



Pricing Day Fundamentals

May 9, 2019



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Brian S. Cooper
Baker Tilly
Brian.cooper@bakertilly.com

Thomas J. Ricchiuto
Baker Tilly
Tom.ricchiuto@bakertilly.com



Pricing Day – How Did We Get Here?

- Bond pricing is one of the most important days of the issuance process
 - Investors are reviewing credit quality, terms and market conditions
 - Sales effort is typically focused on a single day
 - Interest rates and deal terms are finalized
 - Bonds are awarded to the original purchaser
- How did we get here?
 - Plan of Finance
 - Method of Sale (Negotiated, Competitive or Bank Purchase)
 - Legislative Authority
 - Disclosure (Preliminary Official Statement) and Credit Ratings



Negotiated Sale

- Underwriting firm is selected well in advance of the proposed sale date.
- Underwriter proposes an amount of compensation known as underwriter's discount.
- The underwriting firm takes the lead in marketing the bonds to investors.
- Transaction may be sole managed or co-managed by a group or "syndicate" of underwriting firms.
- Managing (or senior) underwriter proposes interest rates at which various maturities will be offered to investors.
- Upon approval by the issuer, underwriter will approach investors to determine whether bonds can be sold at the proposed rates.
- Adjustments are made to the interest rate scale until final terms are reached reflecting the supply and demand for the bonds.
- Once terms for the sale have been reached a bond purchase agreement is signed by the issuer and underwriter (purchaser) agreeing to the final terms.



Negotiated Sale

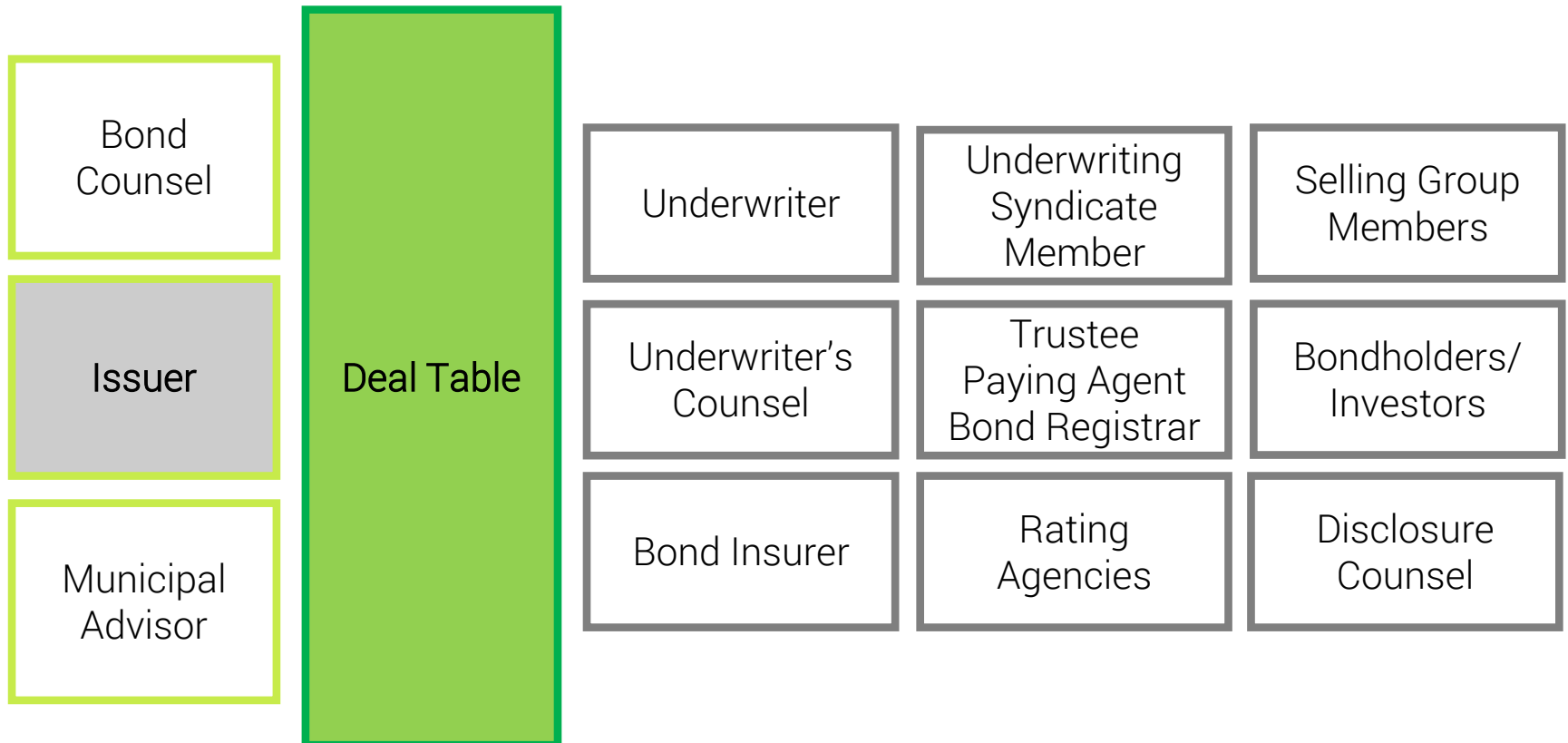
Advantages:

