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# Optimal Tax Management of Municipal Bonds



Brandeis International Business School  
*Rosenberg Institute of Global Finance*

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# Goal: Improve After-Tax Performance

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Munis are held in after-tax accounts

Directly: Individuals and separately managed accounts (SMA's)

Indirectly: Mutual funds and ETF's

Financial institutions: Insurance companies and banks

Performance can be enhanced by strategic sales

Tax-loss harvesting is the standard method

Tax treatment is investor-specific

Losses require offsetting gains

# Unique Challenge of Tax-Managing Munis

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Market price of discount muni is depressed by tax on gain at maturity

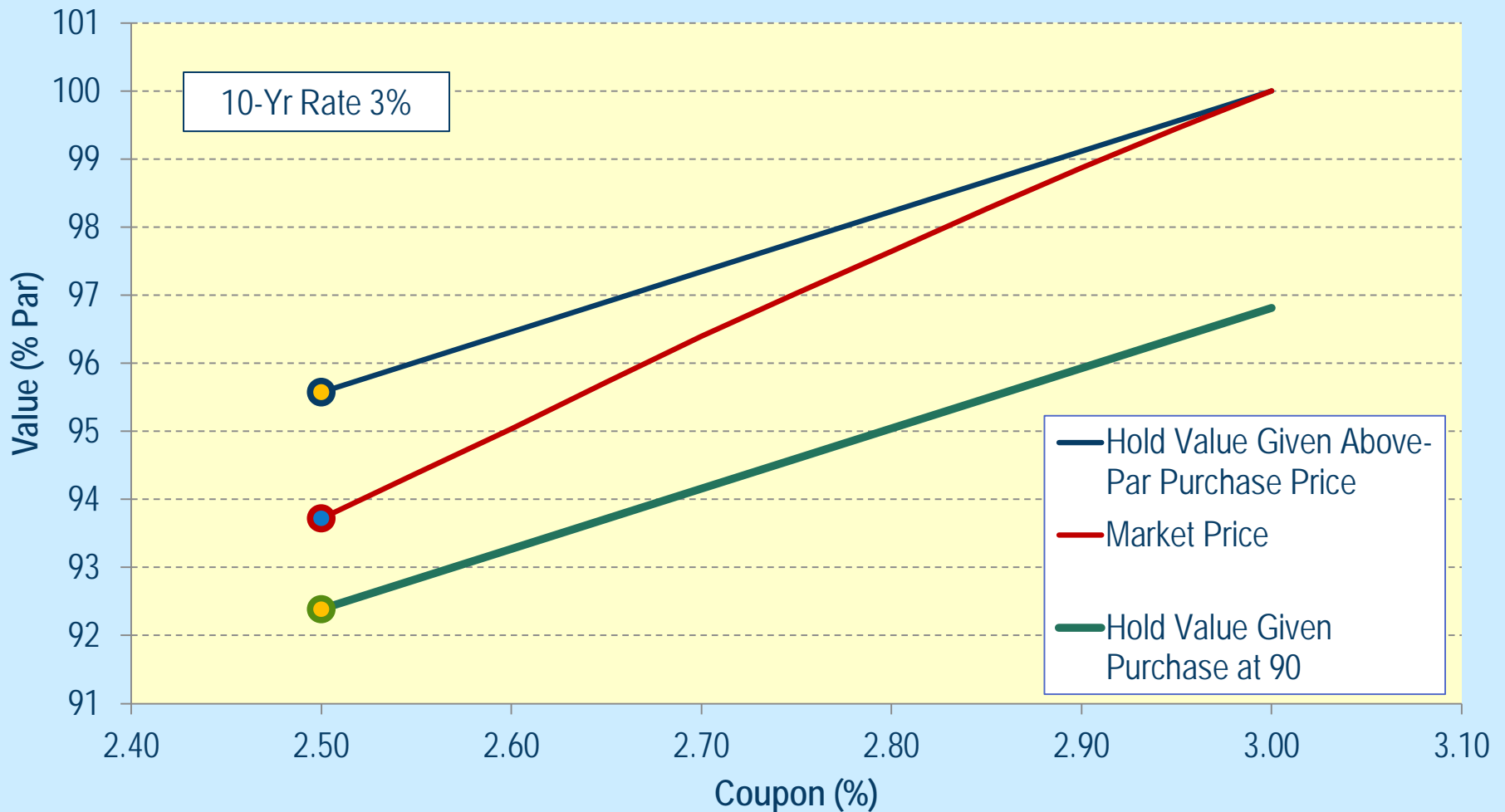
But 'hold value' is determined by current investor's purchase date and purchase price

Benefit from tax-driven sale depends on hold value

Which can substantially differ from market price

# Market Price and Hold Value Can Diverge

## 10-Year Bullets



# Introducing the Tax Option

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It is the right to execute tax-driven trades

Every investor owns this *free* option

Paper explores how to 'monetize' it

Value depends on market volatility and transaction cost

Similar to issuer's refunding option

# Tax Option Strategies

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Ad hoc opportunity to execute beneficial trades

Candidates: SMA's

Tax option acquired on reinvestment *not* considered

Bond-specific decision (today's topic)

Systematic portfolio-based approach to maximize A/T return

Candidates: sophisticated financial institutions

Entails strategic tax option trade-offs (work in progress)

Significant potential benefit

Tax option in a long muni is worth about 5 points

Calculated by tax-driven sales and reinvestments in *same* bond

"The Tax Option in Municipal Bonds," J of PM, (Winter 2014)

# Sale Decision Is a Two-Step Process

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## 1. Is it beneficial?

