Escrow Optimization with an Inverted Yield Curve

Structured Products Group

Matthew Eisel, CFA, Managing Director
John Crotty, Director
Sarah Good, Senior Managing Consultant
Samantha Chin, Senior Analyst

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PFM Financial Advisors LLC
pfm.com

1735 Market Street
42nd Floor
Philadelphia, PA 19103
(215) 567-6100

pfm.com

Basics of Escrow Structuring and Procurement

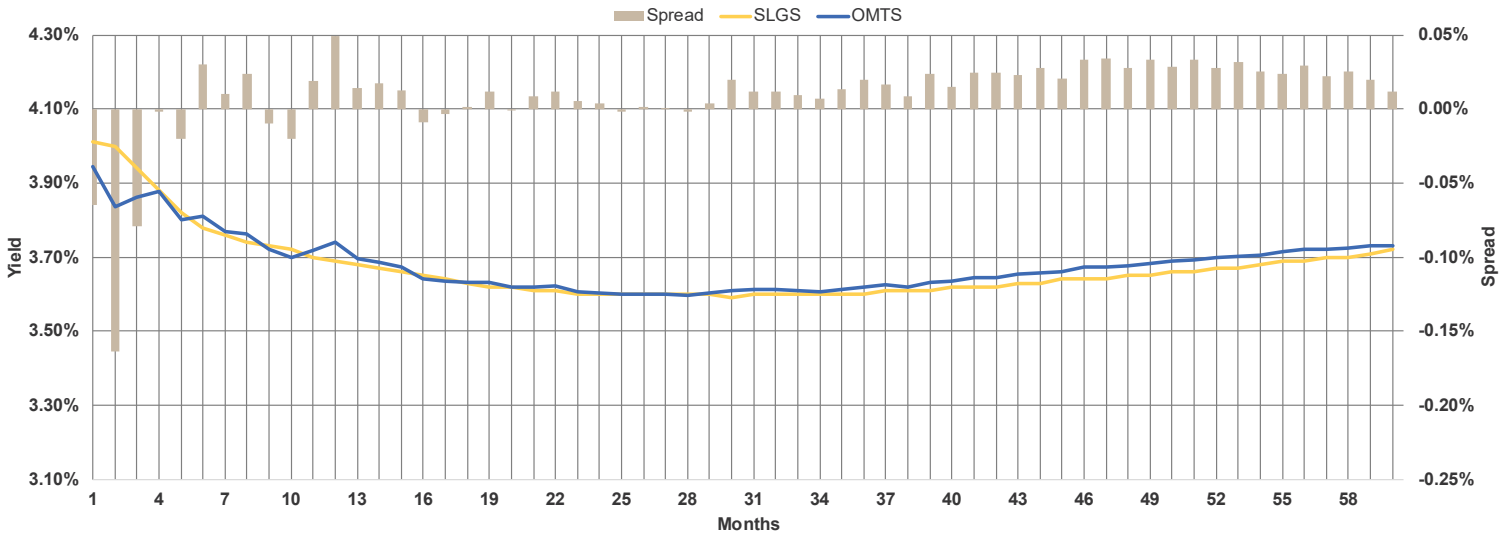
- What is an escrow?
  - Portfolio of securities pledged to pay debt service on a specific set of liabilities
- Why are escrows important?
  - Escrow yield is one of the two major drivers of savings on a refunding transaction
  - Appropriate strategy might save millions of taxpayer dollars
- What are “SLGS”?
  - United States Treasury Securities, State and Local Government Series (SLGS)
    - Designed to help issuers comply with arbitrage regulations while having easy access to Treasury securities[1]
  - Purchased directly from U.S. Treasury Department via SLGSafe System
    - Time Deposit (fixed rate)
    - Demand Deposit (variable rate and tax-exempt)
- Open-market securities are purchased in the secondary market from broker-dealers
  - Important to run a competitive bidding process and show evidence of fair market value purchases

[1] *Source: Treasury Direct, About the State and Local Government Series Securities.*

Understanding SLGS and Open-market Treasuries

Relationship Between Open-market Treasuries and SLGS

- SLGS rates are set daily by 10:00 a.m. Eastern and are fixed for the day regardless of market conditions
- **SLGS Rate Interpolation**
  - The SLGS Regulations state that SLGS yields are set one basis point below open-market Treasuries, but the spread varies considerably due to a number of technical factors
  - Interpolation of the SLGS curve is imperfect and should be carefully monitored
- Open-market securities trade throughout the day and vary in yield – sometimes considerably
  - The relationship between SLGS and open-market securities can dictate the optimal investment strategy for issuers



Source: Bloomberg, yields as of October 30, 2025.
Source: Treasury Direct, SLGS Daily Rate Table.

