

Cutting-Edge Analytics For Municipal Bonds

Andrew Kalotay, Ph.D.
Boston, June 2, 2014

Andrew Kalotay Associates, Inc.



Overview of Firm

- Debt management advisor since 1990
 - Municipal clients include Massachusetts and Chicago
- Main business: fixed income valuation software
 - For bonds, MBS, interest rate derivatives, etc.
- Kalotay background
 - Previously at Bell Labs and Salomon Brothers
 - Inducted into Fixed Income Hall of Fame in 1997
 - On MSRB committee for certification of municipal advisors



Recent Publications

- Pricing 5% bonds with shorter calls (*Bond Buyer* 4/21/14)
 - Discussed below
- Bond Analysis in Tax Denial (*Tabb Forum*, 3/28/14)
 - Tax differential between investors and issuers creates trading opportunities
- How to Take a Tax Loss and Then Profit From Obamacare (*Bond Buyer*, 12/11/13)
 - Optimal tax-loss harvesting
- Advance Refunding: A Misguided View from the Ivory Tower (*Bond Buyer*, 9/10/13)
 - Debunks claim that advance refunding is always suboptimal



Unique Challenges of Managing Munis

- Prices of discount bonds affected by tax on gain at maturity
 - Standard systems ignore taxes (**exception: Investortools**)
 - Reported risk measures (duration, OAS) are unreliable
- Maximizing return by strategic tax-loss harvesting
 - How to calculate benefit from selling?
 - When to sell?
- *Additional complexity: Standard scale is 5% NC-10*
 - *Quoted yields are YTC's*
 - *Rigorous analysis requires optionless rates*



Converting Callable Muni Scale to Optionless Scale *Needed for Discounting and Option Valuation*