Compare after-tax proceeds from sale to hold value

### *Observations:*

- *Benefit does not depend on the replacement bond*
- *Reinvestment in like bond maintains risk exposure*
- *In practice, tax-driven sales are presented to retail clients as swaps*



# Sale Decision Is a Two-Step Process

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1. Is it beneficial?

Compare after-tax proceeds from sale to hold value

2. Do it now or wait?

Compare benefit from sale to forfeited option value



# Tax Efficiency Signals When to Sell

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$$\textit{Tax Efficiency} = \frac{\textit{Aftertax Proceeds} - \textit{Hold Value}}{\textit{Tax Option Value}}$$

Benefit should capture most of forfeited tax option value

- Maximum 100%

- Decision depends on risk tolerance

- No reason to delay at 100%

# Tax Efficiency in Action: Sale Price Not Low Enough

**MuniSignal™** Patent pending

## Current Holding

Issue Date	06/15/2012
Maturity Date	06/15/2022
Coupon (%)	5.00
First Call Date	
Purchase Date	6/15/2012
Purchase Price	120.00

Sell or Hold?

## Market Assumptions

Date	8/1/2014
Bid Price	111.00
Bid-YTC	3.40
Bid-YTM	3.40
Bid-Ask Spread	0.50
Interest Rate Volatility	20.0

Reset Inputs

## After-Tax Analysis

Current Basis (1)	116.18
Sale Price (2)	111.00
Gain/Loss (3) = (2) - (1)	(5.18)
Tax Benefit (4)	1.04
After-Tax Proceeds (5) = (2) + (4)	112.04
Hold Value (6)	111.25
Net Benefit (7) = (5) - (6)	0.79

All Values in % par

Issue price assumed at or above par

Tax Rates: Income - 40%, Short-term gain - 40%, Long-term gain - 20%

## Recommendation

Net Benefit From Sale	0.79
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Opportunity Cost	0.81
	=
MuniSignal™ Score	96.56
<i>100% best. Not recommended below 90%</i>	

OK,  
But Not  
Optimal

# Tax Efficiency in Action: Time to Sell

**MuniSignal™** Patent pending

## Current Holding

Issue Date	06/15/2012
Maturity Date	06/15/2022
Coupon (%)	5.00
First Call Date	
Purchase Date	6/15/2012
Purchase Price	120.00

Sell or Hold?

## Market Assumptions

Date	8/1/2014
Bid Price	108.00
Bid-YTC	3.81
Bid-YTM	3.81
Bid-Ask Spread	0.50
Interest Rate Volatility	20.0 ▾

Reset Inputs

## After-Tax Analysis

Current Basis (1)	116.18
Sale Price (2)	108.00
Gain/Loss (3) = (2) - (1)	(8.18)
Tax Benefit (4)	1.64
After-Tax Proceeds (5) = (2) + (4)	109.64
Hold Value (6)	108.25
Net Benefit (7) = (5) - (6)	1.39

## Recommendation

Net Benefit From Sale	1.39
	÷
Opportunity Cost	1.39
	=
MuniSignal™ Score	100.00
<i>100% best. Not recommended below 90%</i>	

All Values in % par

Issue price assumed at or above par

Tax Rates: Income - 40%, Short-term gain - 40%, Long-term gain - 20%



# Tax Efficiency in Action: Should Have Sold Earlier

**MuniSignal™** Patent pending

## Current Holding Market Assumptions

Issue Date	06/15/2012
Maturity Date	06/15/2022
Coupon (%)	5.00
First Call Date	
Purchase Date	6/15/2012
Purchase Price	120.00

Date	8/1/2014
Bid Price	90.00
Bid-YTC	6.65
Bid-YTM	6.65
Bid-Ask Spread	0.50
Interest Rate Volatility	20.0 ▾

Sell or Hold?

Reset Inputs

## After-Tax Analysis Recommendation

Current Basis (1)	116.18
Sale Price (2)	90.00
Gain/Loss (3) = (2) - (1)	(26.18)
Tax Benefit (4)	5.24
After-Tax Proceeds (5) = (2) + (4)	95.24
Hold Value (6)	92.64
Net Benefit (7) = (5) - (6)	2.60

Net Benefit From Sale	2.60
	÷
Opportunity Cost	2.60
	=
MuniSignal™ Score	100.00

100% best. Not recommended below 90%

All Values in % par  
 Issue price assumed at or above par  
 Tax Rates: Income - 40%, Short-term gain - 40%, Long-term gain - 20%



# Tax Management Today

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Mutual funds and ETF's ranked on pretax performance

Investors are responsible for taxes on capital gains

Net capital losses carried forward

Managers of SMA's reluctant to advise on taxes

For individuals, transaction cost is prohibitive

Insurance company trades tend to be driven by accounting considerations