- Greater incentive for underwriter to engage in pre-sale marketing of the bonds to assess demand for certain structures and maturities.
- A negotiated sale provides the greatest amount of flexibility regarding structure and timing of the sale.

Disadvantages:

- Negotiated sales require issuers to make a greater effort to remain informed of developments in the municipal market to ensure that bonds are priced at favorable rates and the underwriting spreads are reasonable.
- Utilizing a municipal advisor can mitigate this risk.

Deal Team – Negotiated Issuance*



*Adapted from Municipal Securities Rulemaking Board (MSRB) - Professionals Involved in a Negotiated Municipal Bond Transaction



Competitive Sale

- In a competitive sale, the issuer solicits bids from underwriting firms to purchase its bonds.
- Issuer determines the size and other essential characteristics of the issue prior to soliciting bids.
- A Notice of Sale containing bid parameters and terms of the issue is distributed to underwriters.
- Each bid takes into account both the interest rate paid to investors and the amount of compensation paid to the underwriting firm for selling the bonds.
- Bonds are awarded to the firm or syndicate offering the lowest interest rate (highest price) bid.
- Final terms and underwriter who will purchase the bonds are outlined in the Certificate of Award.



Competitive Sale

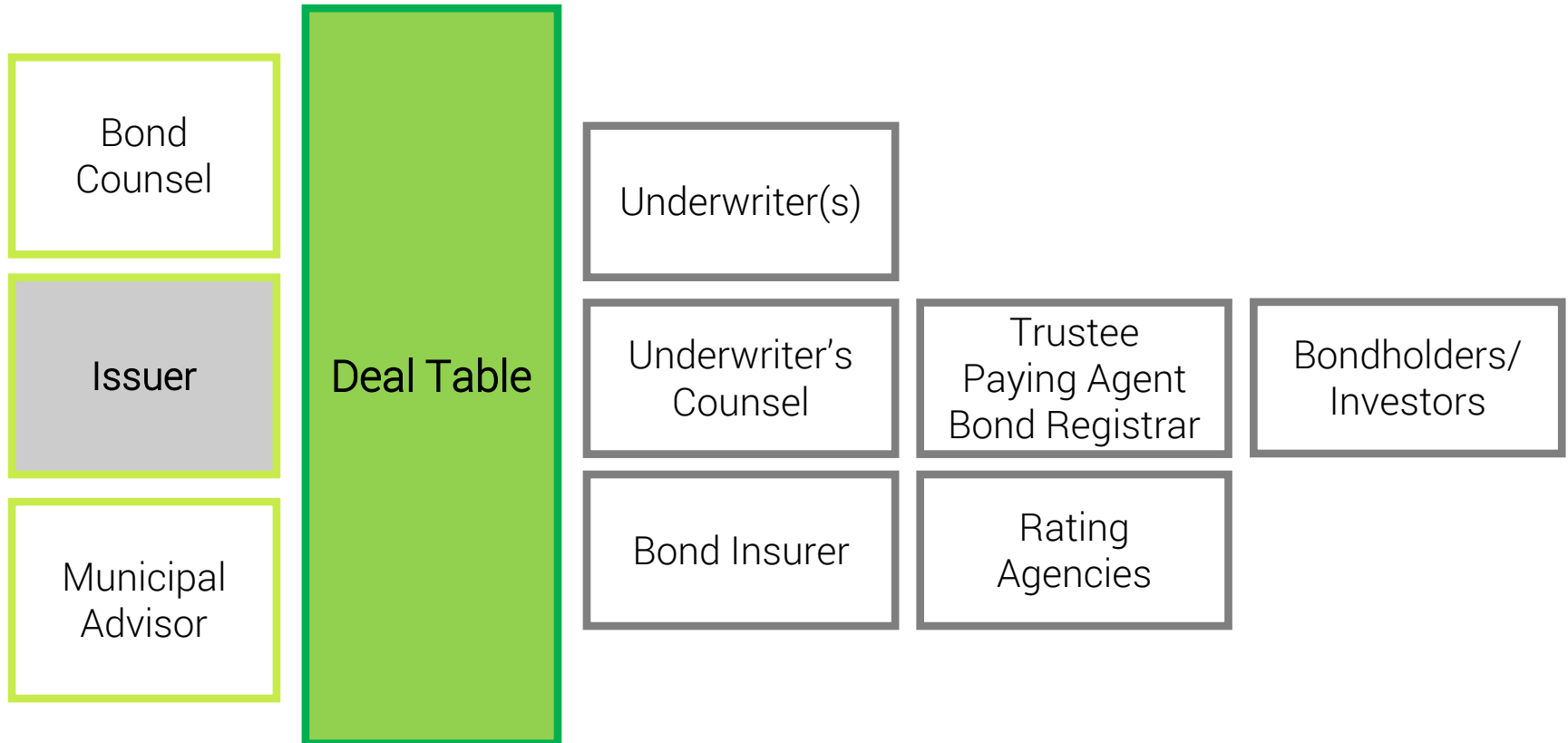
Advantages:

- Provides some assurances that bonds have been sold at the lowest interest rate given the current market conditions.
- Competitive sales promote the appearance of an open, fair process.

Disadvantages:

- Issuer may have less flexibility in adjusting the structural features to respond to investor interest in certain maturities, call provisions or other characteristics.
- Underwriters may build a “risk premium” into their bids to compensate for interest rate volatility and uncertainty in being able to sell the bonds at a particular interest rate.
- Complex financings or weak or unknown credits may have difficulty attracting bids.

Deal Team – Competitive Issuance*



*Adapted from Municipal Securities Rulemaking Board (MSRB) - Professionals Involved in a Competitive Municipal Bond Transaction

