchanges, and other electronic securities markets in the U.S.
- DFA provides CFTC and SEC with authority to regulate swaps and security-based swaps

[1] Dodd-Frank Wall Street Reform and Consumer Protection Act, Pub. L. No. 111-203, 124 Stat. 1376 (2010)

Dodd-Frank Key Definitions

- **Swap Dealer**
  - Regularly enters into swaps with counterparties as an ordinary course of business
  - Engages in activity causing itself to be commonly known in the trade as a dealer or market maker in swaps
- **Major Swap Participant**
  - A person that maintains a “substantial position” in any of the major swap categories
  - A person whose outstanding swaps create “substantial counterparty exposure that could have serious adverse effects on the financial stability of the U.S. banking system or financial markets
  - Any “financial entity” that is “highly leveraged relative to the amount of capital such entity holds and that is not subject to capital requirements established by an appropriate Federal banking agency” and that maintains a “substantial position” in any of the major swap categories
- **Special Entity**
  - States, municipalities, state and federal agencies, pension plans, governmental plans and endowments (excludes 501c3 entities, e.g. colleges, non-profit hospitals)
  - Swap dealers have additional responsibilities with respect to transacting with Special Entities
- **Qualified Independent Representative (Swap Advisor)**
  - Independent fiduciary to Special Entity capable of evaluating the transaction and its risks

[1] Dodd-Frank Wall Street Reform and Consumer Protection Act, Pub. L. No. 111-203, 124 Stat. 1376 (2010)

DFA Guidelines

- DFA provides for registration and comprehensive regulation of Swap Dealers and Major Swap Participants
- Requires SDs and MSPs to become and remain members of a registered futures association
- *Requires mandatory clearing of all swaps through an exchange or clearinghouse unless no clearing house will accept the swap or one of the parties is a commercial end-user*
- DFA provides an exemption for mandatory clearing if one of the parties is a non-financial entity and is using swaps to "hedge or mitigate commercial risk"
  - It is expected that all Special Entities, i.e. munis, will qualify for the clearing exemption
  - All Special Entities are required to use a QIR when executing swaps

Other areas include:

- Capital and margin
  - To offset risk to the SDs or MSPs and the financial system arising from use of swaps
- Reporting and recordkeeping
  - SDs and MSPs should make reports regarding transactions and positions and financial condition of the SDs and MSPs and to maintain daily records of trading and all recorded communications

Source: https://www.cftc.gov/LawRegulation/DoddFrankAct/index.htm

Summary

Summary

Swaps can be valuable tools for both debt and interest rate risk management

There are potential risks and pitfalls

Issuers should seek out independent, informed advice on the use of swaps

The risks/rewards of any swap should be clearly understood before entering into a transaction

Overview of PFMSA

Firm Overview

PFM Swap Advisors LLC (“PFMSA”) is an affiliate of PFM Financial Advisors LLC (“PFMFA”), a nationally recognized financial advisor to the public and non-profit sector.

PFMSA serves as QIR and Designated Evaluation Agent in advising public sector and 501c3 clients on the use of derivatives and hedging products. We analyze the benefits, risks and costs for each option, assist in the selection of an option and implement the plan in the best interest of the client.

