

# Interest Rate Swap Futures

**ERIS Standards, Flexes  
&  
MAC Swap Futures (MSF)**



# The R.J. O'Brien Decision

- **The Challenge:** How to “do” virtually everything that can be done with cleared OTC swaps with greatest cost and capital efficiency for both Customers and RJO.
- **The Solution:** Combine ERIS Standards + ERIS Flexes + MAC Swap Futures (MSFs) and Eurodollars to replicate anything clear-able elsewhere. **Build it- don't buy it.** Lower the margins & costs, increase the liquidity & transparency, and maintain full D/F compliance without more than a trade ticket. It's what futures are- hedge building blocks.
- **The Truth:** RJO is a pure agency FCM- no dealer. We never made a chunk of the \$35-\$50bb/year that was lost with the elimination of OTC execution (“trading profits”). We got lucky- we didn't chase what we never had. Second mouse gets the cheese.

# Trading Knowledge: Liquidity

- Both Exchange-Traded Swap Futures DO NOT yet trade around the clock like Treasury futures
  - Liquidity/Streaming markets: Just after 7am to 4pm Central; M-F, U.S. business days.
    - Morning Fed O/N mark limits opening due to curve valuation
  - Depth, even markets at all, fall off prior to Econ Releases– more like cash; less like Treasury Futures
  - Very low (relative to SEF execution and other interest rate futures) block trade thresholds
    - Via RJO, pick your competing brokers
    - Enables “packaging” of irregular curve trades on small (adjustment basis) or massive (whole portfolio immunization or hedge re-allocation)
- Both executable via voice or e-platform
  - EMSX platform; Third-party platforms; Voice execution through RJO

# Trading Knowledge: HUGE!

- ERIS Standards and Flexes: Fixed-Payer Vantage Point–
  - **BUY ERIS = SHORT DV'01**
  - **SELL ERIS = LONG DV'01**
- CME Group MAC Swap Futures (MSF)
  - **BUY MSF = LONG DV'01**
  - **SELL MSF = SHORT DV'01**

→ **YES, this difference gets its own slide**

# ERIS Standard Swap Futures

## Eris Standards: Quarterly Swap Futures

- **Benchmark Contracts**
  - 2, 3, 4, 5, 7, 10, 12, 15, 20 & 30 year contracts with quarterly effective dates that coincide with IMM dates
  - Liquidity, transparency, and efficiency of futures, but identical performance and economics of an OTC MAC interest rate swap
  - Can be rolled for constant duration/yield curve adjustments or held to maturity as futures (no physical delivery)
  - Handful of dealers streaming actionable markets
  - Streaming quotes past the contract's effective date
  - Single line item; Unwind existing positions, automatically net and offset.
  - 2-day Var margin through the maturity date

# ERIS Standard Swap Futures Specs

<b>Most Traded Reference Tenors</b>	2Y Stnd, 5Y Stnd, 7Y Stnd, 10Y Stnd, 30Y Stnd			
<b>Effective Dates</b>	Quarterly IMM Dates (3 <sup>rd</sup> Wednesday of each March, June, September, December) for Expiration and Maturity			
<b>Contract Fixed Rate</b>	Predetermined rate set by Eris Exchange which will remain static throughout the life of the Contract. Determined just prior to quarterly listing. Multiple fixed rates may be predetermined and listed for IMM Date.			
<b>Pricing Convention</b>	Price = Swap NPV + Historical Fixed & Floating Payments + Synthetic Interest on Margins + Index Price of \$100 Priced on a basis of 100, similar to market practice for bonds and other futures contracts. Unique pricing convention replicates OTC swap economics.			
<b>Contract Size</b>	1 contract = 1 lot = \$100,000 notional			
<b>Contract Specifics</b>	<b>Tenor</b>	<b>Minimum Per Contract</b>	<b>Hedge Margin</b>	<b>Block Size</b>
	30Y Stnd	1/50 <sup>th</sup> point (\$20.00)	\$4,000	100
	10Y Stnd	1/100 <sup>th</sup> point (\$10.00)	\$1,500	100
	7Y Stnd	1/100 <sup>th</sup> point (\$10.00)	\$1,250	100
	5Y Stnd	1/200 <sup>th</sup> point (\$5.00)	\$850	100
	2Y Stnd	1/500 <sup>th</sup> point (\$2.00)	\$400	100
<b>Last Trading Day</b>	The last day on which the contract can be traded is the NY business day preceding the Maturity Date			
<b>Trading Hours</b>	Eris Exchange standard trading hours are currently 7:00 AM to 5:00 PM EST			
<b>Bloomberg Tickers</b>	<b>Tenor</b>	<b>Generic</b>	<b>Current Contract</b>	
	30 Y Stnd	LIEA	LIEZ7	
	10Y Stnd	LIYA	LIYZ7	
	7Y Stnd	LIBA	LIBZ7	
	5Y Stnd	LIWA	LIWZ7	
	2Y Stnd	LITA	LITZ7	
<b>Matching Algorithms</b>	FIFO			© 2017 Eris Exchange