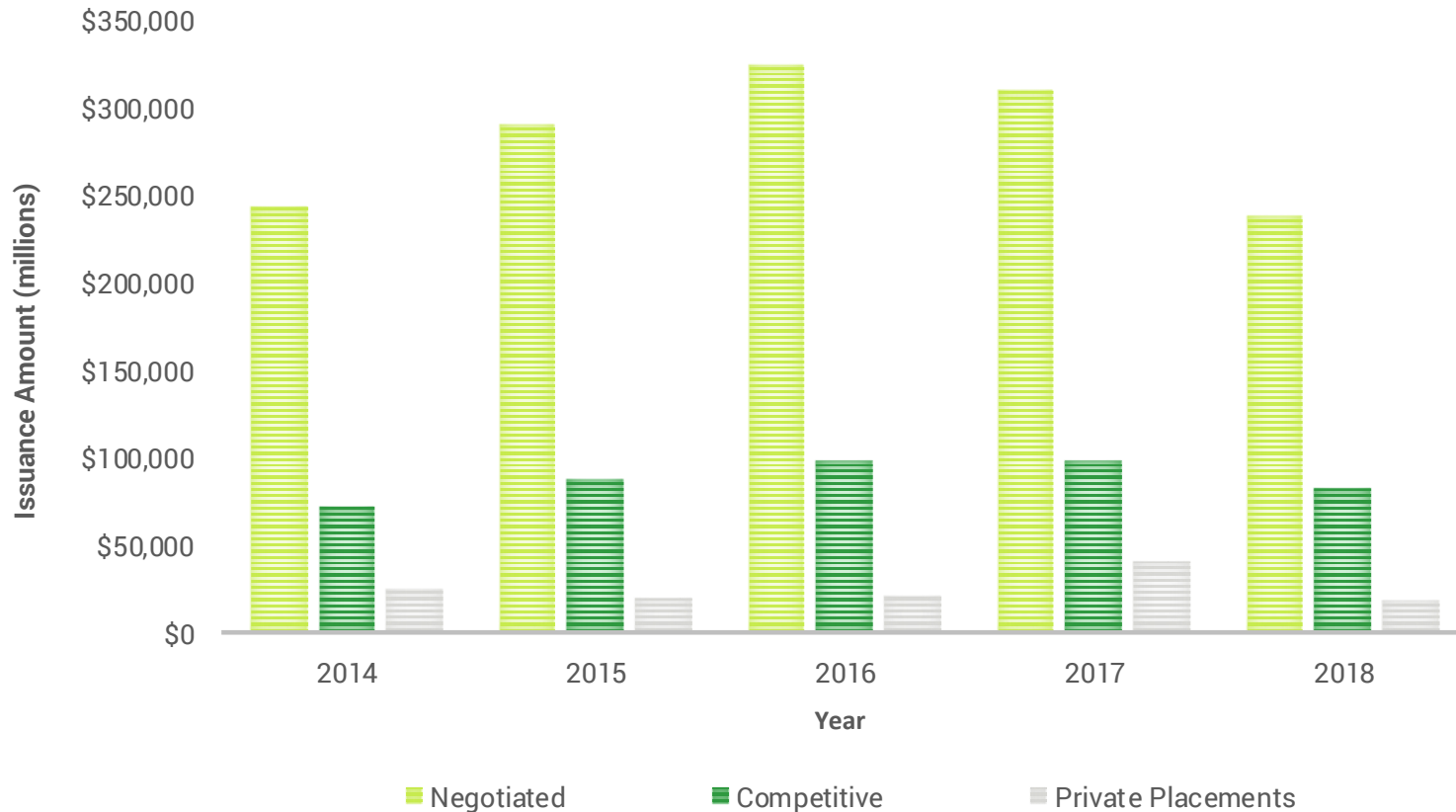


Private Placement or Direct Bank Purchase

- Method of sale in which the issuer sells bonds directly to a limited number of sophisticated investors or financial institutions without a public offering.
- Must be sold to 35 or fewer investors
- For governmental issues, bonds are typically sold to a bank or investment company
- Financial institution may hold the securities in its investment portfolio until maturity.
- Bonds may also have provisions to sell or transfer the bond to another sophisticated investor.
- Common for financings with shorter terms (weighted average maturity of approximately 10 years or less)
- Typically no offering document, rating, CUSIP or DTC
- Require sophisticated investor letters (aka “Big Boy Letters”)
- Typically exempt from continuing disclosure under Rule 15c2-12

