Escrow Optimization with an Inverted Yield Curve

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Basics of Escrow Structuring and Procurement

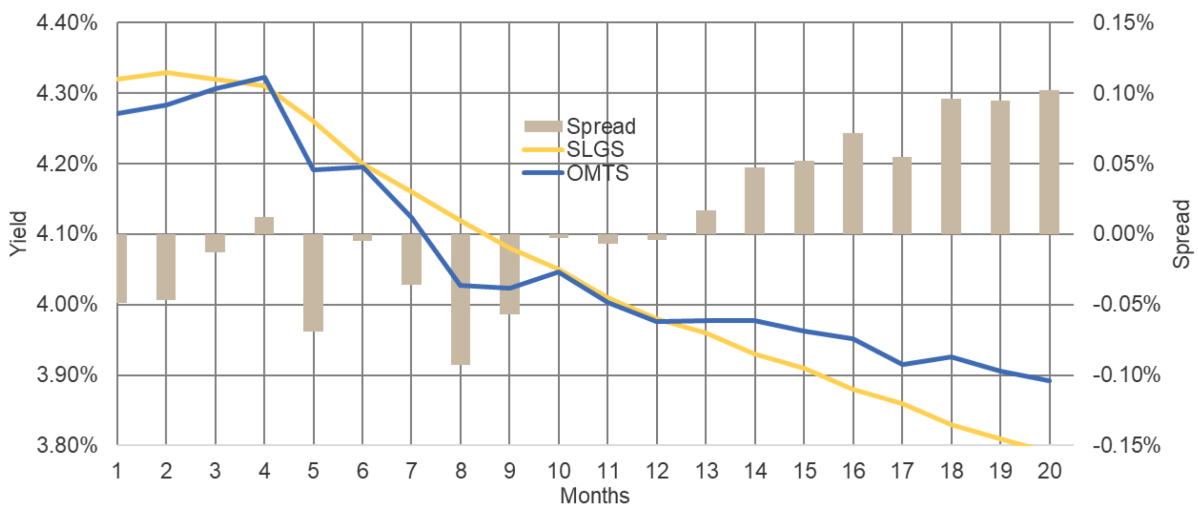
- What is an escrow?
  - Portfolio of securities pledged to pay debt service on a specific set of liabilities
- Why are escrows important?
  - Escrow yield is one of the two major drivers of savings on a refunding transaction
  - Appropriate strategy might save millions of taxpayer dollars
- What are “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 April 23, 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

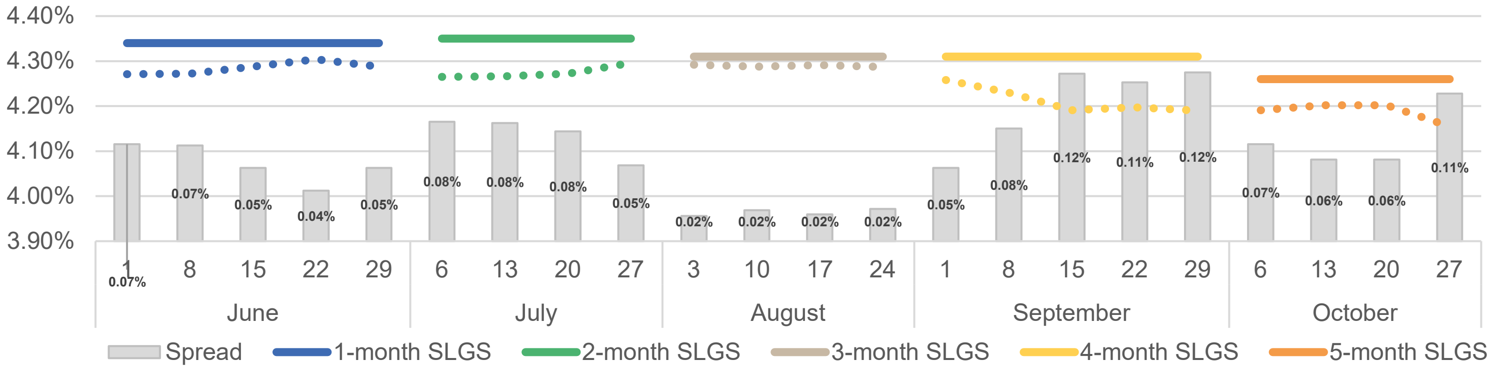
- It is crucial to understand the relationship between SLGS and open-market securities in order to determine the optimal investment strategy for an escrow

  A. True

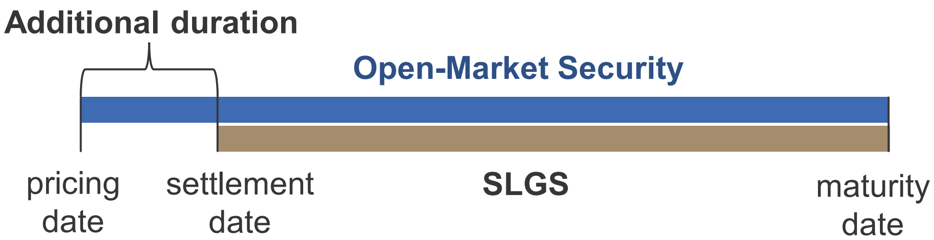
  B. False

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]