# ERIS Flexible Swap Future

## Eris Flexes: Date Flexible Swap Futures

- Customizable Contracts
  - Effective date can be any business day up to 10 years out
  - Maturity date can be any business day up to 30 years following the effective date
  - Yield curve granularity with accounting treatment of OTC swaps
  - 5-day VaR margin vs. 10-day VaR for most OTC IR swaps
  - Easy request for quote for contracts if not streaming
  - Notional value = \$100k per contract

# MAC Swap Future (MSF) Specs

<b>Reference Tenors</b>	2, 5, 7, 10, 20, 30 Year				
<b>Delivery Months</b>	Quarterly Cycle (March, June, Sept, Dec)				
<b>Contract Fixed Rate</b>	Set by the CME before contract is listed for trading, as a rate per annum with 30/360 day count fraction, at an integer multiple of 25bps (Current: 2yr 1.50%, 5yr 2.25%, 10yr 2.75%, 30yr 3.25%)				
<b>Price Basis</b>	100 points plus NPV of deliverable grade IRS				
<b>Contract Size</b>	\$1,000 per point (\$100,000 Notional per contract)				
<b>Minimum Price Increment</b>	<b>Reference Tenor</b>	<b>Minimum Price Increment Per Contract</b>	<b>Approx DV01 Equivalent</b>	<b>Hedge Margin</b>	
	30-Year	1/32nd point (\$31.25)	1/8	\$4,000	
	10-Year	½ 1/32nd point (\$15.625)	1/6	\$1,500	
	5-Year	½ 1/32nd point (\$15.625)	1/3	\$850	
	2-Year	¼ 1/32nd point (\$7.8125)	3/8	\$400	
<b>Last Trading Day</b>	Second London business day before 3rd Wed. of futures Delivery Month				
<b>Trading Hours</b>	CME Globex 6:00 PM to 5:00 PM EST, Sun-Fri				
	Trading in expiring futures terminates at 3:00 PM EST on Last Trading Day				
<b>Bloomberg Tickers</b>	<b>Tenor</b>	<b>Generic</b>	<b>Current Contract</b>		
	30-Year	CBPA	CBPZ7		
	10-Year	CNPA	CNPZ7		
	5-Year	CFPA	CFPZ7		
	2-Year	CTPA	CTPZ7		
<b>Matching Algorithms</b>	<b>Outrights</b>	<b>Calendar Spreads</b>			
	FIFO (F)	Pro Rata (K)	© 2017 CME Group		