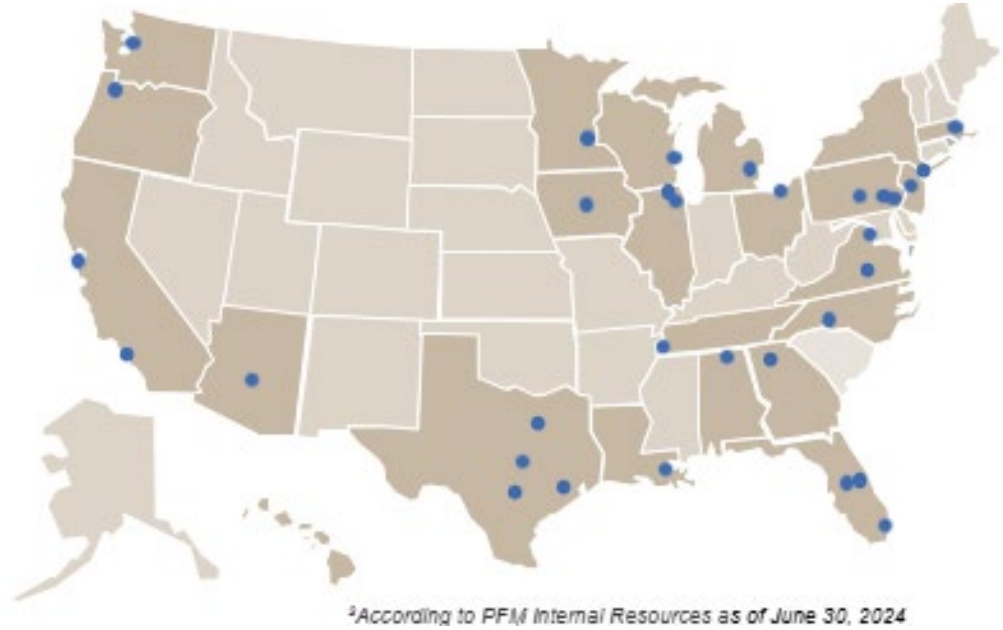
Contacts

Nat Singer, *Senior Director*
George Hu, *Director*
Brooke Pierce, *Senior Swaps Coordinator*
Jacob Cusatis, *Analyst*

Swap Advisory Services for Municipal and Tax-Exempt Entities

32 Office Locations

PFM[1] currently has over 300 employees[2] located in 32 offices and locations across the United States[3].



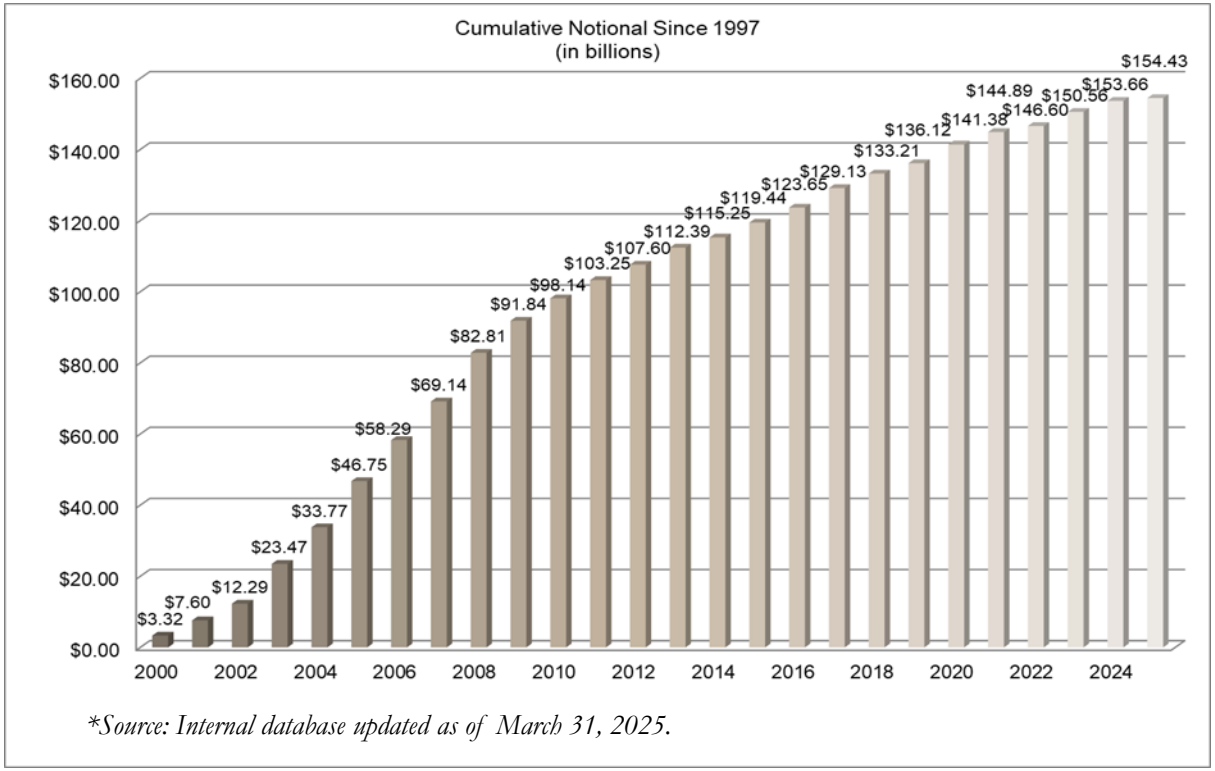
[3]According to PFM Internal Resources as of June 30, 2024

[1] PFM is the marketing name for a group of affiliated companies providing a range of services. All services are provided through separate agreements with each company.
[2] Estimated according to PFM internal resources as of June 30, 2024.