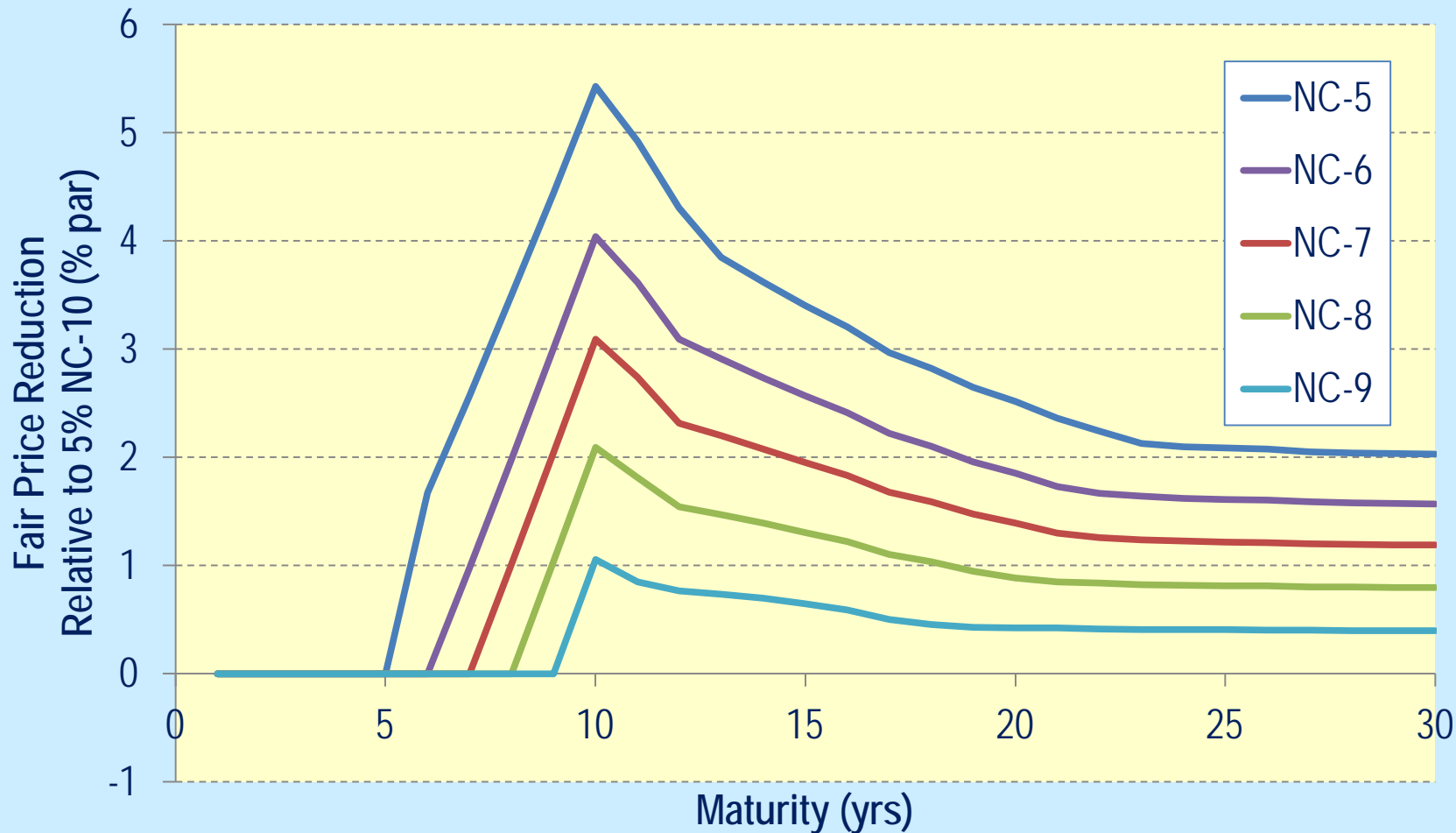
Issuer Curve

Volatility Years to call

Maturity	Coupon	Benchmark Yields	Issuer Spread	Issuer Curve	Par NCL Curve
1		0.150%	35bps	0.500%	0.500%
2		0.350%	40bps	0.750%	0.756%
3		0.620%	45bps	1.070%	1.086%
5		1.190%	50bps	1.690%	1.729%
7		1.750%	55bps	2.300%	2.360%
10	5.0%	2.270%	60bps	2.870%	2.939%
15		2.820%	65bps	3.470%	3.798%
20		3.200%	75bps	3.950%	4.192%
25		3.410%	80bps	4.210%	4.308%
30		3.460%	90bps	4.360%	4.330%



Shorter Call Reduces Price Relative to 5% NC-10



Taxation of Munis Held to Maturity

- Gain is taxed at maturity, but loss is not deductible
 - Large gain as ordinary income
 - Small gain (purchase above *de minimis* threshold) as capital gains
- When rates rise, tax on gain to new buyer depresses price
 - *But 'hold value' depends on current investor's purchase date and price, and can differ from market price*