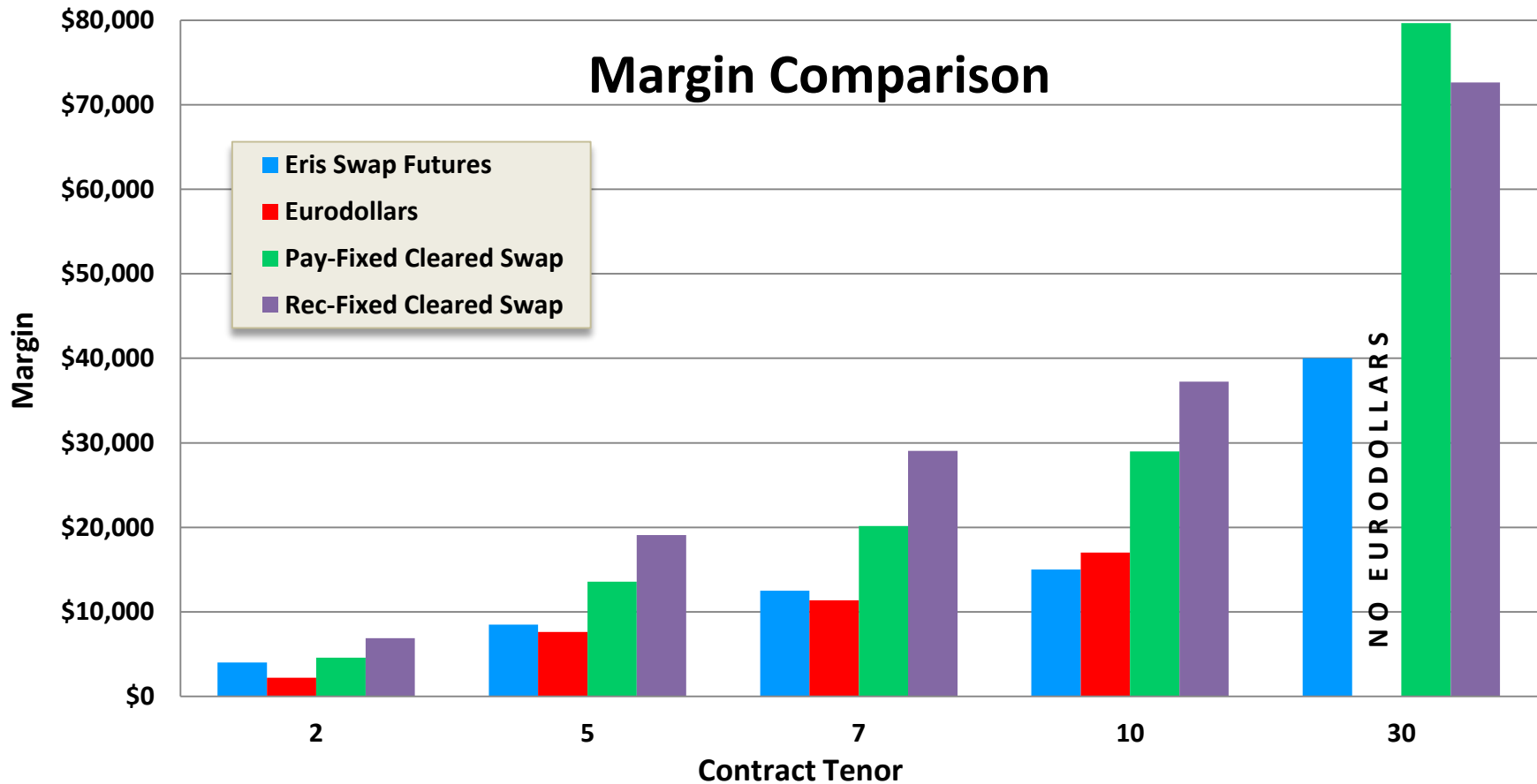
# Margin Comparison

Tenor	Eris Swap Futures	Eurodollars	Pay-Fixed Cleared Swap	Rec-Fixed Cleared Swap
2	\$4,000	\$2,200	\$4,590	\$6,885
5	\$8,500	\$7,610	\$13,575	\$19,070
7	\$12,500	\$11,370	\$20,140	\$29,050
10	\$15,000	\$17,010	\$28,975	\$37,225
30	\$40,000		\$79,665	\$72,625

Margin Reduction for Futures	
Swap Futs % of Cleared	EDs % of Cleared
70%	38%
52%	47%
51%	46%
45%	51%
53%	n/a