Competitive Edge

- ***Strong team with 25 years experience[1] that is familiar with all aspects of swap and derivative transactions (over 2270 transactions and $154 billion in notional principal arranged since 1997*)***
- ***Access to market price information and trading screens and state-of-the art derivatives valuation software***
- ***Swap and derivative products advisory provided by a Registered Municipal Advisor, subject to Securities and Exchange Commission regulation (PFMSA is not a swap broker or dealer; we serve only as a fiduciary to our clients).***
- ***Registered with the Commodity Futures Trading Commission ("CFTC") as a Commodity Trading Advisor ("CTA")***

- Assists with seamless transaction execution
- Advises on maintaining orderly market through:
  - Real time pricing
  - Market communication
  - Minimize front-running dealers
- Advocate issuer objectives, requirements and transaction needs to Wall Street
- Seek to generate lowest cost funding for issuers



**Source: Internal database updated as of March 31, 2025.*

[1] PFM Swap Advisors LLC commenced operations on April 1, 2014; all transactions prior to such date were effected through former affiliate, PFM Asset Management LLC.

PFMSA Services

- PFMSA provides comprehensive services in regard to interest rate swaps, including:

Swap and Derivatives Policy Development	Transaction Review and Risk Analysis	Structuring Advice
Board or Rating Agency Education	Provider Identification	Documentation Review
Hedge Accounting & Reporting	Pricing and Execution Advice (Competitive Bid or Negotiated)	Fair Market Opinions
Portfolio Monitoring and Surveillance	Qualified Independent Representative (Dodd Frank)	Designated Evaluation Agent (Dodd Frank)

Swaps and Derivatives Part II: Accounting and Monitoring

Client Training

May 1, 2025

Presented By

George Hu

PFM Swap Advisors LLC

1735 Market Street
42nd Floor
Philadelphia, PA 19103

(215) 567-6100
(215) 567-4180 fax
pfm.com

GASB 53

GASB 53 Summary Review

The following are the three core concepts of GASB 53:

1. **Report the fair value of a derivative on the statement of net assets**

   (balance sheet).

2. **All hedges must be evaluated for effectiveness**

   (methods outlined in the Statement, applied in stepladder fashion).

3. **Recognize changes in the fair value** - of the derivative either:

