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Flexible Fast ACCURATE Cutting-edge Accurate CUTTING-EDGE

Mismanagement of Municipal Debt Puts a Hole in Everybody's Pocket

August 8, 2012

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Bird's Eye View of Municipal Finance

Significant segment of fixed income market

- 50,000 issuers
- Outstanding debt $3 trillion
- 2 million individual bonds

Issuers rely on external advice for transactions

- 'Financial advisors' for bonds
- 'Swap advisors' for swaps

Industry regulated by the MSRB

- Under Dodd-Frank advisors will be certified

Largest trade association is the GFOA

- Recommends 'best practice'

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Areas of Involvement

Intraday pricing of bond ETF's

- Fair value of underlying portfolio must be reported every 15 seconds (SEC)
- Calculation requires a live benchmark yield curve

Debt management advisor to issuers

- Testified on municipal derivatives at SEC hearing
- Expert witness on swapped variable-rate transaction
- Member of the MSRB 'municipal advisor' certification task force

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Topics

Municipal swaps

- SEC testimony (July 2011)
- LIBOR fixing

The allure of 5% bonds

- *The Bond Buyer*, February 3, 2012

Understanding the municipal yield curve

- Why it always slopes upwards
- *Journal of Fixed Income* (Winter 2008)

After-tax valuation of municipal bonds

- Incorporating the de minimis rule

Typical Use of Swaps: Synthetically 'Fix' Bond Coupon

- Municipality issues variable rate bonds
  - Auction rate or VRDO*
- Enters into 'plain vanilla' interest rate swap
  - Pay fixed, receive floating
  - Swap notional amortizes like bond principal
- Potential problems:
  - Bonds cannot be economically refunded
    - Long fixed coupon munis are always callable
  - LIBOR rate received on swaps introduces basis risk
    - Poor correlation with bond's variable rate
  - Credit of liquidity provider, bond/swap insurer, etc.

*__Auction Rate Securities__ do not require liquidity provider, but issuer may be stuck with punitive rate if auction fails.

Variable Rate Demand Obligations – Remarketing agent sets rate so bonds will clear. If remarketing fails or bonds put back without replacement buyer, issuer draws on liquidity facility.

Swapped Variable Rate Bonds Feed Many Mouths

Mark-up of swap (*bank's raison d'etre for the deal*)

Bank counterparty*

Conventional Fixed Rate Bond Issuance Expenses	Additional Expenses* for Synthetic Fixed
Underwriter	Swap Advisor
Bond Advisor	Swap Insurer
Bond Insurer	Remarketing Agent (ongoing)
Rating Agency	Liquidity Provider (ongoing)
Legal Counsel	

**** Supposedly incurred to 'save money'.***
But deals are likely to go bad and cost much more!

THE BOND BUYER

THE DAILY NEWSPAPER OF PUBLIC FINANCE

What Makes Muni Swaps So Special? Nothing, Actually

Friday, February 4, 2011

By Andrew Kalotay

Given the re... ...wap market," it may be worthwhile to identify what distinguishes it from the regular swap market.

In substance, these markets are basically the same. But there is a stark difference in practice: municipalities pay significantly more than other market participants for essentially the same pr...

Fo... municipal swaps t... "transaction fee"...

The swap dealer obviously will charge what the market will bear. Unfortunately, the municipality's grossly overcompensated hired guns – swap advisers, lawyers and such – provide inadequate protection and are conflicted by self-interest.