Relationship Between Open-market Treasuries and SLGS (cont.)

- Intraday volatility can materially alter the spread between open-market Treasuries and SLGS

Source: Bloomberg.

Poll Question #1

- Which of the following is false about SLGS and open-market securities?

  A. SLGS rates are set at approximately 8:35 a.m. and are held constant all day, whereas open-market securities trade and vary in yield throughout the day

  B. SLGS are designed to be set one basis point below open-market Treasury securities

  C. The interpolation of the SLGS curve is perfect

  D. SLGS are purchased from the U.S. Treasury Department, whereas open-market securities are purchased in the secondary market from broker-dealers

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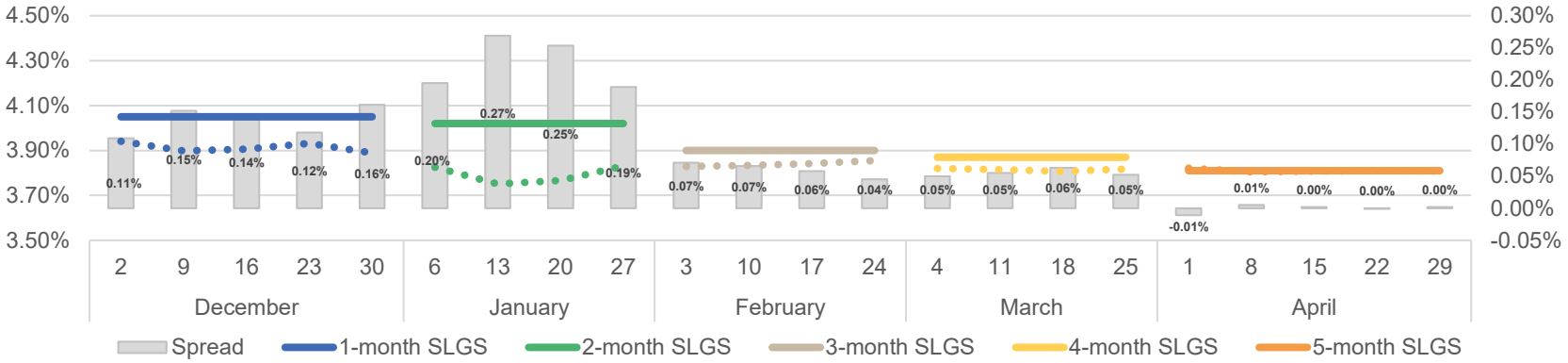
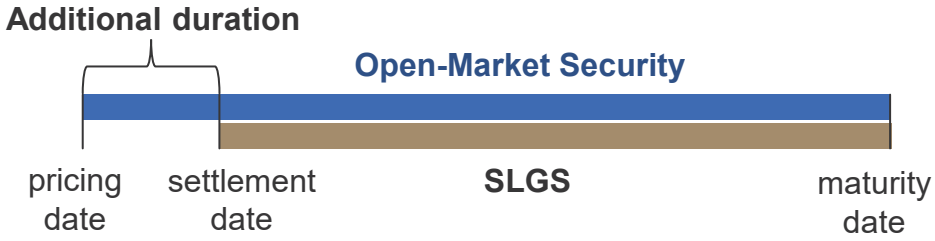
Maturity Considerations – Comparing Apples & Oranges

- With the current inverted yield curve, the "maturity buckets" of SLGS may provide benefit relative to open-market securities. The opposite is true in a normal, upward sloping yield curve environment. (See below chart)[1]



- **"Phantom" duration from gap between pricing and settlement dates**
  - Due to the forward settlement of escrow security purchases, open-market securities often provide incremental yield compared to comparable maturity SLGS in an upward sloping ("normal") yield curve environment
  - Opposite effect from the current yield curve, which is inverted