   a) on the balance sheet or statement of net assets,

   as **deferred inflows** or **deferred outflows**

   if the derivative passes its effectiveness test; OR

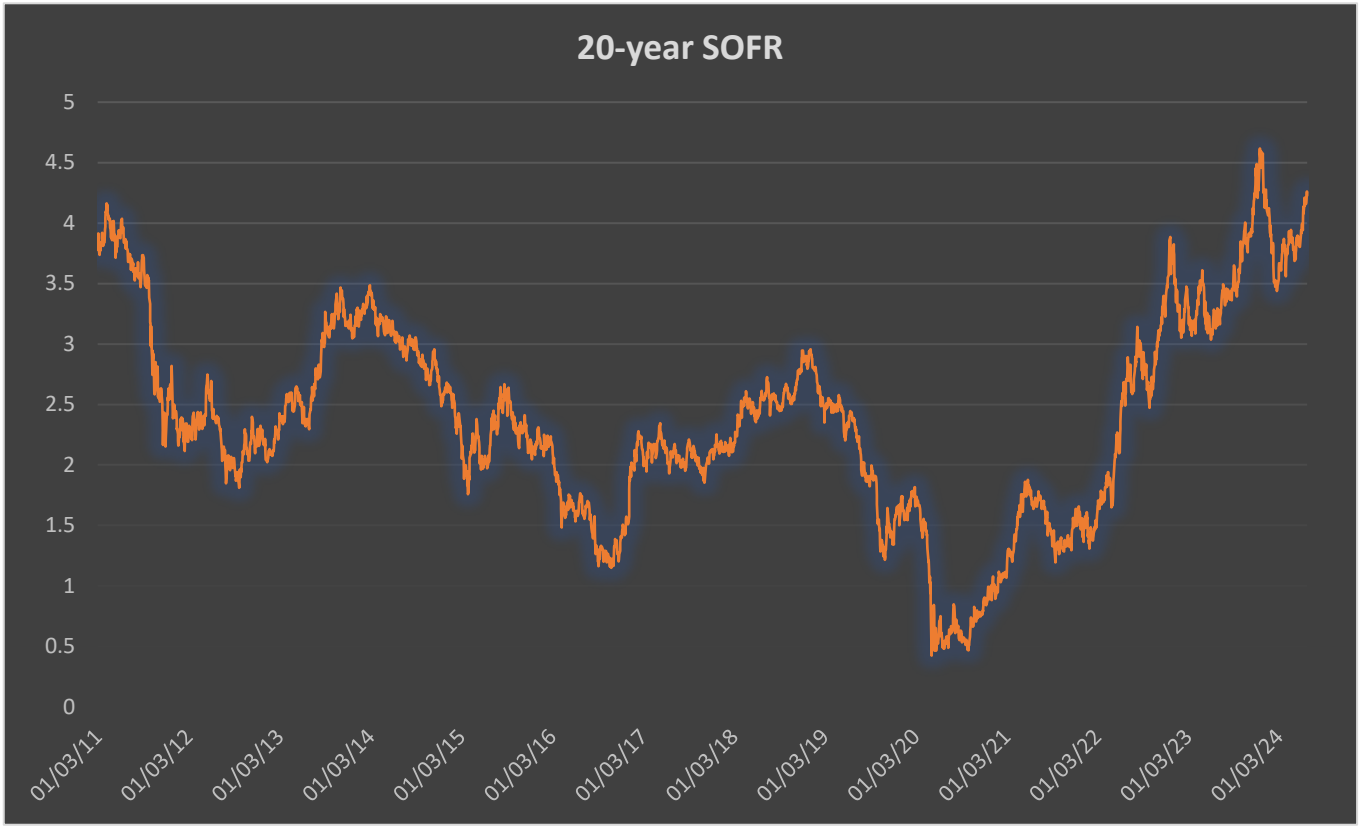
   b) as **investment revenue/loss** (i.e., gain or loss through statement of revenues, expenses, changes in fund net assets, as appropriate) if the derivative fails, or is not a hedge.

   The government must also provide a summary of activity through the reporting period

Source:
https://gasb.org/page/ShowPdf?path=GASBS+53+combined.pdf&title=GASB%20STATEMENT%20NO.%2053,%20ACCOUNTING%20AND%20FINANCIAL%20REPORTING%20FOR%20DERIVATIVE%20INSTRUMENTS

Market Environment During GASB 53 Implementation

- **20-year SOFR 2011 to Present**
  - **Level of interest rates are key drivers of Fair Value**
  - **Most borrowers hedge against rising interest rates**
  - **Results in relatively large liabilities**



Source: Bloomberg

Primary Issuer Concerns of GASB 53

(in order of importance)

New asset/liability effect on bond covenant ratios

Potential investment revenue/loss effect on bond covenant ratios

Potential Board, Investor, Press impact of recording new liabilities/losses

Potential of recording large loss upon losing effectiveness (Headline risk)

Additional training and compliance cost

What are the Pros and Cons of Different Testing Methods?

	Pros	Cons
Consistent Critical Terms		
	Easy to implement	No flexibility for other types of swaps
Quantitative Methods		
Synthetic Instruments	Relatively easy to implement; Uses observed bond and swap data	Could fall out of range in differing rate environments
Dollar Offset	Conceptually easy to implement – just another hypothetical "perfect" trade	Unpredictable and subjective if hedging and hedged rates do not move significantly, and in tandem.
Regression Analysis	Favorite among ASC 815; Has worked well historically	Relatively harder to implement; Needs statistical knowledge
Other Quantitative Methods		
	Flexible, as long as one can justify	Too much subjectivity, and need to document procedure

How to Account for an Effective Hedge (Journal Entries)?

- When a derivative is an effective hedge and its value goes up by $1,000,000

Date	Account Titles	Debit	Credit
June 30, 20XX	Swap	1,000,000	
	Deferred Inflow		1,000,000

- When a derivative is an effective hedge and its value goes down by $1,000,000

Date	Account Titles	Debit	Credit
June 30, 20XX	Deferred Outflow	1,000,000	
	Swap		1,000,000

What Happens to an Ineffective Hedge (Journal Entries)?