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Bid-Ask Spreads for LIBOR Swaps Are Extremely Tight*

Term	2-Year	5-Year	10-Year	30-Year
Bid Rate (%)	0.659	1.830	3.068	3.895
Ask Rate (%)	0.665	1.833	3.070	3.898
Difference (%)	**0.006**	**0.003**	**0.002**	**0.003**

**Source: Bloomberg, July 12, 2011 4pm (YCRV <GO> S23)*

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Reported Fair Value of Swap For Accounting Purposes Is 'Fair'

Denver Public School District No. 1
Value of $750 million 4.859% LIBOR swap as of June 30, 2010

Reported by banks*	$142,866,925
Kalotay Fair Value	$144,174,835
Difference	$1,307,910
Difference as percent of notional amount	0.17%

**Source: Denver School District No.1 Comprehensive Annual Financial Report 2010*

But Transacted Rate In 2008 Was Far From 'Fair'

Denver Public School District No. 1
Value of $750 million 4.859% LIBOR swap as of April 22, 2008

Perceived Value (to DPS)	0
Kalotay Fair Value	$13,583,213*
Mark-up as percent of notional amount	1.81%

**Adjusted for $550,000 paid by banks upfront to cover fees to swap advisor ($425,000), swap counsel ($100,000), and swap pricing agent ($25,000). Source: Swap confirmation documents*

Estimated fair coupon was 4.73%, nearly 13 basis points lower than that of actual swap

Hidden Tax of Municipal Swaps On a National Scale

Estimated notional amount of swap transactions in last 5 years: $1 trillion

According to MSRB report of April 2009, annual municipal derivatives volume grew to $300 billion

Mark-up to fair value: 2% of notional amount

Cost to taxpayers: $20 billion

2% of $1 trillion

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What to Do?
The Brandeis Answer

"Sunlight is the best of disinfectants; electric light is the best policeman"

-- *Other People's Money, 1913*

Regulators emphasize disclosure, but don't appreciate the need for rigorous valuation

Implications of the LIBOR Fixing Scandal

Typical synthetic fixed rate transaction:

Pay 'SIFMA' on bonds, receive percent of 'LIBOR' on swap

Artificially low LIBOR short-changes issuers

- But damage is modest

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Muni Adviser Role Continues to Evolve

AUGUST 2, 2012

Morning Bell

House panel approves muni adviser bill, but changes are on tap

A House Financial Services subcommittee approved legislation that would define municipal advisers. The measure doesn't require muni advisers to meet a fiduciary-duty standard of care, but a substitute amendment will, according to Rep. Robert Dold, R-Ill. The full committee will vote on the substitute amendment soon. Dold's office said the amendment addresses industry concerns. Kenneth Bentsen Jr., executive vice president of public policy and advocacy at SIFMA, said the group is encouraged because "there was virtually unanimous recognition that the SEC's December 2010 proposed rule on municipal advisers goes far beyond congressional intent

THE BOND BUYER
THE DAILY NEWSPAPER OF PUBLIC FINANCE

The Allure of 5% Bonds: Coupon Levitation Creates Magical Savings

Friday, January 27, 2012

By Andrew Kalotay

During the pa … rial bonds of various matur … nterest rates, these bonds a … longer-term bonds were o

… Fortunately, nobody gets fired in muni finance for “saving money”.

This trend is attributed to institutional investors’ preference for premium bonds over par bonds. Three reasons are often cited. First, the current yield of 5% bonds is higher. Second, if rates rise, premium bonds are less likely to fall below the de minimis discount level, where there is additional downward price pressure.

Third, assuming they are eligible, 5% bonds are more likely to be advance-refunded and thus rendered triple-A, with a commensurate price appreciation. Such bonds are particularly desirable because of the scarcity of triple-As following the decline of bond insurance.

Investor Appeal of 5% Callable Bonds

- Less likely to fall below the de minimis level if rates rise
  - Where gain to buyer would be taxed as ordinary income
- Very likely to be advance refunded; virtually certain to be called in Year 10
  - Advance refunding entails cash matching bond payments to call date with Treasuries
  - Bond becomes AAA

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Issuer Appeal of 5% Callable Bonds: A Case Study

Alternatives to raising $100 MM by selling fairly priced 30-year bonds:

$100 MM 4% bonds sold at 100

4.00% YTM, 4.00% YTC

OR

$87 MM 5% bonds sold at 115

4.12% YTM, 3.23% YTC

Which alternative to choose?