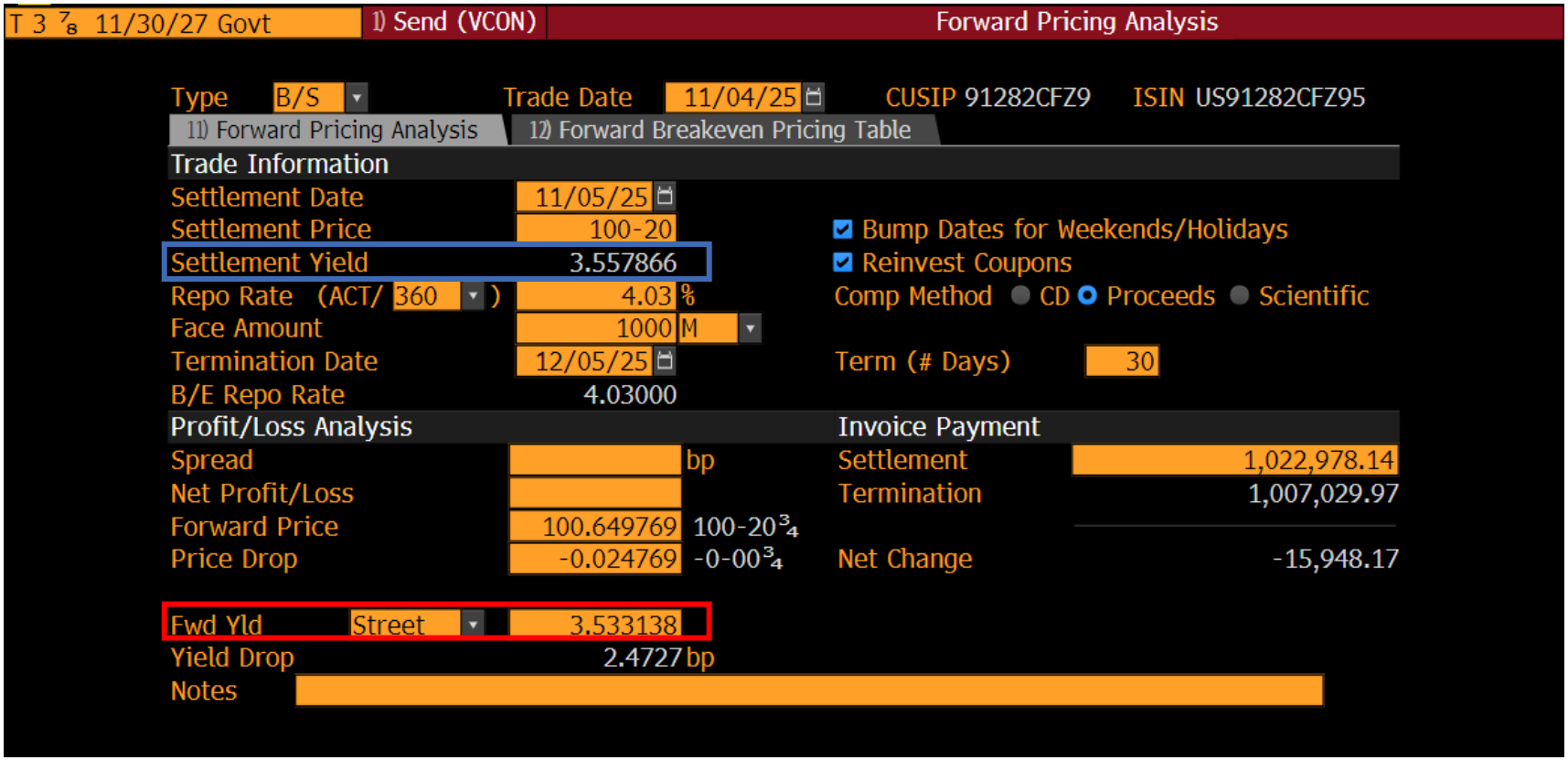


[1]*Source: Bloomberg, rates as of October 31, 2025.*

Escrow Pricing – Impact of Forward Settlement

Example #1: Two-year Treasury Note for one month forward settlement in an inverted yield curve environment.