- When a derivative is an **ineffective** hedge and its value goes up by $1,000,000

Date	Account Titles	Debit	Credit
June 30, 20XX	Swap	1,000,000	
	Investment Revenue		1,000,000

- When a derivative is an **ineffective** hedge and its value goes down by $1,000,000

Date	Account Titles	Debit	Credit
June 30, 20XX	Investment Revenue	1,000,000	
	Swap		1,000,000

Poll Question 4

- GASB 53 first rule is that:

A. Derivatives must be tested for hedge effectiveness

B. Derivatives must be reported on the statement of net assets

C. Changes in fair value of derivatives must be reported as deferred inflow outflow, or as revenue gains or losses, if it fails as a hedge

D. Derivatives must be associated with bonds first

E. A government must elect whether to follow the statement or not

ASC 820 & GASB 72 – Fair Value

ASC 820 and GASB 72 Fair Value Summary:

Fair Value Definition

- Fair value shall reflect the nonperformance risk of the **client counterparty** relating to that **liability**
- Fair value shall reflect the nonperformance risk of the **bank counterparty** relating to that **asset**

Fair Value Hierarchy based on Valuation Technique/Input

- Inputs to generate the valuation are classified into three different Levels
  - **Level 1** – Quoted prices
  - **Level 2** – Observable inputs
  - **Level 3** – Unobservable inputs
- Disclosure is made of the level within which the Fair Value falls
- ***PFMSA will help compute Fair Value Measurements for any Asset/Liability requiring compliance with ASC 820 or GASB 72.***

Sources:
- https://fasb.org/page/PageContent?pageId=/projects/recentlycompleted/fair-value-measurement-topic-820-fair-value-measurement-of-equity-securities-subject-to-contractual-sale-restrictions.html
- https://www.gasb.org/page/ShowPdf?path=GASBS72.pdf&title=GASB%20STATEMENT%20NO.%2072,%20FAIR%20VALUE%20MEASUREMENT%20AND%20APPLICATION

GASB 72 and ASC 820 Redefines Fair Value

In other words:

- A liability must reflect the chance of the government counterparty going “belly up” before the maturity of a swap.
- An asset must reflect the chance of the bank counterparty going “belly up” before maturity of the swap.
  - Think having had an asset with bankrupt Lehman Brothers as counterparty, and standing in line for a claim to receive the *fair value* of cents on the dollar *mark-to-market*.
  - GASB 72 and ASC 820 requires reporting the fair value, not the mark-to-market.

Siource:

- https://fasb.org/page/PageContent?pageId=/projects/recentlycompleted/fair-value-measurement-topic-820-fair-value-measurement-of-equity-securities-subject-to-contractual-sale-restrictions.html
- https://www.gasb.org/page/ShowPdf?path=GASBS72.pdf&title=GASB%20STATEMENT%20NO.%2072,%20FAIR%20VALUE%20MEASUREMENT%20AND%20APPLICATION