Negotiated vs. Competitive Sale

NEGOTIATED, COMPETITIVE & PRIVATE PLACEMENT ISSUANCE 2014 - 2018

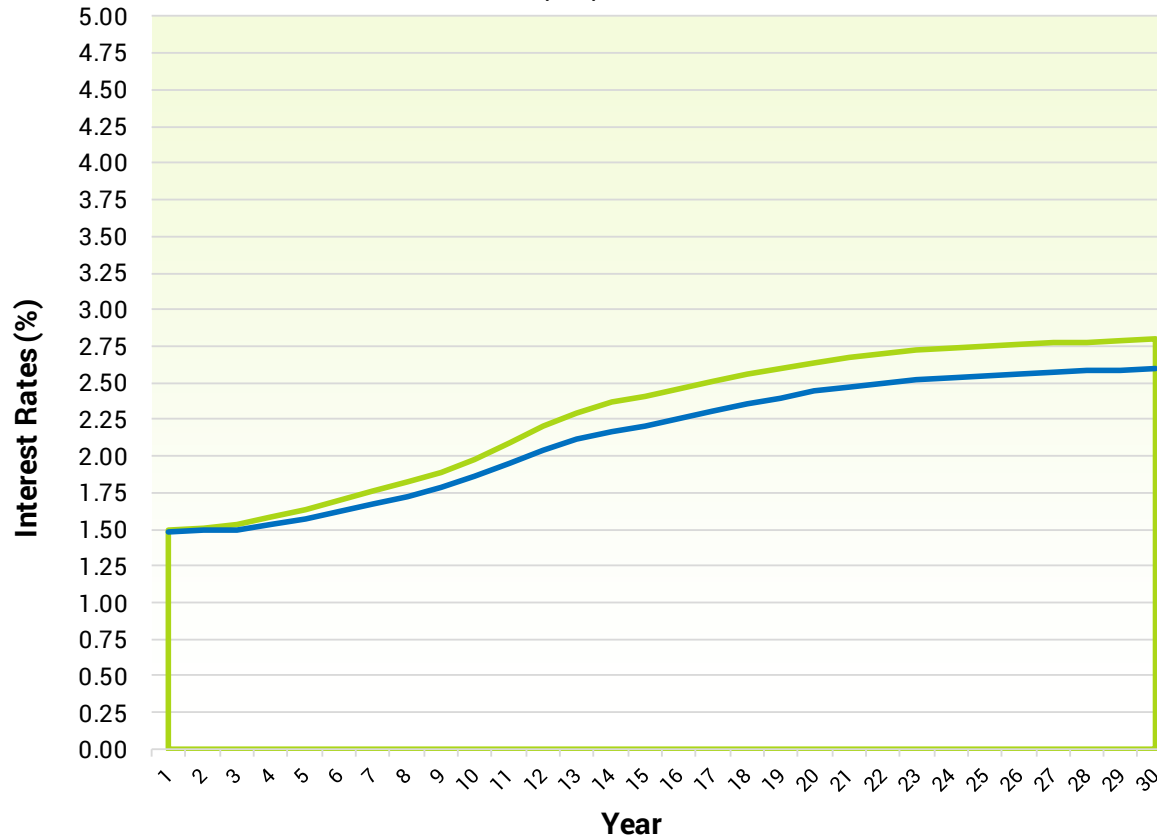


Source: Bond Buyer

Yield Curve

AAA GO MMD vs. AA GO MMD

As of 3/28/2019

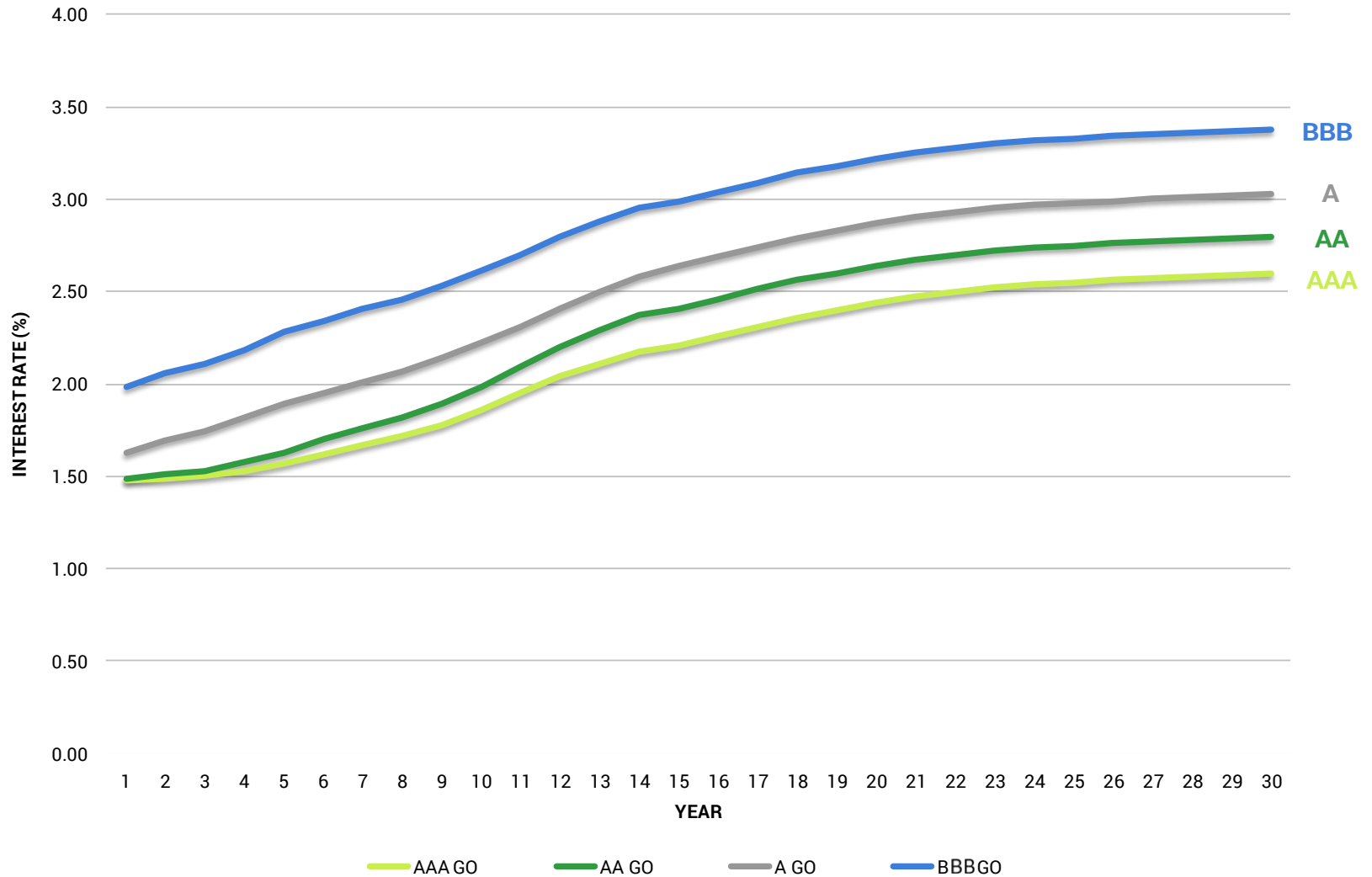


Source: TM3.com

AA GO AAA GO

Years	AAA GO	AA GO
1	1.48	1.49
2	1.49	1.51
3	1.50	1.53
4	1.53	1.58
5	1.57	1.63
6	1.62	1.70
7	1.67	1.76
8	1.72	1.82
9	1.78	1.89
10	1.86	1.98
11	1.95	2.09
12	2.04	2.20
13	2.11	2.29
14	2.17	2.37
15	2.21	2.41
16	2.26	2.46
17	2.31	2.51
18	2.36	2.56
19	2.40	2.60
20	2.44	2.64
21	2.47	2.67
22	2.50	2.70
23	2.52	2.72
24	2.54	2.74
25	2.55	2.75
26	2.56	2.76
27	2.57	2.77
28	2.58	2.78
29	2.59	2.79
30	2.60	2.80