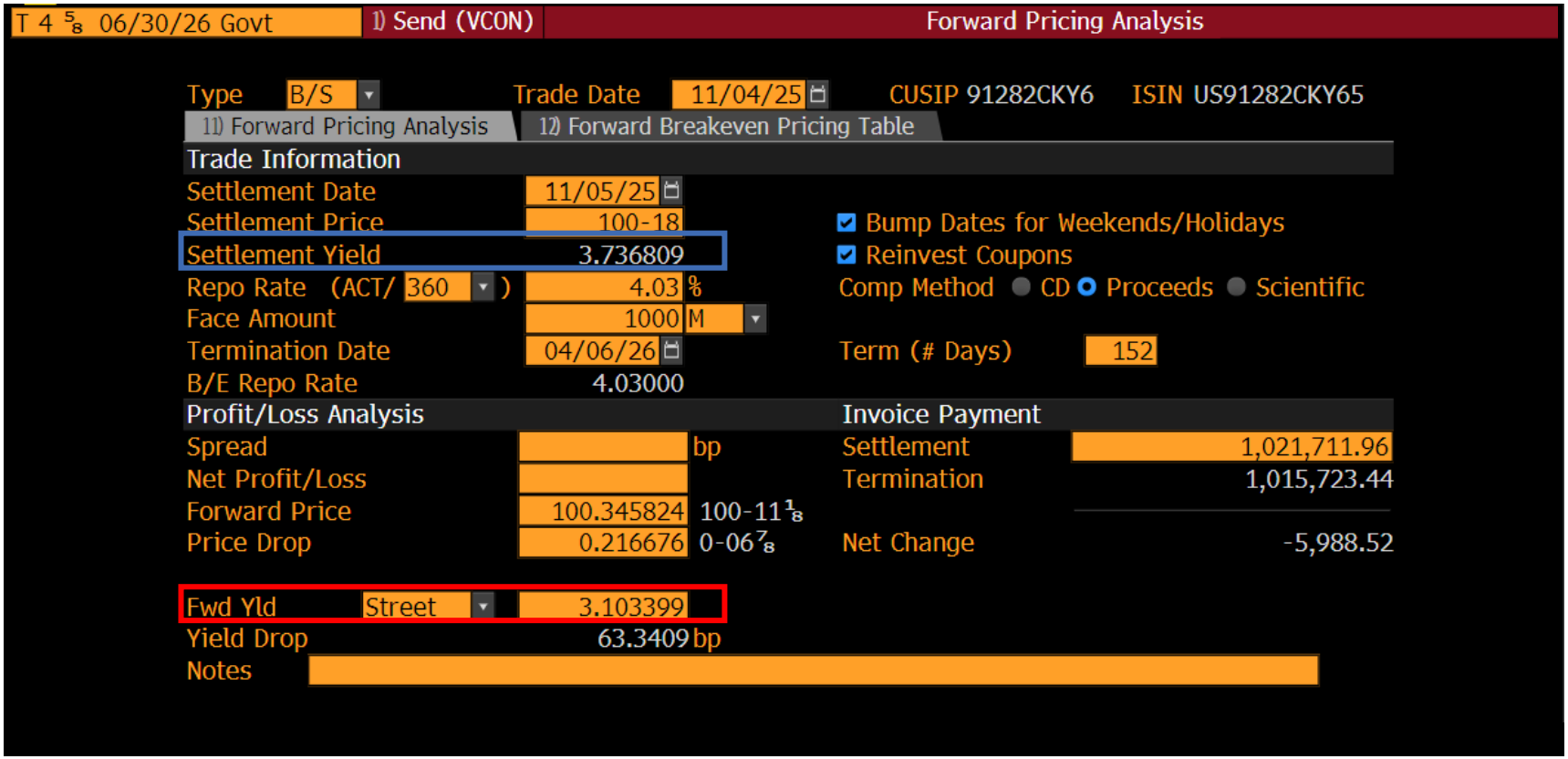
- Opposite impact in an upward sloping (“normal”) yield curve environment.



Source: Bloomberg, market conditions as of November 4, 2025.
For illustrative purposes only – actual results may vary considerably.

Escrow Pricing – Impact of Forward Settlement (cont.)

- **Example #2**: Three-month Treasury Note for five months forward settlement in an inverted yield curve environment.
- Again, opposite impact in an upward sloping ("normal") yield curve environment.



Source: Bloomberg, market conditions as of November 4, 2025.
For illustrative purposes only – actual results may vary considerably.

Poll Question #2

- Forward settlement of open-market security escrows hurts pricing in an inverted yield curve environment and helps pricing in a normal, upward sloping yield curve environment

A. True

B. False

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  A. True

  B. False

Advanced Escrow Strategies

Potential Value In Escrows From Other Sectors

- **Permitted investments for escrows tend to be very conservative and are often limited to direct obligations of the U.S. Government, but consider other options if permitted:**
  - **Government Sponsored Enterprises (GSEs) – often referred to as "Agencies"**
    - Usually created by an act of Congress and includes obligations of Fannie Mae, Freddie Mac, the Federal Home Loan Banks, etc.
  - **Resolution Funding Corporation Interest STRIPs**
    - Securities created as part of the Savings & Loan bailout that are guaranteed by the U.S. Government
  - **US Agency For International Development Bonds (US AIDs)**
    - Sovereign debt obligations that carry a U.S. Government guarantee
      - Examples include bonds issued by Israel and Ukraine
    - U.S. Government guarantee payment lag of 3 business days must be taken into account
      - Consider adding an extra day or two to be conservative
      - Can create challenges with date matches to corresponding liabilities

Other Potential Value Opportunities

- Two other ideas for enhancing value in cash defeasance escrows:
  - **Yield restriction blending**
    - Identify if any negative yield restriction liability exists from previous investments associated with the bonds (e.g., older cash defeasance, originally done as tax exempt advance refunding, etc.)
  - **Demand Deposit SLGS**
    - Tax-exempt investment that allows an issuer to keep all of the earnings even if the yield exceeds the arbitrage yield
      - DD SLGS yield is 3.00% as of November 4, 2025
      - Consider reinvestment risk carefully because of potential Fed action
        - Spread and time horizon are both very important

Source: Treasury Direct, SLGS Daily Rate Table.