The Answer Is Sure to Surprise You!

Sell 5% bonds and *immediately* refund them with 4% bonds

- Assumes no ‘negative arbitrage’ and disregards transaction costs

The proof:

- PV of 5% bonds over 30 years: 102.1MM
- Cost of defeasance to call date: 100.0MM
- Net savings: $2.1MM

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What's Wrong with Issuing 5% Callable Bonds?

Refunding is virtually guaranteed

- Even if rates increase; call option is deep in the money

Consequences are undesirable

- Additional issuance expense for municipality
- Doubling the volume of tax-exempt debt that supports an eligible project

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Underlying Problems of Municipal Finance

Advisors conflicted and underqualified

- Swap advisors get paid only if transaction consummated
- Bond advisors reluctant to confront banks

Guidance from GFOA inadequate

- "Best practice" makes no mention of option value
  - Refunding threshold based on NPV savings
  - Winning competitive bid determined by TIC

Management not accountable

- Not subject to Sarbanes-Oxley
- Exempt from corporate disclosure requirements
- In a state of denial

Subtleties of Municipal Yield Curves Provided Daily by MMA and MMD

- Indicated yields are for bonds assumed to be *callable at par after 10 years*
  - Hence the long end must slope upwards
- Assumed coupon is 5% for every maturity
  - High-grade bonds priced well above par
  - Yields are *to call* (rather than YTM)

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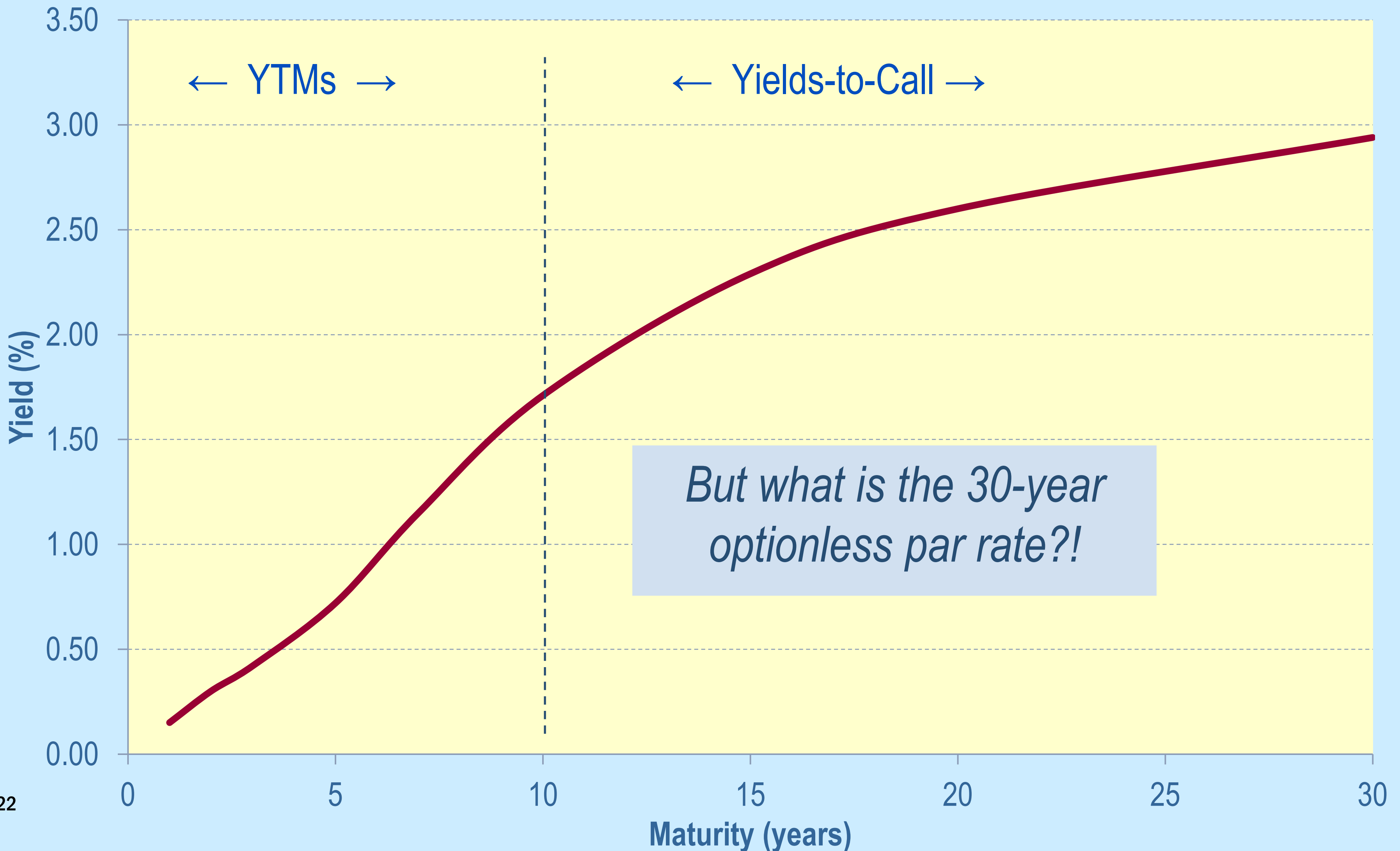
5% NC-10 Curve (MMA 7/23/12)