- **\*\*Per \$1 Million Notional\*\***
- Cleared Swap margin in chart is average of Pay & Receive-Fixed
- Eurodollars are 3 month LIBOR contracts, only out to 10yrs
- Cleared IRS margin found through the CME Core
- Margin comparisons from 8/9/2017

# Margin Comparison (cont'd)



# Capital Efficiency: Margining

- IRS transaction that is uncleared:
  - Margin = 10-day Hvar ( $\approx$  5+ TIMES swap futures)
- Cleared OTC IRS transaction
  - Margin = 5-day Hvar ( $\approx$  2+ TIMES swap futures)
- Swap Futures (ERIS and MAC Swap Futures)
  - Margin = 2-day HVaR

# Pricing Conventions: Eris vs. MSF

– appear different, but aren't

Security	Price
T 2 3/4 02/15/24	100-26 1/2
11) #LIYH4 10Y Swap Future Mar14	-2,180.00
12) #CNPH4 USD IRS 10yr Prim Mar14	104-15
13) #TYH4 US 10YR NOTE (CBT)Mar14	127-00

ERIS (LIYH4 above) Quotes and Trades in Net Present Value (NPV)– or, the IN/OUT-of-the-money value based on the COUPON.

ERIS is quoted in +/- a number of dollars based on the current yield of the swap versus the 3.00% coupon set by the exchange for this March14 settling future: (\$2,180)

MAC Swap Future (CNPH4 above) Quotes and Trades in Non Par Value (“the other” NPV)– or, the amount in 32nds above/below 100-00 based on the COUPON.

MSF is quoted in 32nds above or below PAR: 104-15 or 4-15 over par or \$4,468.75. MSF an exchange-set coupon of 3.25%

Since both ERIS & MAC Swap Futures are March'14-settling 10-year swap futures, the difference is:

ERIS has a (\$2,180.00) value with a 3.00% coupon

MSF has a \$4,468.75 value with a 3.25% coupon

So– How can a yield be calculated to compare the two futures? **With a PV'01**

# Comparing Eris & MSF Yields Using PV'01

**Both Futures Have SAME PV'01 = \$92.10**

## Eris

Eris Coupon = 3.00% → 300bps

Eris NPV = -\$2,180

Yield = Eris Coupon + (Eris NPV / PV'01)

Eris Yield =  $300 + (-\$2,180 / \$92.10)$

=  $300 - 23.6699$

= 276.3301 bps

**Eris Yield = 2.7633%**

## MSF

MSF Coupon = 3.25% → 325bps

MSF Price = 104'15 → 104.46875

MSF NPV =  $100 - 104.46875 = -\$4,469$

Yield = MSF Coupon + (MSF NPV / PV'01)

MSF Yield =  $325 + (-\$4,469 / \$92.10)$

=  $325 - 48.5233$

= 276.4767 bps

**MSF Yield = 2.7648%**

# PV'01

- **PV'01 Critical Value:**

**CURRENT YIELD SWAP FUTURE = COUPON +/- [(NPV÷PV'01)/100]**

- PV'01 for both ERIS and MSFs may be calculated off IMM-based fixed-leg pay dates and semi-annual fixed-leg-day-count conventions.
  - PV'01s and full cash flow illustration may be found using Bloomberg™:
    - LIYZ7 <Comdty>DES<GO>9<GO>for ERIS Dec17 10yr
    - CNPZ7<Comdty>DES<GO>9<GO> for MSF Dec17 10yr
- 2yr: LITYZ7 or CTPZ7, 5yr: LIWZ7 or CFPZ7, 7yr: LIBZ7 or CNPZ7  
30yr: ILIEZ7 or CBPZ7. Usually quarterly H-Mar, M-Jun, U=Sep, Z-Dec.**