Fair Value Reporting Requirements

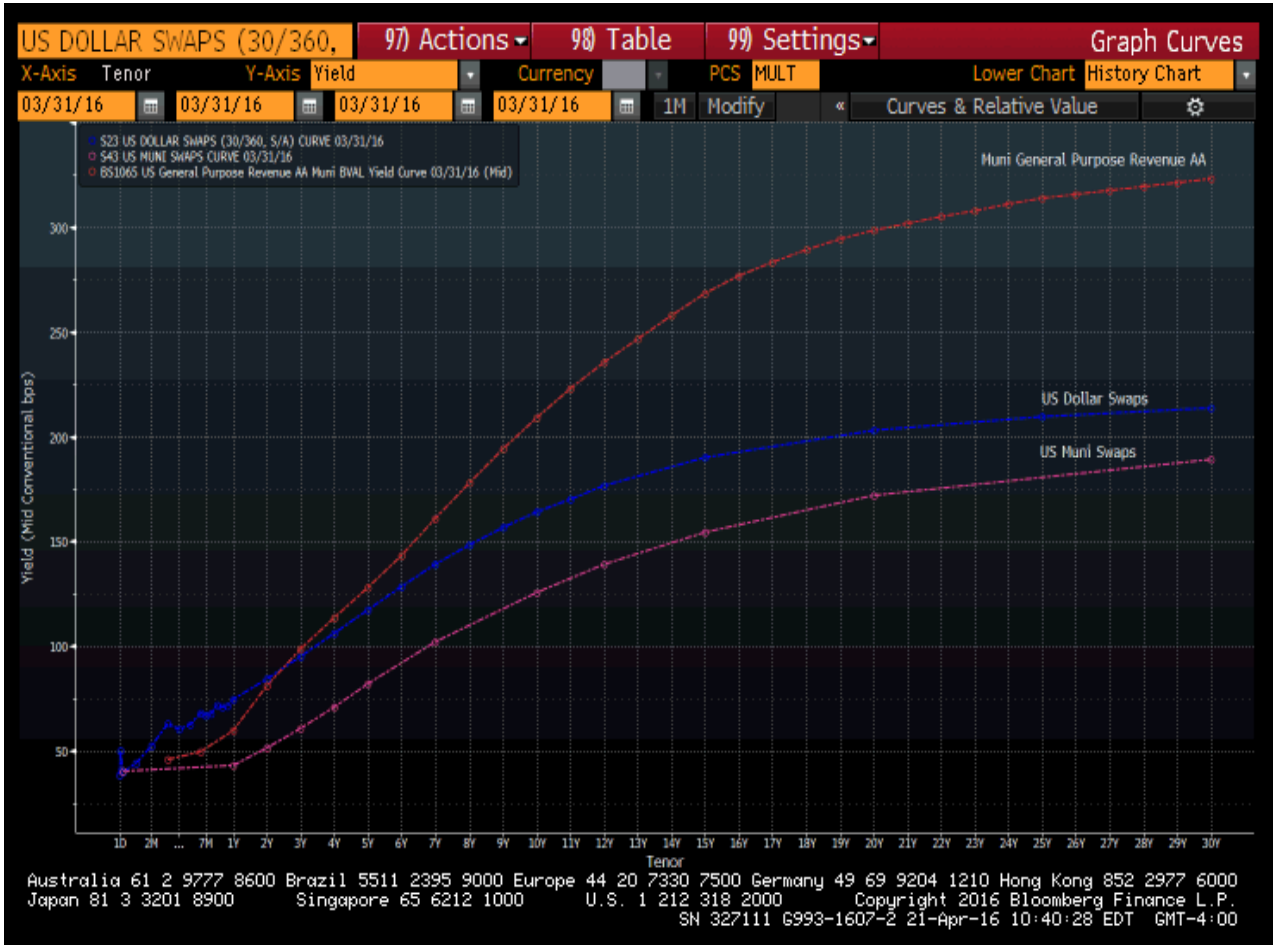
Example level disclosure:

	Level 1	Level 2	Level 3	Total
Common stocks - Consumer durable goods	$ 1,086,000	$ -	$ -	$ 1,086,000
Common stocks - Consumer nondurable goods	155,000	-	3,280,000	$ 3,435,000
Common stocks - Other industries	921,000	-	-	$ 921,000
Convertible bonds	-	5,400,000	-	$ 5,400,000
Swaps	-	2,710,000	-	$ 2,710,000
U.S. government obligations	-	3,475,000	-	$ 3,475,000
Repurchase agreements	-	500,000	-	$ 500,000
TOTAL	$ 2,162,000	$ 12,085,000	$ 3,280,000	$ 17,527,000

Fair Value Outline of Methodology

- Determine **nonperformance risk free valuation**
  - Old definition of fair value, e.g. using a mid LIBOR (now SOFR) curve
- Absent nonperformance risk, determine whether asset or liability
- Absent nonperformance risk, determine which counterparty is at risk of nonperformance
- Create a counterparty specific discounting curve based on:
  - **A**: Relevant, Observable (Level 2) industry, sector, geographic curves, e.g. Fair Market Curves on Bloomberg, or Thomson Financial.
  - **B**: Unobservable (Level 3) client specific curve adjustments – if necessary
- Compute a **risk adjusted valuation** using the counterparty specific discounting curve
- The difference between the nonperformance risk free valuation and risk adjusted valuation is the transaction's **risk adjusted amount**
- In the simplest case, this is the **Credit Value Adjustment (CVA)** to apply to the nonperformance risk free valuation to get the **Fair Value** under ASC 820 or GASB 72