Case Study: Yield Restriction Blending

- **A sophisticated issuer with a complex debt profile was partially defeasing four series of bonds**
- Initial assumption: each sub-escrow would be restricted to the yield of the corresponding bonds being defeased
  - **Yield restriction blending**
    - Recognizing that the issuer had done many refundings/defeasances in the past, we asked about the various yield restriction positions and reviewed their rebate reports
    - There was enough of a negative yield restriction liability to allow two of the sub-escrows to be unrestricted
    - Savings compared to initial plan: **~$570,000**

For illustrative purposes only, and actual results may vary substantially. Please refer to additional disclosures at the end of this presentation.

Maximizing NPV Savings via Call Date Optimization

- Due to the high-interest rate environment, unrestricted current refundings can potentially benefit from investing in SLGS at yields in excess of corresponding arbitrage yields
  - Issuers should consider how to maximize their NPV savings
- Common misconception: If the arbitrage yield is lower than the SLGS yield, an issuer should invest in Time Deposit SLGS for as long as possible
  - **Why is this wrong?** Must consider the cost of keeping the refunded bonds outstanding vs. the interest earned on the SLGS

Yield Restricted	Arbitrage Yield	Refunded Coupon	SLGS Yield	Best Solution
No	3%	3.5%	4%	Time Deposit SLGS for longest duration
No	3%	3.5%	3%	Call refunded bonds ASAP

- More challenging/dynamic now that short-term interest rates are dropping!
  - Can even consider different call dates for different individual bonds depending on coupon rates
    - Always consult with advisors and legal team

Escrowing to Maturity vs. Escrowing to Call Hypothetical Scenario

- An escrow to maturity could be permitted for certain refunding or defeasance transactions
- Escrow to maturity: preserves call option on bonds for a potential future restructuring

Bond Component	OMS Yields
Serial Bonds	19,963,743
Term Bond #1	31,842,141
Term Bond #2	75,622,994
Total Portfolio Cost	**127,428,878**

- Escrow to call: call option will be exercised on 7/1/2026

Bond Component	OMS Yields
Serial Bonds	20,222,575
Term Bond #1	32,200,216
Term Bond #2	78,768,535
Total Portfolio Cost	**131,191,326**

- Escrow to maturity is $3,762,449 less expensive
- If yields rise, escrow to maturity becomes even less expensive
  - $8.6 million cheaper than escrow to call if rates rise 50 bps
  - $13.3 million cheaper than escrow to call if rates rise 100 bps

For illustrative purposes only – actual results may vary considerably based upon available investment yields and coupons of bonds being defeased.
Source: Bloomberg, yields as of April 16, 2025.

Escrow Bidding Methodologies

“Security-by-security”

- Strives to obtain the best price possible on each individual security
  - Particularly valuable for portfolios containing multiple large securities and/or various security types because different broker-dealers sometimes specialize in different types of securities (e.g. T-Notes vs. T-STRIPs)
- Allows for optimal combination of SLGS and open-market securities (when SLGS program is available)
- Price transparency allows for allocations to specific sub-portfolios for accounting and/or tax purposes
  - Fair market value established for each individual security rather than an entire portfolio
- Allows for incremental competition from broker/dealers who do not participate in all-or-none bids
- Competition may be lacking if you are buying many small securities and/or providers are very busy because of a SLGS program suspension or lower interest rate environment

“All-or-none”

- May allow for faster and more efficient execution depending on size, complexity, and how busy potential providers are
  - SLGS suspension significantly increases volume
- Securities deliveries only need to be coordinated with one broker/dealer
- May achieve better pricing on smaller portfolios and/or portfolios with many small securities (“odd lots”)
- Bidding agent fee may be lower because modeling and execution are more straightforward

Poll Question #3

- Which of the following is not true about escrow bidding methodologies?

A. In all-or-none bidding, securities deliveries only need to be coordinated with one broker-dealer

B. The bidding agent fee may be lower in an all-or-none bidding process because modeling and execution are more straightforward

C. Security-by-security strives to obtain the best price possible on each individual security

D. Issuers should choose a certain methodology and stick with it over the years

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Questions/Discussion

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