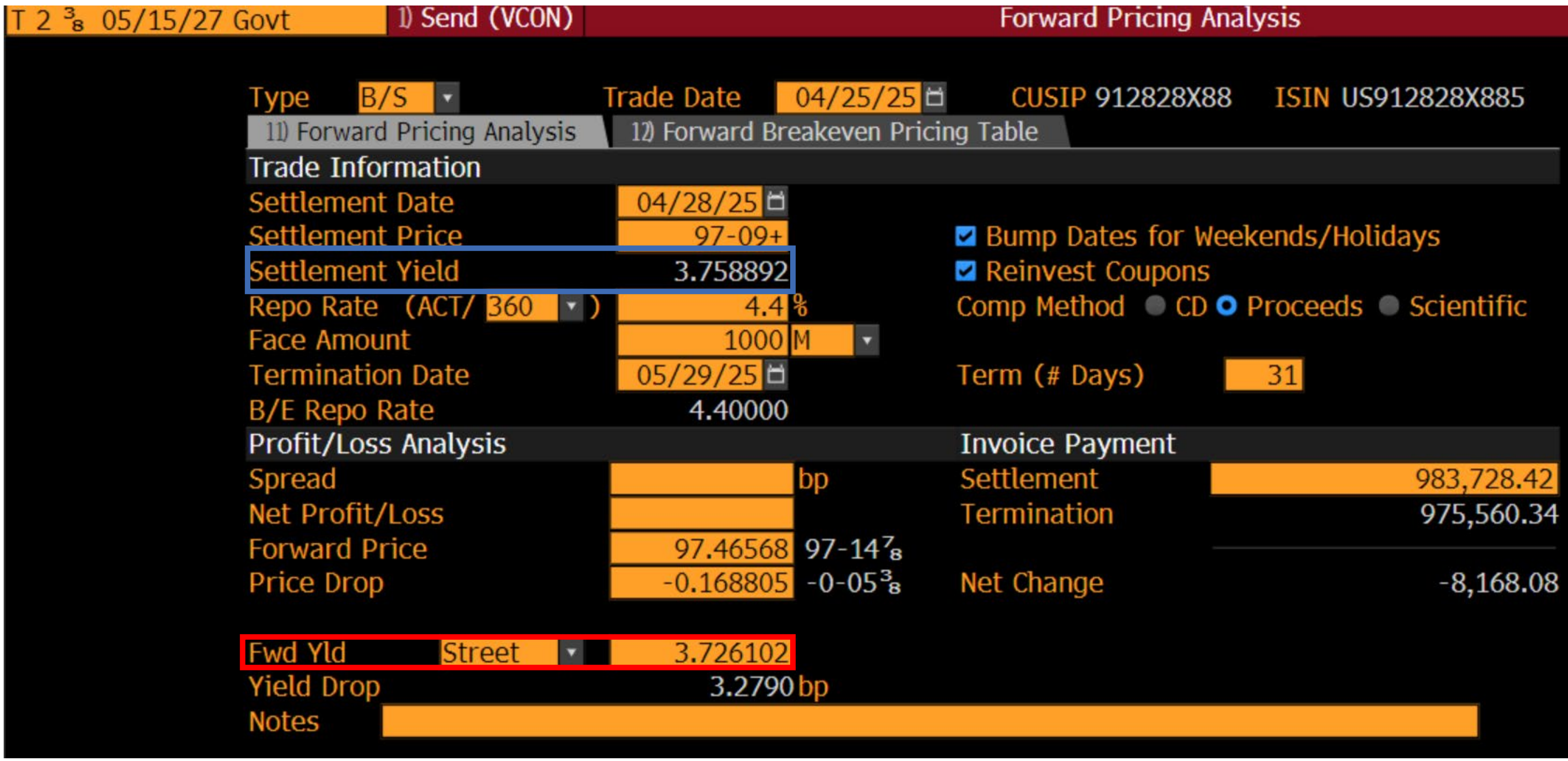
- **"Phantom" duration from gap between pricing and settlement dates**
  - Due to the forward settlement of escrow security purchases, open-market securities often provide incremental yield compared to comparable maturity SLGS in an upward sloping ("normal") yield curve environment
  - Opposite effect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



Source: Bloomberg, rates as of April 28, 2025.
[1]Assumes settlement of May 1, 2025.

