



Option-based Debt Management Analytics

Issuers

*What to sell —
new issue structuring*

*When to call —
optimal refunding*

Advisors

*Demonstrate expertise
with powerful analytical
tools*

Underwriters

*Communicate effectively
with issuers and advisors*

MuniCycle™

Cutting-edge Structuring and Refunding Analysis

MuniCycle enables issuers, advisors, and underwriters to analyze contemplated transactions. This powerful tool offers option-based analysis for new issue structuring with different coupons and call protection periods, and for calling / refunding.

Essential in Today's Municipal Market

With the elimination of advanced refunding, bond structures with calls shorter than 10 years and coupons lower than 5% are becoming more prevalent. Issuers need rigorous analytics to compare alternative structures. On the refunding side, escrow costs and negative arbitrage are no longer relevant, but issuers do need to ensure that they are exercising call options efficiently.

Key Features

- Extracts optionless par rates from callable scale, essential for proper discounting
- Determines fair price given coupon, maturity, and call date (new or seasoned bonds)
- Incorporates transaction costs
- Signals when to call, based on refunding efficiency
- Ranks refunding candidates by savings and efficiency
- Present value calculations supported by cashflows and discount rates

Flexible Desktop Application

MuniCycle is available as a feature-rich Excel add-in for fast and convenient desktop use.

About Kalotay Analytics

For three decades Kalotay Analytics has been at the core of leading fixed income valuation and risk systems. The firm's patented technology performs computationally intensive calculations with the precision and speed demanded by sophisticated fixed income market participants.

Extracts implied optionless par curve from 5% non-call 10 muni curve at user-specified volatility

Yield Curve Conversion

Issuer Curve		Maturity (Yrs)	1	2	5	7	10	15	20	30
Coupon %	5	Issuer Curve (%)	1.600	1.640	2.052	2.303	2.638	2.831	2.971	3.991
Years to call	10	Par NCL Curve (%)	1.600	1.641	2.067	2.328	2.678	3.106	3.261	4.303
Volatility %	15									

Essential for discounting and option valuation

Determines new issue price for any combination of coupon, maturity, and call date

Structuring Analysis

Coupon	Structure	Fair Price	YTC	YTM	YTW
5.00	30 NC-10	108.253	3.991	4.496	3.991
5.00	30 NC-8	107.374	3.917	4.547	3.917
5.00	30 NC-6	106.199	3.834	4.616	3.834
5.00	20 NC-10	117.443	2.971	3.752	2.971
5.00	20 NC-8	115.432	2.831	3.883	2.831
5.00	20 NC-6	113.025	2.639	4.044	2.639
5.00	15 NC-10	118.775	2.831	3.393	2.831
5.00	15 NC-8	116.623	2.678	3.560	2.678
5.00	15 NC-6	114.051	2.466	3.765	2.466
4.00	30 NC-10	92.804	4.920	4.436	4.436
4.00	30 NC-8	92.563	5.146	4.452	4.452
4.00	30 NC-6	92.316	5.522	4.467	4.467
4.00	20 NC-10	106.478	3.237	3.545	3.237
4.00	20 NC-8	105.552	3.208	3.608	3.208
4.00	20 NC-6	104.519	3.167	3.679	3.167
4.00	15 NC-10	108.708	2.986	3.261	2.986
4.00	15 NC-8	107.685	2.916	3.344	2.916
4.00	15 NC-6	106.513	2.813	3.440	2.813

Reports present value savings and loss of option value

Calculates *Refunding Efficiency* — a widely used yardstick for determining when to call

Refunding Analysis

Outstanding Bond		Refunding Bond		MuniCycle Analysis and Report			
Dated	4/1/2008	Dated	4/1/2018	PV Date	4/1/2018	Old PV	63,119,096
Maturity	4/1/2038	Maturity	4/1/2048	Fair Ref Price	104.52	New PV	54,543,291
Coupon	5.000	Coupon	4.000	Refunding Face	49,071,891	Savings	8,575,804
Face	50,000,000	Fee	0.500	YTC	3.167	Savings %	13.6
Call Type	American	Call Type	American	YTM	3.679	Old Option	12,149,760
Call Date	4/1/2018	Call Date	4/1/2024	YTW	3.167	New Option	3,135,110
Call Price	100	Call Price	100	Option Loss		Option Loss	9,014,651
				Option Loss %		Option Loss %	74.2
				Efficiency %		Efficiency %	95.13
						(Savings/Option Loss)	