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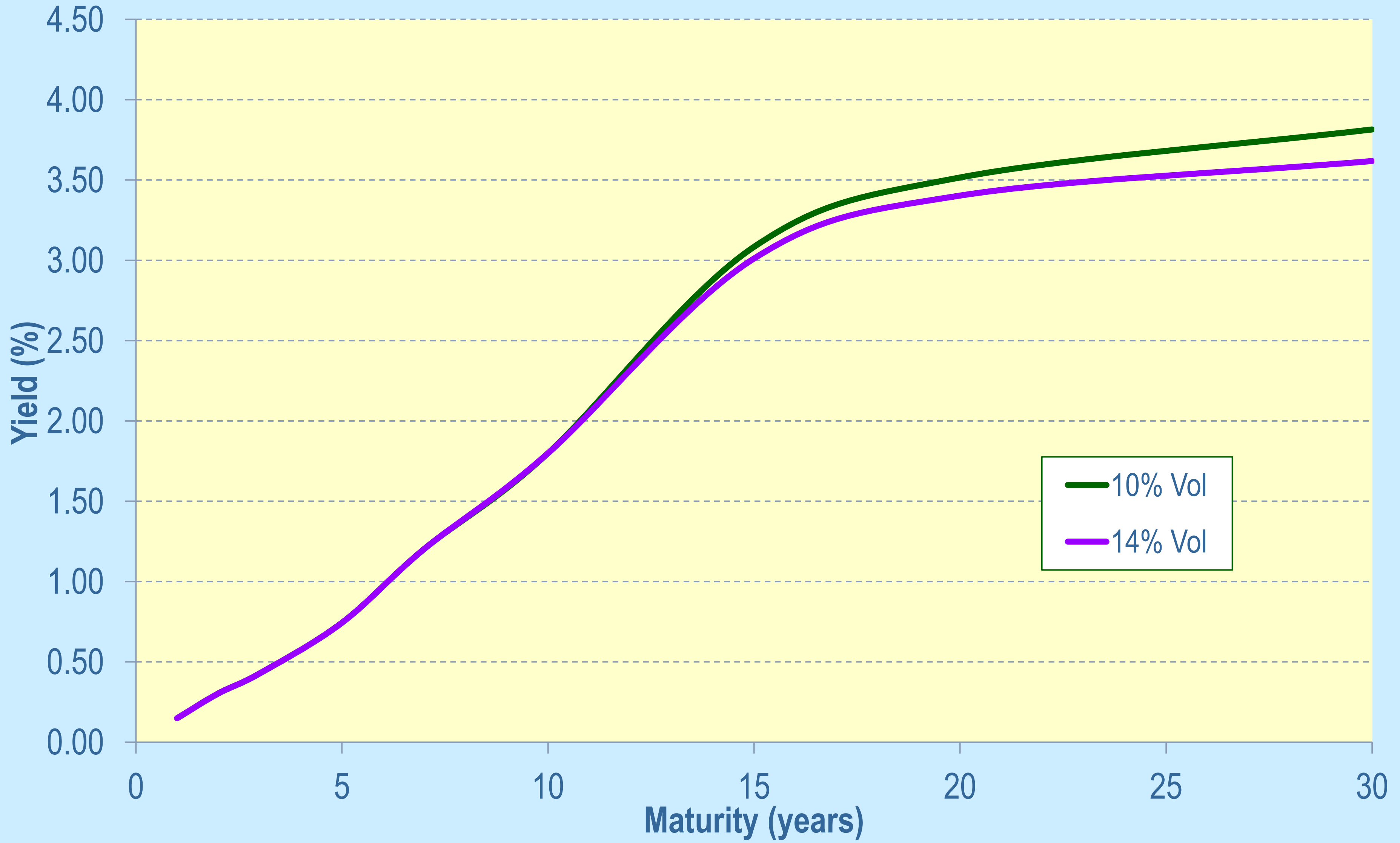
Implied Par Optionless Curves
Essential for Proper Valuation