Escrow Pricing – Impact of Forward Settlement

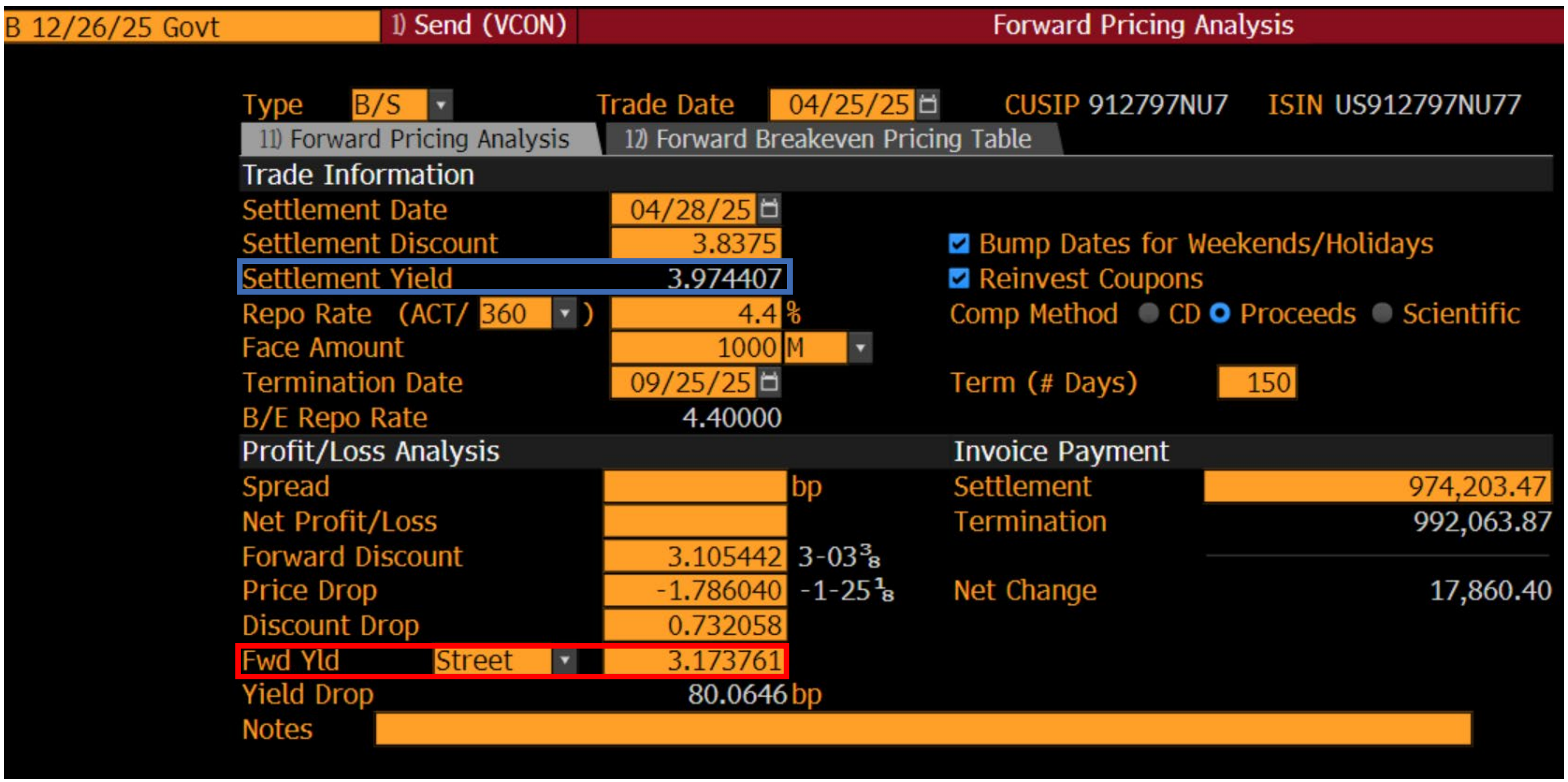
- **<u>Example #1</u>**: Two-year Treasury Note for one month forward settlement in an inverted yield curve environment.
- Opposite impact in an upward sloping (“normal”) yield curve environment.



Source: Bloomberg, market conditions as of April 23, 2025.
For illustrative purposes only – actual results may vary considerably.

Escrow Pricing – Impact of Forward Settlement (cont.)

- **Example #2**: Three-month Treasury Bill 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 April 23, 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

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 (older cash defeasance, project fund with temporary period expired, 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
      - Consider reinvestment risk carefully because of potential Fed action
        - Spread and time horizon are both very important

Effect of the Public Debt Limit on SLGS

- Outstanding SLGS count against the federal government's debt limit
- Debt issuance suspension period continuing through June 27, 2025[1]
  - Extraordinary measures currently enacted, SLGS suspension not currently part of them as of April 28, 2025
- **Since 1995, the SLGS window has been closed sixteen times**, for periods ranging from 24 hours to 235 days[2]
  - Most recent suspension was from May 2, 2023 – June 5, 2023
- Possibility for another suspension if an agreement to raise the debt ceiling cannot be met
  - SLGS subscriptions placed prior to window closure expected to be honored
  - Without access to SLGS, issuers are forced to structure escrows for refundings and defeasances with open market securities or cash (very high opportunity cost in this interest rate environment)
    - Reasonable option is to prepare for open-market securities at the same time in case the SLGS program is suspended with little advance notice

[1] Source: Secretary of the Treasury Letter to Congress. (March 14, 2025).
[2] Source: Treasury Direct. FAQs for SLGS.

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

Call Date Optimization

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	3.5%	5%	5.5%	Time Deposit SLGS for longest duration
No	3.5%	5%	4.5%	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.

Questions/Discussion

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