Sample Relevant Curves for GASB 72/ASC 820 Fair Value Reporting



Nonperformance Risk:
Muni General Purpose AA
vs.
"Risk Free"
Tax-Exempt & Taxable Swaps

Source: Bloomberg Finance L.P. - For Illustrative Purposes Only

Sample GASB 72/ASC 820 Report

[redacted] Transportation [redacted]

Fair Value Valuation Report as of 06/30/2016

Transaction Type	Name	Associated Bonds	Client Pays	Client Receives	Trade Date	Effective Date	Maturity Date	Initial Notional	Bank Counterparty	Moody's	S&P	Fitch	Accrued Interest	MTM Value
Swap	[redacted]	Series 2002 B & C Refunding Bonds	3.1640%	67% of USD-LIBOR	10/3/2002	10/23/2002	9/1/2019	$200,000,000.00	Goldman Sachs Bank USA	A1	A-	A	($1,122,538.75)	($6,481,359.00)
Swap	[redacted]	Series 2002 B & C Refunding Bonds	3.1640%	67% of USD-LIBOR	3/1/2012	3/1/2012	9/1/2019	$112,139,170.00	The Bank of New York Mellon	Aa2	AA-	AA	($673,551.27)	($3,882,366.84)
Swap	[redacted]	Series 2004 B & C Revenue Bonds	3.5710%	63.5% of USD-LIBOR + 0.29%	11/12/2004	11/23/2004	9/1/2024	$147,000,000.00	Goldman Sachs Bank USA	A1	A-	A	($816,259.74)	($13,225,797.28)
Swap	[redacted]	Series 2004 B & C Revenue Bonds	3.5710%	62.329% of 10 Year CMS	6/15/2007	7/1/2007	9/1/2024	$75,000,000.00	Goldman Sachs Bank USA	A1	A-	A	($821,406.50)	($12,494,106.95)
													($3,433,756.26)	($36,083,630.07)

MTM Value	Asset/ Liability	Non-PerformanceRisk Entity		Moody's	S&P	Fitch	Credit Support	Credit Value Adjustment	Fair Value	Valuation Level
($6,481,359.00)	Liability	[redacted]	Transportation	Aa2	AAA	N/A	$0.00	$10,293.07	($6,471,065.93)	Observable (Level 2)
($3,882,366.84)	Liability	[redacted]	Transportation	Aa2	AAA	N/A	$0.00	$6,148.46	($3,876,218.38)	Observable (Level 2)
($13,225,797.28)	Liability	[redacted]	Transportation	Aa2	AAA	N/A	$0.00	$145,460.13	($13,080,337.15)	Observable (Level 2)
($12,494,106.95)	Liability	[redacted]	Transportation	Aa2	AAA	N/A	$0.00	$139,259.81	($12,354,847.14)	Observable (Level 2)
($36,083,630.07)							$0.00	$301,161.47	($35,782,468.60)	

Source: SwapViewer® - For Illustrative Purposes Only

Sample GASB 72/ASC 820 Report Cont'd

Relevant Data for Fair Value Calculation, incorporating nonperformance risk as of 09/29/2023

Maturity	SOFR YIELD CURVE
1D	5.3100
1W	5.3099
2W	5.3120
3W	5.3143
1M	5.3201
2M	5.3562
3M	5.3887
4M	5.4169
5M	5.4370
6M	5.4540
7M	5.4665
8M	5.4686
9M	5.4676
10M	5.4610
11M	5.4497
12M	5.4373
18M	5.1932
2Y	4.9726
3Y	4.6410
4Y	4.4650
5Y	4.3750
6Y	4.3273
7Y	4.2977
8Y	4.2803
9Y	4.2727
10Y	4.2701
12Y	4.2723
15Y	4.2756
20Y	4.2296
25Y	4.1226
30Y	4.0168
40Y	3.7920
50Y	3.5766

Maturity	SIFMA YIELD CURVE
1Y	3.5750
2Y	3.4124
3Y	3.3125
4Y	3.2650
5Y	3.3031
7Y	3.3683
10Y	3.4801
12Y	3.5193
15Y	3.5648
20Y	3.5845
30Y	3.5549