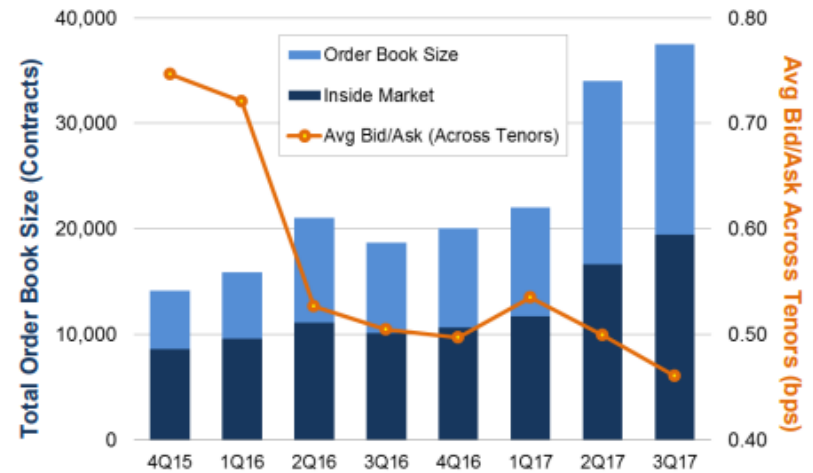
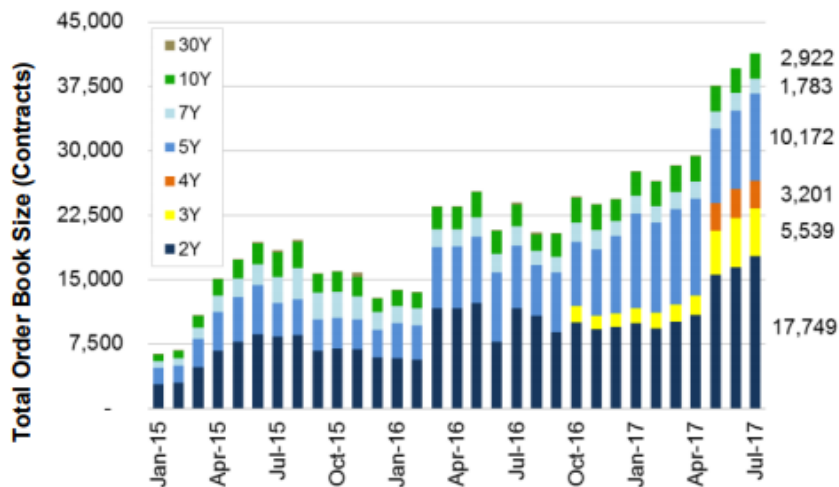
# Curve & Valuation

- **Prior to FUTURES last settlement date, ERIS & MSF trade to NPV: Open Market, Actionable Bid/Ask, Anonymous, Face CME CCP**
- **Begin/End of Day Yield Curve Valuation**
  - <ftp://ftp.erisfutures.com/> --Dates, Rates, Discount Factors
  - CME Valuation Curve for ALL Cleared Swaps and Swap Futures-Settlement; Daily ERIS Settles
- **AFTER futures period:**
  - MSF converts to OTC Cleared, Initial Margin roughly doubles to 5-day HVaR, Payments Made/Taken on Float and Fixed Pay/Receive dates.
  - ERIS standards become ERIS 'Aged Standards' and persist as a future. Margin remains 2-dHVaR but same as for tenor of original future. Pay/Rec payments are averaged over the period and directly adjusted in daily price settlement. PAI (Synthetic FedFunds O/N Interest on Variation) added. "Dirty Price" =  $NPV + \text{Daily \%Pay/Rec} + \text{PAI}$  – Identical to total cash flows of OTC Swap (see white paper).

# Eris Liquidity

- Eris offers transparent, anonymous Central Limit Order Book liquidity consolidated into benchmark tenors like other futures markets
- Frequency of trading in Off-The-Run tenors increasing, with volumes up, and bid/offers consistent with On-The-Run: executions at ~2/10bp from mid