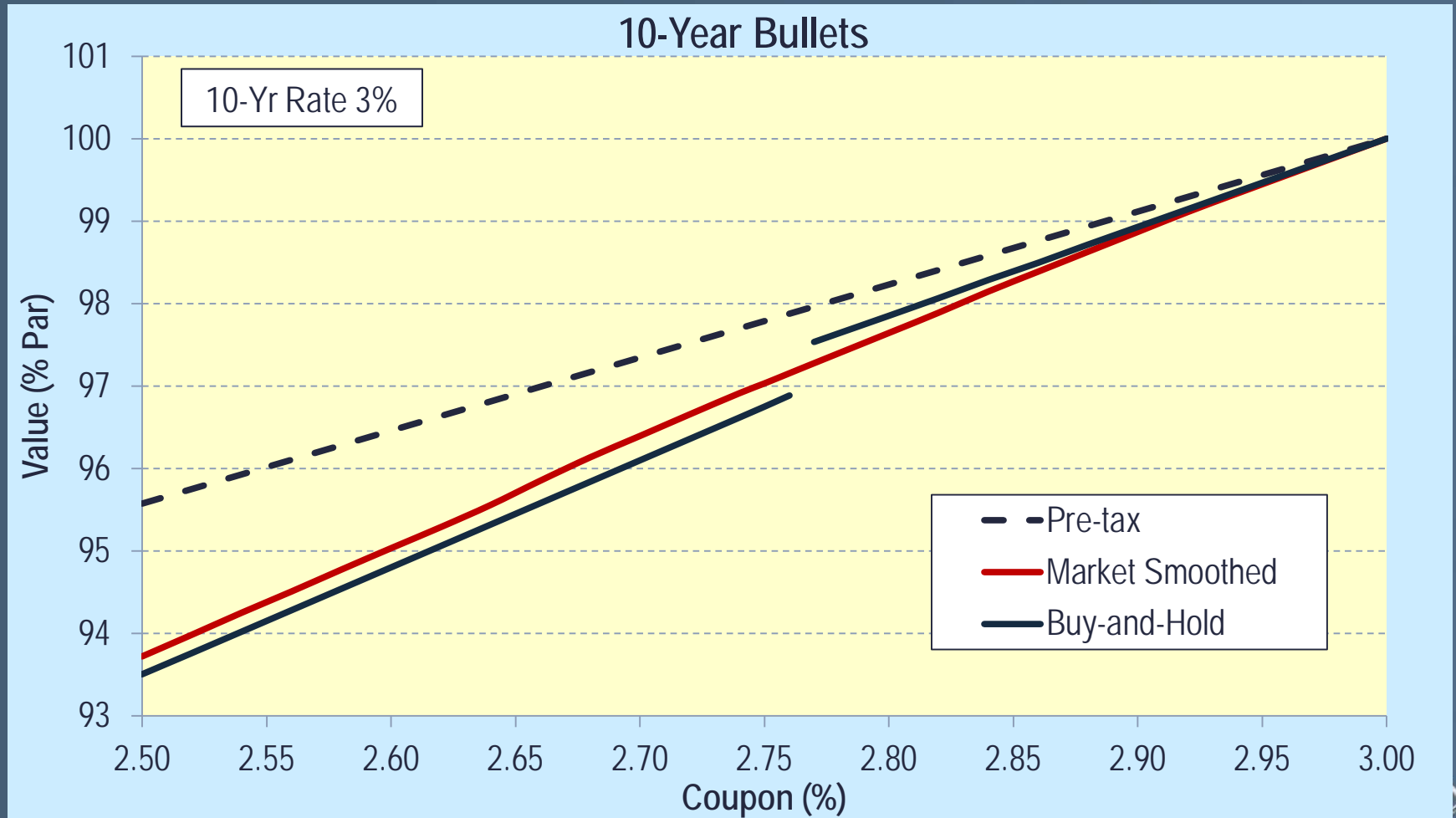
MuniOAS™ for After-tax Valuation

Licensed to Investortools

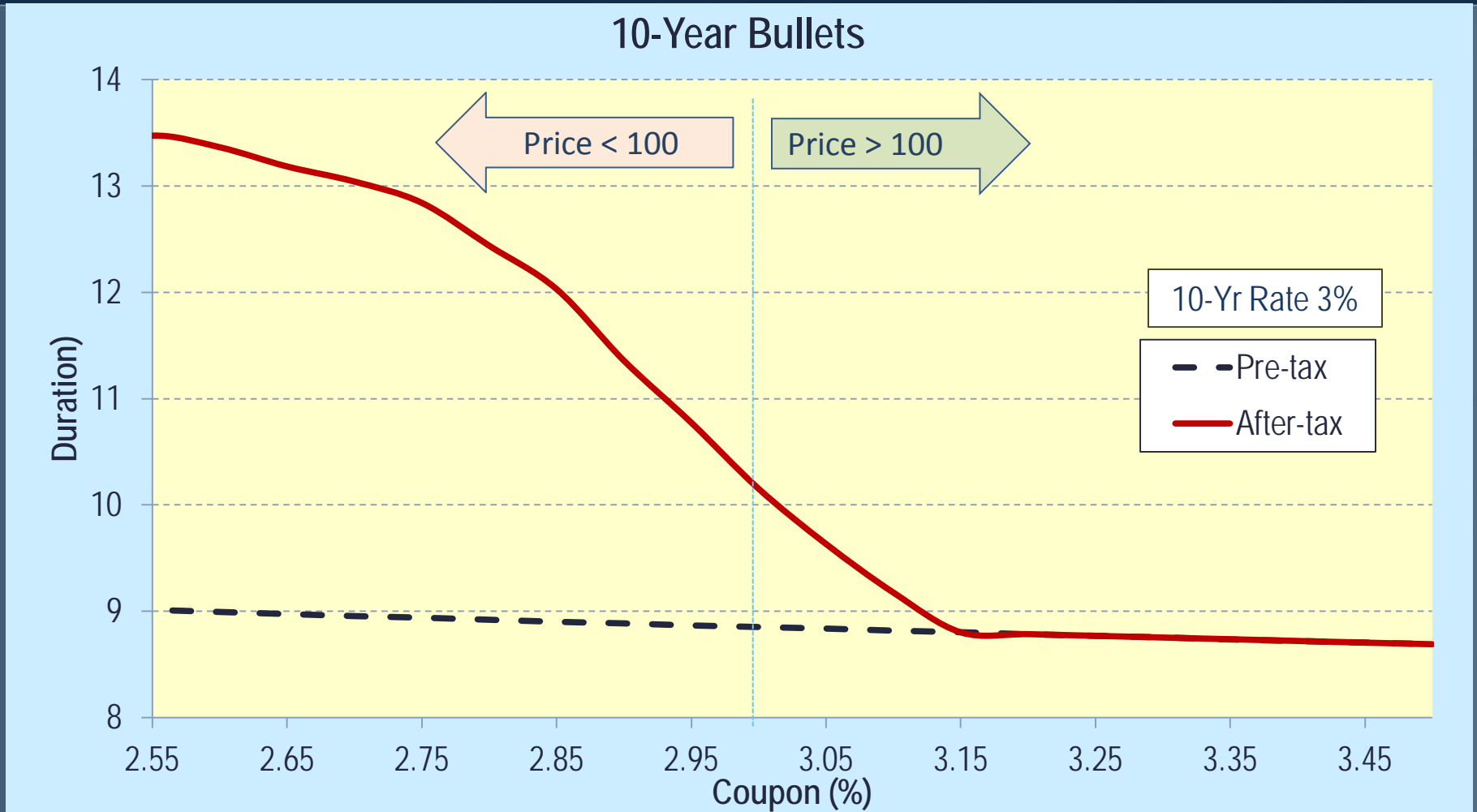
- Key concepts: *tax-neutral price* and *tax-neutral OAS*
 - Tax-neutral price is PV of after-tax cashflows, *including tax at maturity* (which depends on price)
 - Determined iteratively
 - Assume investors are in a high tax bracket
 - Tax-neutral OAS adjusts for both call option and taxes