Maturity	SIFMA/SOFR RATIOS
1Y	65.7500
2Y	68.6250
3Y	71.3750
4Y	73.1250
5Y	75.5000
7Y	78.3751
10Y	81.5000
12Y	82.3750
15Y	83.3750
20Y	84.7500
30Y	88.5000

Source: SwapViewer® - For Illustrative Purposes Only

Sample GASB 72/ASC 820 Report Cont'd

Maturity	Muni Transportation AA+ BS1062 Tax-Exempt Observable - Level 2
3M	0.3190
6M	0.3570
1Y	0.4240
2Y	0.5740
3Y	0.7020
4Y	0.8280
5Y	0.9430
7Y	1.1910
9Y	1.4560
10Y	1.5860
12Y	1.8290
14Y	2.0210
15Y	2.1040
20Y	2.3880
30Y	2.5960

Maturity	BANK-A BANK-A Taxable Observable - Level 2
3M	0.9430
6M	1.0246
1Y	1.1815
2Y	1.5111
3Y	1.7826
4Y	2.0069
5Y	2.2192
7Y	2.5970
9Y	2.8951
10Y	3.0394
12Y	3.2888
14Y	3.5382
15Y	3.6629
20Y	4.0240
30Y	5.7972

Maturity	BANK-AA BANK-AA Taxable Observable - Level 2
3M	0.6520
6M	0.6980
1Y	0.7950
2Y	1.0410
3Y	1.2830
4Y	1.5030
5Y	1.7210
7Y	2.1100
9Y	2.2700
10Y	2.5480
12Y	2.8706
14Y	3.1933
15Y	3.3546
20Y	3.7157
30Y	5.4889

Source: SwapViewer® - For Illustrative Purposes Only

Poll Question 5

- Under ASC 820 or GASB 72 Fair Value, a client has four identical swaps with four different counterparties, all swaps in a liability position (against the client) with no collateral posted. Which one will show the largest Credit Value Adjustment (CVA)?

A. Merrill Lynch Derivative Products

B. Goldman Sachs Mitsui Marine

C. Citibank, N.A.

D. Lehman Brothers Derivative Products

E. Same CVA for all swaps

Poll Question 6

- A client with a swap liability has just been downgraded and reports under ASC 820. All else equal, what happens to the mark-to-market of the swap and the Fair Value of the swap?

A. Mark-to-Market does not change, Fair Value becomes less of a liability

B. Mark-to-Market does not change, Fair Value does not change

C. The Bank Counterparty will be glad to get rid of it, so both Mark-to-Market and Fair Value become less of a liability.

D. The Mark-to-Market becomes more of a liability because the situation is worse for the bank counterparty, so the Fair Value should also become more of a liability.

E. Impossible to tell with the information given

SwapViewer® - As a Training Tool
Live Demo

Disclosures

PFM is the marketing name for a group of affiliated companies providing a range of services. All services are provided through separate agreements with each company. This material is for general information purposes only and is not intended to provide specific advice or a specific recommendation. PFM does not provide tax, legal or accounting advice.

Financial advisory services are provided by PFM Financial Advisors LLC, a registered municipal advisor with the Securities and Exchange Commission (SEC) and the Municipal Securities Rulemaking Board (MSRB) under the Dodd-Frank Act of 2010.

Swap advisory services are provided by PFM Swap Advisors LLC which is registered as a municipal advisor with both the MSRB and SEC under the Dodd-Frank Act of 2010, and as a commodity trading advisor with the Commodity Futures Trading Commission. Additional applicable regulatory information is available upon request.

Consulting services are provided through PFM Group Consulting LLC. PFM's financial modeling platform for strategic forecasting is provided through PFM Solutions LLC.

For more information regarding PFM's services or entities, please visitwww.pfm.com.

Special disclaimer regarding the research and forecasts included in today's presentation: This research and any forecasts are based on current public information, as of the date of this presentation (or as of such date as may be specified in the presentation), that we consider reliable, but we do not represent it as accurate or complete, and it should not be relied on as such. The information, opinions, estimates and forecasts contained herein are also as of the date hereof and are subject to change without prior notification.

Case studies are provided for information purposes only and do not constitute specific advice or a recommendation. Opinions, results, and data presented are not indicative of future performance. Actual results may vary. Inclusion on this list does not represent endorsement of PFM's services.

Thank You

pfm