Muni Rates Under Scrutiny

The New York Times

July 30, 2012

Muni Rates Examined for Signs of Rigging

By NATHANIEL POPPER

Yet another key benchmark in the financial industry is under scrutiny.

Attention has swung to a set of benchmark interest rates that help determine how much cities and states pay to borrow money in the bond market. The scrutiny of the Municipal Market Data, or M.M.D. index, comes on the heels of revelations that a broader financial industry benchmark, the London Interbank Offered Rate, or Libor, was manipulated by banks before and after the financial crisis. Libor is used to help determine the costs of products like mortgages and credit cards.

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Tax Treatment of Tax-exempt Bonds Held to Maturity – Simple Version

Purchase Price	Treatment	Tax Rate
At a premium	Premium amortized to zero	N/A
At par	No gain or loss	N/A
At de minimis* discount	Taxed as capital gain	15%
At discount greater than de minimis	Taxed as ordinary income	35%

**0.25 x number of years remaining to maturity (e.g. 2.50 for 10-year bond)*

All interest is tax-free

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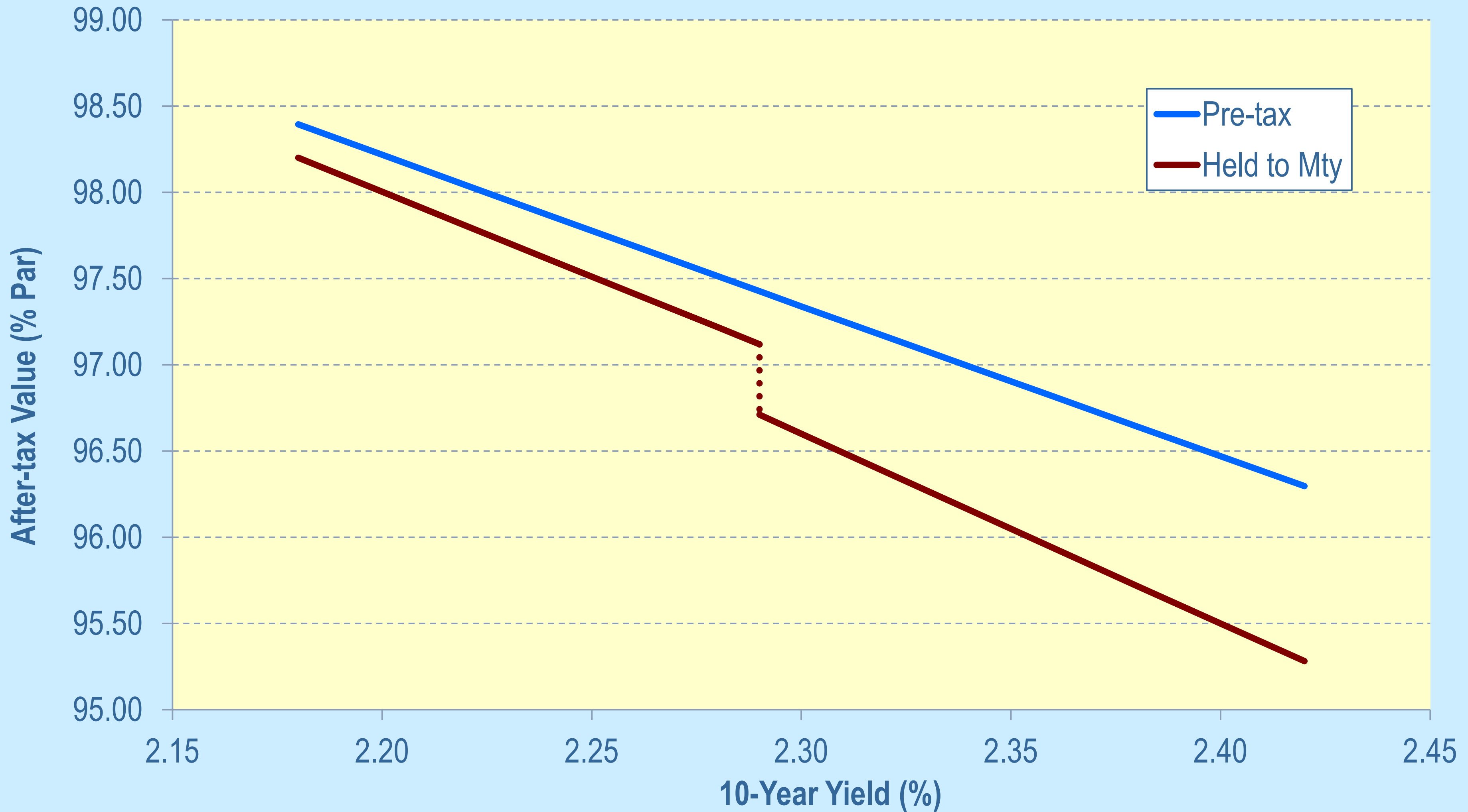
After-Tax Value Based on Holding to Maturity Is Discontinuous



Solution to the Dilemma: After-tax Trading Opportunities

On an after-tax basis selling at a loss and reinvesting is preferable to doing nothing

And selling at a gain is worse

Example: Selling bond at 80 (purchased at par) results in an immediate tax break of 3 points (100 – 20) x 0.15.

Greater interest rate volatility implies more opportunities for after-tax trading

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Our Approach to After-tax Valuation

- True OAS-based lattice implementation
- Incorporates tax treatment
  - Including de minimis rule
- Bond sold and proceeds reinvested if price declines
  - No action taken if price increases
- Produces sensible and realistic results
  - No falling off the cliff