## Front Month Order Book Expands, Leads to Tighter Markets Across Tenors



Source: Eris Exchange




# Eris Standards vs. MAC Swap Futures

Category	Characteristic	Eris Standards	Deliverable Swap Futures	
		Trade inception through Maturity Date	Prior to Delivery	Post Delivery
<b>Product Specs</b>	Futures Contract	✓	✓	
	Cleared OTC Swap			✓
	Static, benchmark underlying tenors	✓	✓	✓
	Static, Pre-Determined Fixed Rate	✓	✓	✓
	Quarterly Effective Dates	✓	✓	✓
	Potential/Expectation for Monthly, Weekly, Annual Effective Dates	✓		
	Price Alignment Interest (PAI) to replicate OTC economics	✓		✓
<b>Execution</b>	Electronic & Off-exchange negotiation platforms available	✓	✓	✓
	Supports quoting in NPV terms	✓		✓
	Real time credit controls / trade acceptance	✓	✓	
	Block Trading Thresholds determined by Exchange, not CFTC	✓	✓	
	Supports Exchange of Derivatives for Related Positions (EDRP)	✓	✓	
	Exempt from SEF/Swaps trading rules	✓	✓	
<b>Clearing</b>	Settles daily to CME IRS swap curve, not order book	✓		✓
	Potential/Expectation for 1-day VAR margin treatment	✓	✓	
	Supports SPAN margin methodology	✓	✓	
	Supports HVAR margin methodology	✓		✓
	Margin offsets with CME Eurodollars and Treasury Futures	✓	✓	✓
	60+ Eligible Clearing Firms (CME Futures FCMs)	✓	✓	
	Standard Futures Documentation	✓	✓	
	Utilizes existing CME post-trade allocations and give-up system	✓	✓	
	Customer Collateral Held in 4(d) account class	✓	✓	
	Backed by Futures Guarantee Fund, with no Liquidity Add-on Charges	✓	✓	
<b>Other</b>	Exempt from SDR requirements	✓	✓	
	Exempt from DFA Business Conduct Rules	✓	✓	
	Eligible for 60/40 Tax Treatment	✓	✓	