Taxes Depress Prices of Discount Munis

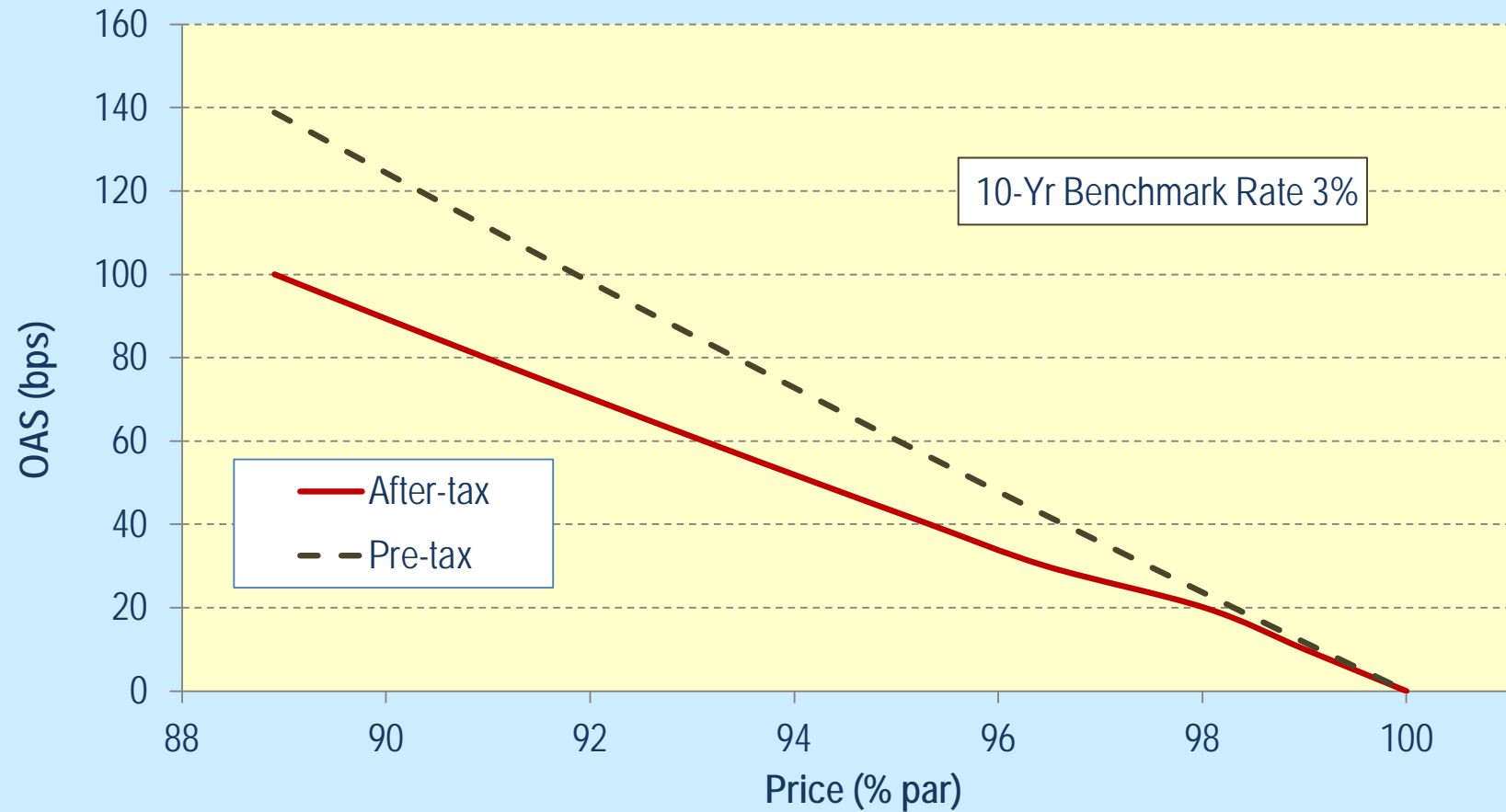


Ignoring Taxes → Effective Duration Underestimated



Ignoring Taxes → OAS Overestimated

3% 10-Year Bullet

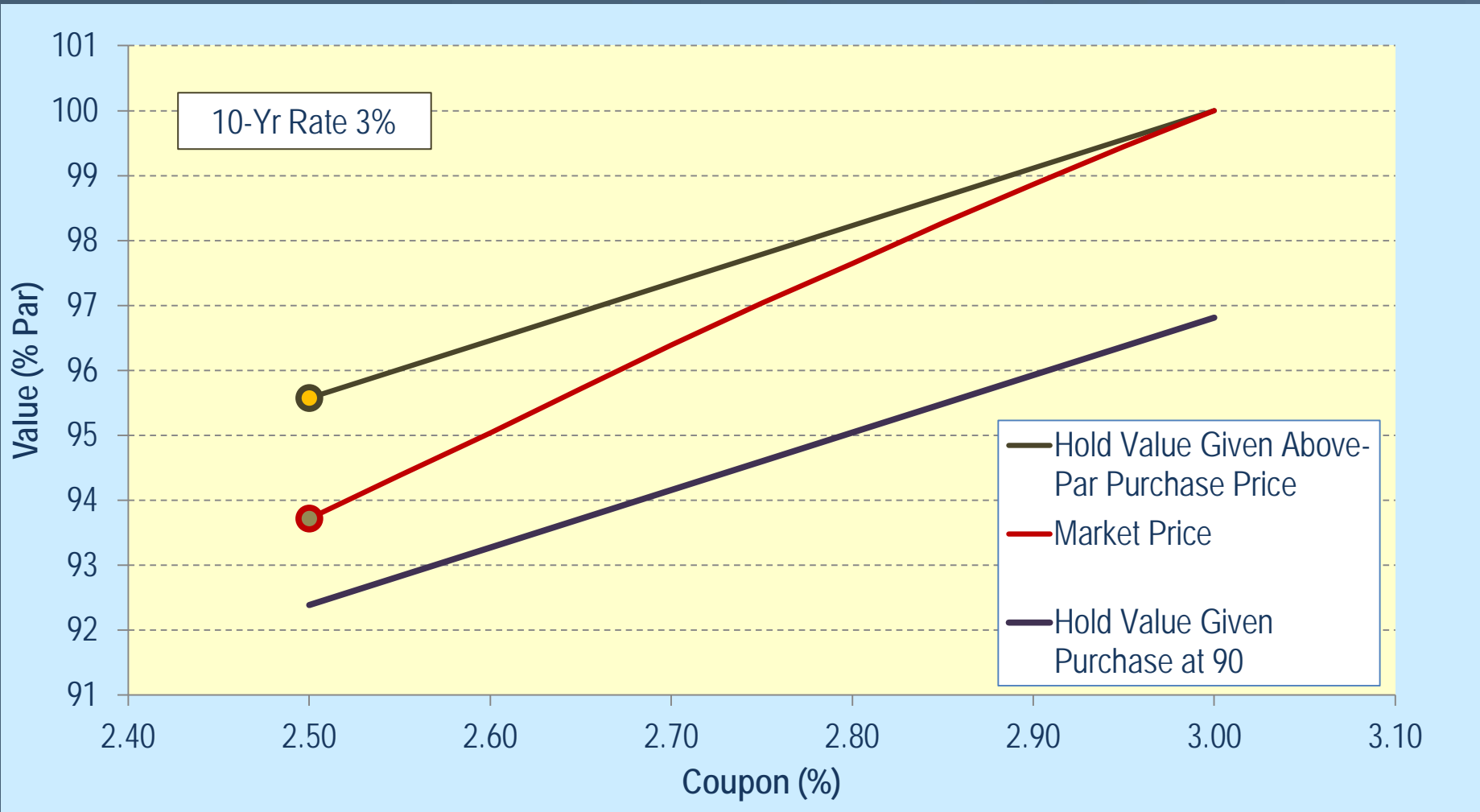


Tax-Loss Harvesting

- Standard transaction: selling losers
 - Short-term loss particularly valuable
- ‘Hold Value’ critical to sale decision
 - Depends on date and price of purchase
 - Can diverge from market price, as noted above
- The right to execute tax-driven trades is the *tax option*
 - Every investor owns this *free* option
 - But only astute managers know how to ‘monetize’ it