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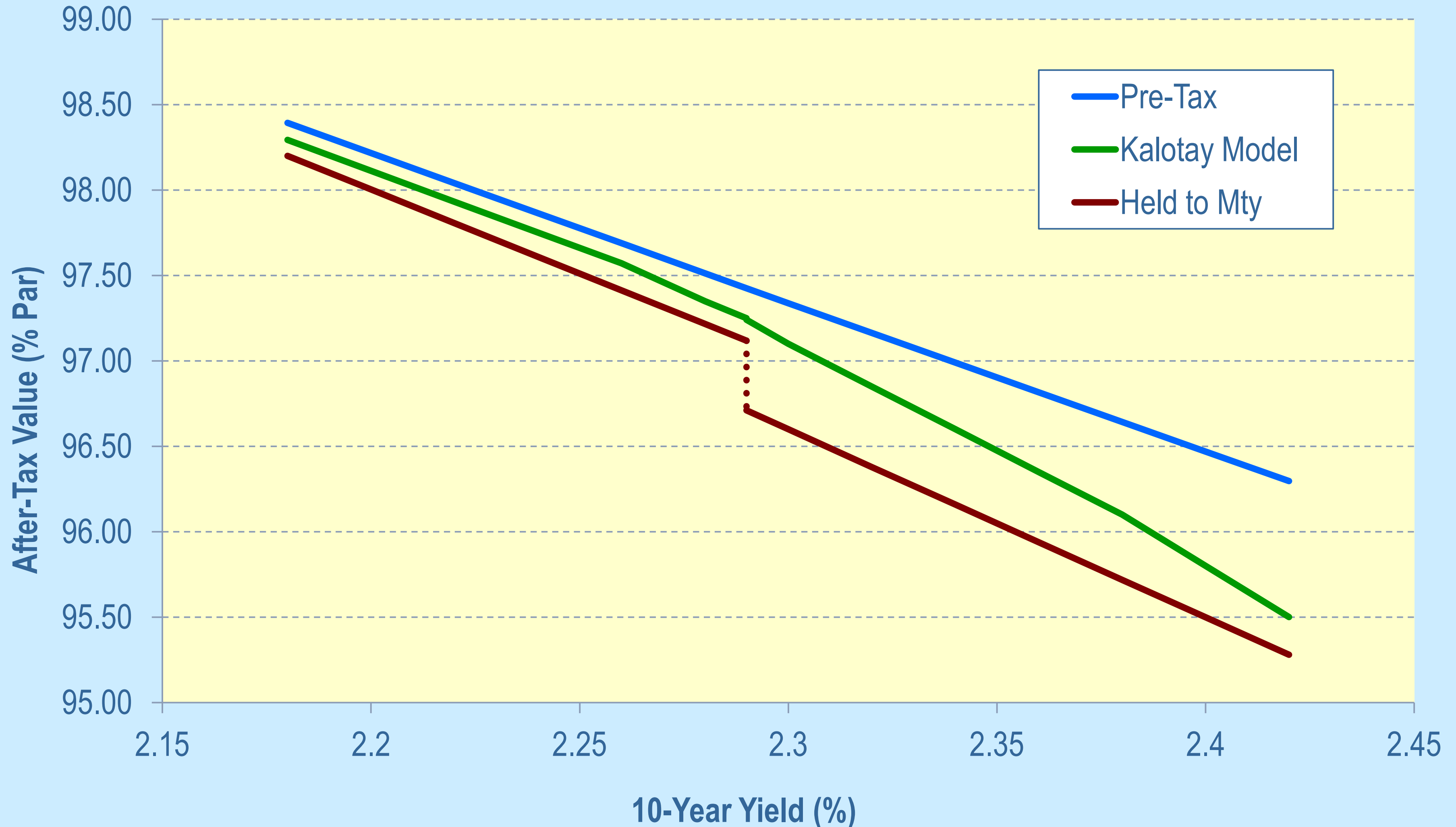
After-tax Lattice Model Smooths Out De Minimis Effect



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Innovations/Analytics for Municipal Bonds

"Introducing TIC+: Rethinking TIC Calculation"
– *IPREO Newsletter,* June 2012

"Patent Sought for Tax Credit Bond Idea"
– *Bond Buyer,* July 9, 2012

(see www.kalotay.com/research)

Bond analytics demos (www.kalotay.com bottom right)

Values 6,000 callable bonds in 1.5 seconds

DebtPays software

Comes with 1.2 million bonds from Mergent

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