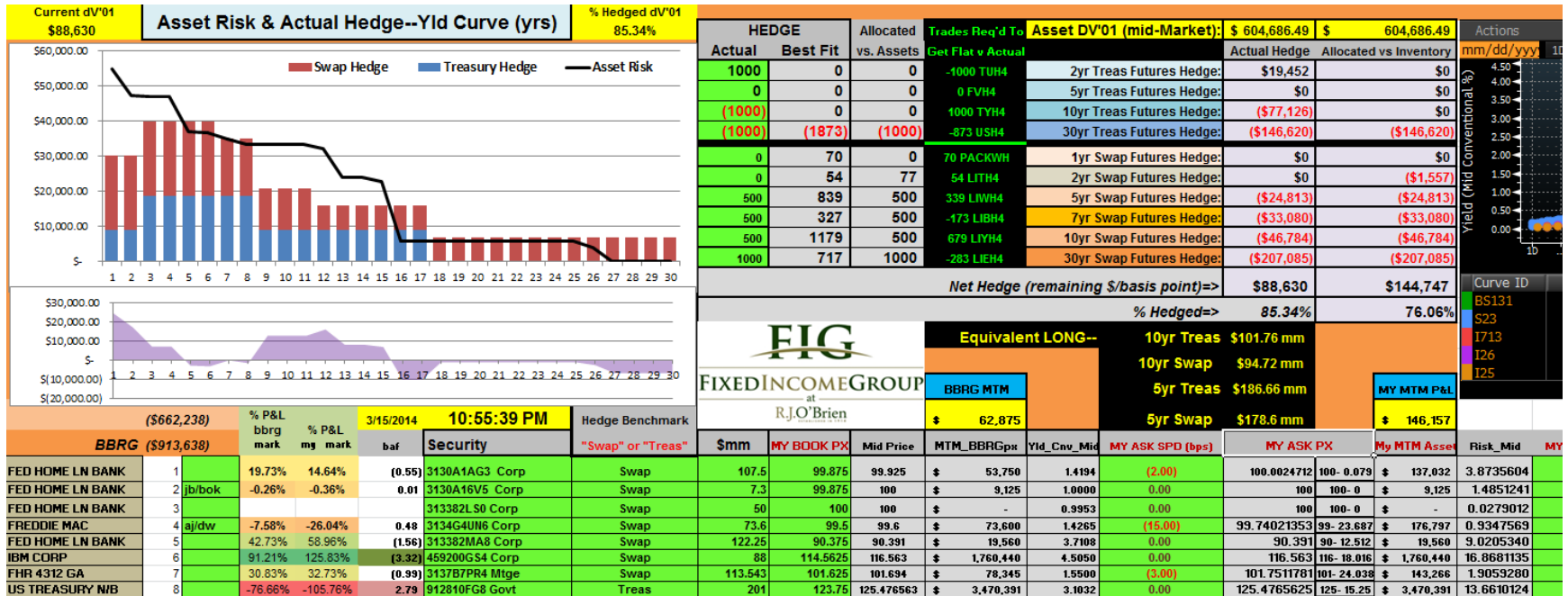
# Eris Flexes vs. Cleared OTC IRS

Category	Characteristic	Customized Contracts	
		Eris Flexes	CME OTC IRS
Product Specs	Futures Contract	✓	
	Cleared OTC Swap		✓
	Flexible Tenors (any good business day)	✓	✓
	Flexible Fixed Rates	✓	✓
	Flexible Effective Dates	✓	✓
	Price Alignment Interest (PAI) to replicate OTC economics	✓	✓
Execution	Electronic & Off-exchange negotiation platforms available	✓	✓
	Supports quoting in NPV terms	✓	✓
	Supports quoting in Par Rate terms	✓	✓
	Real time credit controls / trade acceptance	✓	
	Block Trading Thresholds determined by Exchange, not CFTC	✓	
	Supports Exchange of Derivatives for Related Positions (EDRP)	✓	
	Exempt from SEF/Swaps trading rules	✓	
Clearing	Settles daily to CME IRS swap curve, not order book	✓	✓
	Opportunity/expectation to move below 5-day VAR	✓	
	Supports HVAR margin methodology	✓	✓
	Margin offsets with CME Eurodollars and Treasury Futures	✓	✓
	60+ Eligible Clearing Firms (CME Futures FCMs)	✓	
	Standard Futures Documentation	✓	
	Utilizes existing CME post-trade allocations and give-up system	✓	
	Customer Collateral Held in 4(d) account class	✓	
	Backed by Futures Guarantee Fund, with no Liquidity Add-on Charges	✓	
Other	Exempt from SDR requirements	✓	
	Exempt from DFA Business Conduct Rules	✓	
	Favorable Hedge Accounting Treatment	✓	✓
	Eligible for 60/40 Tax Treatment for duration of underlying tenor	✓	

# Bullet Asset Hedging

- Standards & MSFs as LIBOR-Based Duration Immunization Choice
- “In-Lieu-Of” Non-Treasury Credit Exposure
  - Investment & Liquidation A/L Control
- Off-the-run Aged Standards
- Flex + Swap Futures for 
  - Capital Efficiency & Max Liquidity on bulk of duration
  - Precision if and where required

# RiskBuilder– Visualizing Hedge Impact



## Simple DV'01, Single-Point (benchmark) Hedging For Fixed Income Portfolios

- Allows traders to gain familiarity with Swap (combined with Treasury) Futures Risk Metrics
- Cusip & Credit Basis (Swap or Treas) ONLY Required Inputs
  - Hedge Product, Curve Location and DV'01 Neutral Quantity Suggested
  - Trader Override Allowed To Isolate Curve and Credit Spread Biases
  - Graphic Display: Each Year's Cumulative Portfolio DV'01 Exposure, Differentiated Treasury & Swap Hedge Contribution, Vertical (vs Key Rate) DV'01 Risk Netting for Easy Visualization of Residual Curve Exposure