Ratings and Interest Rates





Writing an Interest Rate Scale

- Start with the MMD for tax-exempt securities
 - Current MMD or Interpolated?
- Scale considerations:
 - Issuer
 - Tax status
 - Credit and security
 - Closing date
 - Call date
 - Transaction size
 - Maturity dates and final maturity
- Market conditions change daily and new comparative transactions are likely to impact pricings

Comparable Transactions

- Credit quality
- Security
- Call dates

Issuer	County of [], OH			[] Local Schools, OH			City of [], OH		
Amount (\$000's)	\$9,255			\$42,000			\$16,650		
Description	LTGO			UTGO			LTGO		
Sale Date	6/27/2018			6/21/2018			6/21/2018		
Principle Payment Date	10/1			12/1			12/1		
Dated Date	7/10/2018			7/25/2018			7/11/2018		
Lead Manager									
Call Date	10/1/2025			6/1/2028			12/1/2027		
Insured? (if "Yes", underlying rating)	No			No			No		
Bank Qualified?	No			No			No		
Mdy's/S&P/Fitch	Aa2/AA/NR			Aa2/NR/NR			Aaa/AAA/NR		
Competitive/Negotiated	N			N			C		
	Coupon	Yield	Spread	Coupon	Yield	Spread	Coupon	Yield	Spread
2018									
2019	2.500	1.540	+6.0	4.000	1.550	+8.0	5.000	1.520	+5.0
2020	2.500	1.720	+8.0	4.000	1.740	+10.0	5.000	1.700	+6.0
2021	2.500	1.870	+8.0	4.000	1.910	+12.0	5.000	1.840	+5.0
2022	2.500	2.020	+13.0	2.500	2.030	+15.0	2.000	1.950	+7.0
2023	2.500	2.140	+14.0	2.500	2.170	+18.0	2.500	2.070	+8.0
2024	2.500	2.300	+18.0	2.500	2.300	+19.0	2.500	2.210	+10.0
2025	4.000	2.420	+18.0	2.750	2.420	+19.0	2.500	2.320	+9.0
2026	2.750	2.520	+18.0	2.750	2.520	+19.0	5.000	2.410	+8.0
2027	2.750	2.630	+21.0	4.000	2.640	+23.0	5.000	2.480	+7.0
2028	4.000	2.750	+28.0	4.000	2.700	+23.0	5.000	2.560	+9.0
2029	4.000	2.810	+30.0	4.000	2.860	+35.0	5.000	2.600	+9.0
2030	4.000	2.880	+33.0	4.000	2.930	+38.0	5.000	2.650	+10.0
2031	4.000	2.920	+33.0	4.000	3.020	+43.0	5.000	2.680	+9.0
2032	4.000	2.950	+32.0				4.000	3.010	+38.0
2033							4.000	3.060	+38.0
2034							4.000	3.130	+41.0
2035				5.000	3.000	+24.0	4.000	3.170	+41.0
2036				5.000	3.040	+25.0	4.000	3.220	+43.0
2037				5.000	3.060	+25.0	4.000	3.240	+43.0
2038				5.000	3.090	+26.0			