Market Price and Hold Value Can Diverge 10-Year Bullets



Sale Decision is a Two-Step Process

1. Is it beneficial?

Compare after-tax proceeds to hold value

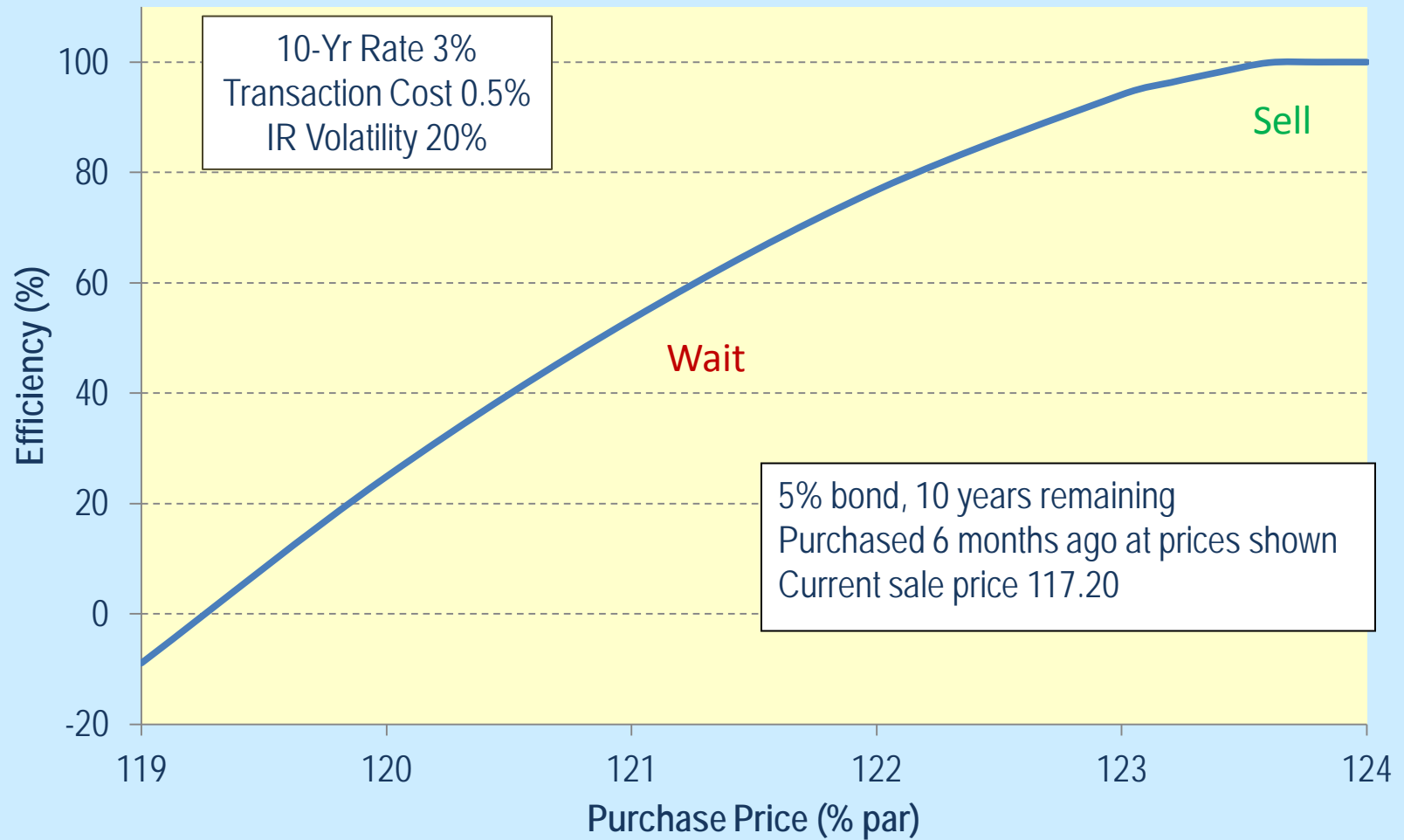
- Tax-driven sales are usually proposed as ‘swaps’,
but benefit from sale *does not depend on replacement bond*

2. Do it now or wait? — need ‘tax efficiency’ measure

Sale at a later time may be more beneficial



Short-Term Loss Enhances Tax Efficiency



Tax Management Today

- Benefit can be considerable
 - Tax option in long muni is worth roughly 5 points
 - Equates to about 30 bps annualized outperformance over ‘buy-and-hold’
- But tax-driven opportunities are underutilized
 - Mutual funds and ETF’s focus on pretax performance
 - Losses in excess of gains are carried forward
 - Bonds and stocks are managed separately in SMA’s; integrated strategy is lacking
 - For individuals, transaction cost is prohibitive



Academic Articles

The Tax Option in Municipal Bonds

Journal of Portfolio Management (Winter 2014)

The Interest Rate Sensitivity of Tax-Exempt Bonds under
Tax-Neutral Valuation”

Journal of Investment Management (1Q 2014)

Optimum Tax Management of Municipal Bonds
(working paper)

See kalotay.com/research



Contact

Andrew Kalotay
andy@kalotay.com
(212) 482 0900