# The Fixed Income Group's HedgeBuilder Amortizing Hedge Generator

RMBS/CMBS/AUTO/Whole Loan

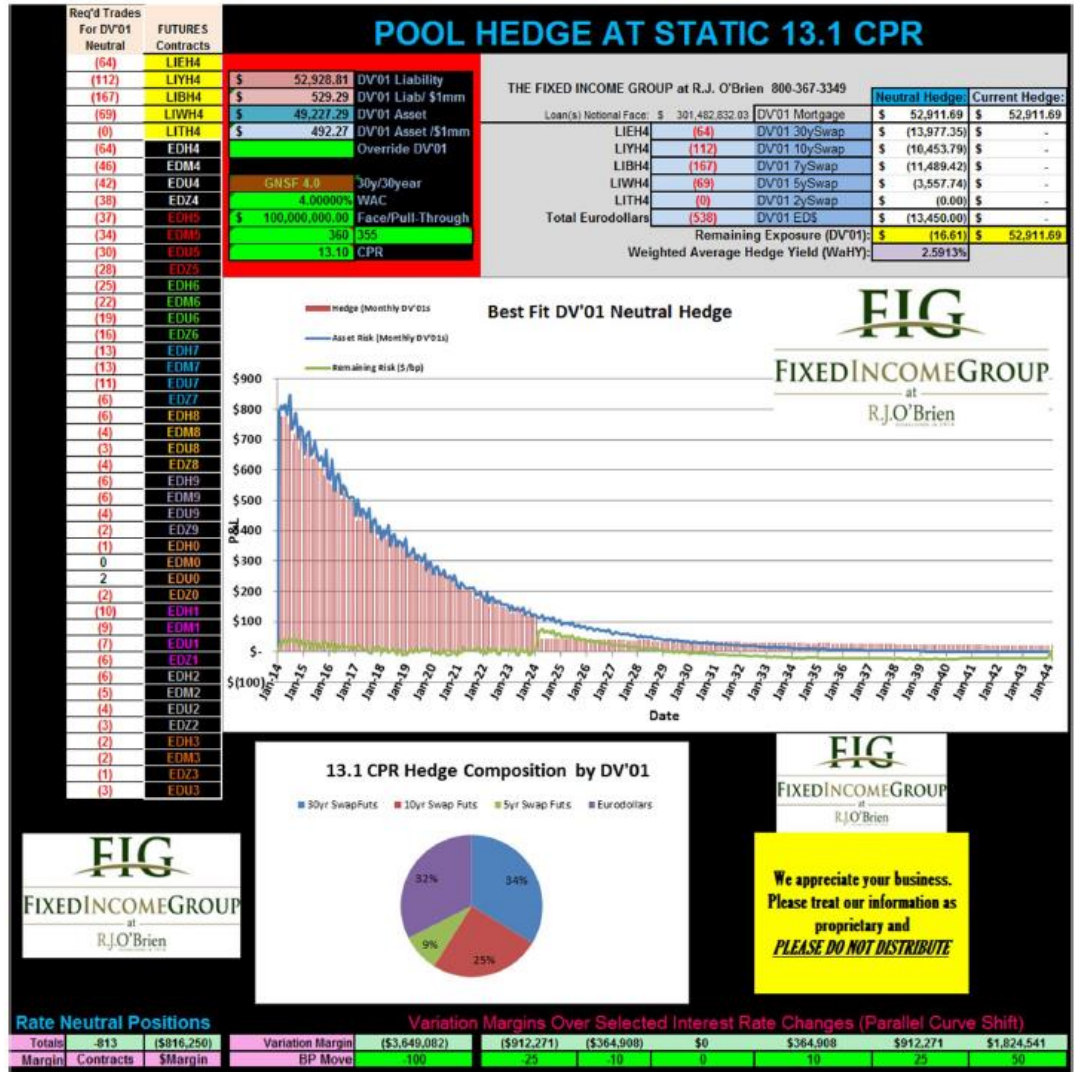
Hedger Inputs-

- WAC
- WAM
- WALA
- CURRENT FACE
- CPR Ramp or Static Speed
- ERIS or MAC Swap Future

For Up to 24 Individual Classes

Cumulative Portfolio Hedge (or Adjustment) is Output Based Upon Pooled Unpaid Balances.

Transaction E-mail and Tear-Sheet (for auditing) Created.



# Any questions? Please contact:



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