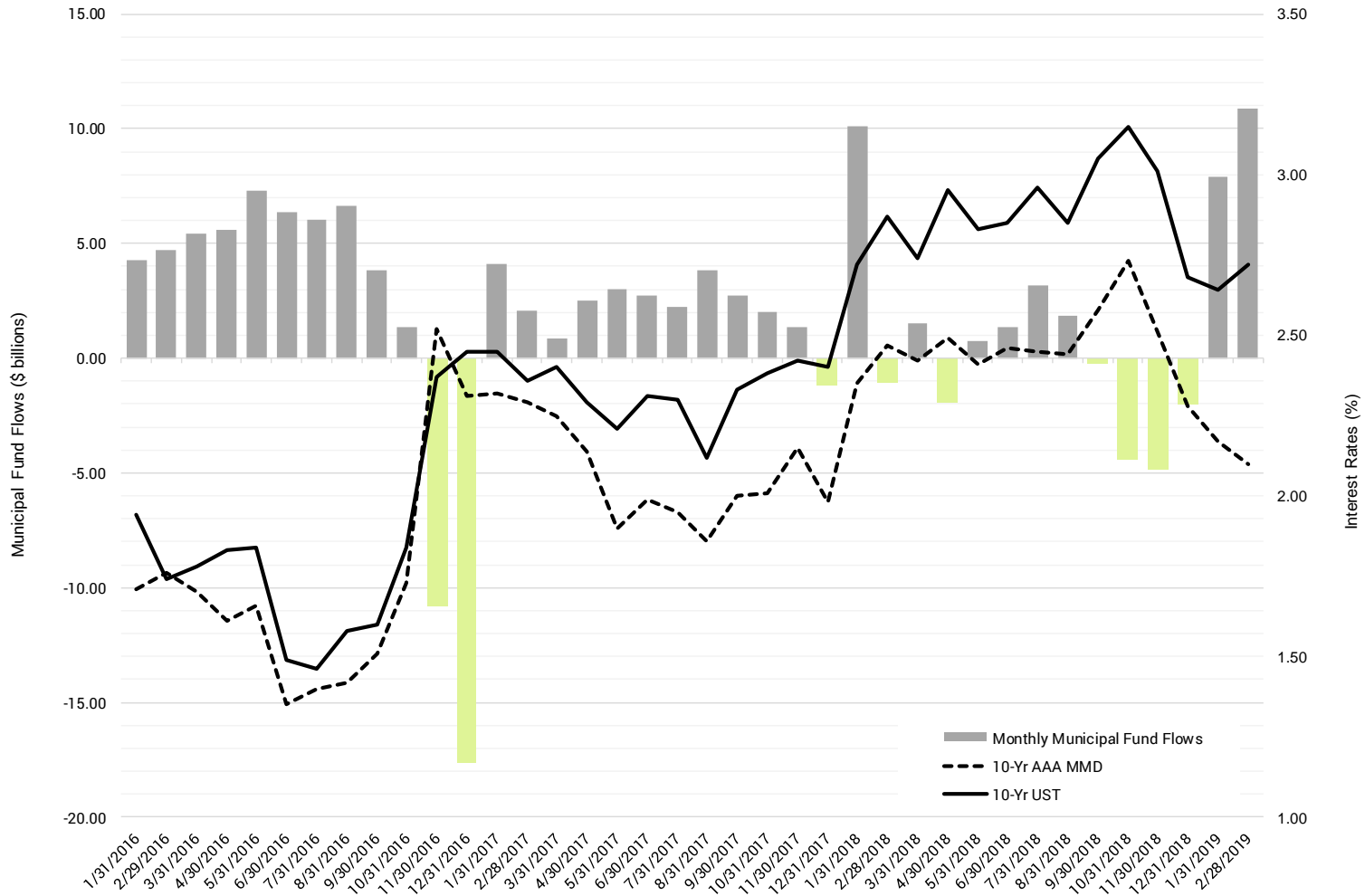


Market Conditions

- Forward Supply
- Muni Inflows and Outflows
- Other transactions in the market
- News, economic indicators
- Volatility

Week	Flows (\$000s)	Muni 10-Year	Muni/Tsy 10-Year %
4/24/2019	1,575.7	1.91%	75.7%
4/17/2019	678.9	1.96%	75.6%
4/10/2019	956.5	1.92%	77.6%
4/3/2019	713.6	1.93%	76.9%
3/27/2019	1,531.6	1.86%	78.4%
3/20/2019	1,424.5	2.02%	79.7%

Municipal Bond Funds



Sources: ICI.org | TM3.com | Treasury.gov



Scale Considerations

- Pre-pricing discussions set the tone and expectations of the bond sale.
- This occurs shortly after the distribution of the Preliminary Official Statement (POS).
- Issuer should be prepared to establish call provisions and have a good understanding of the spread levels being proposed by their Municipal Advisor and Underwriting team.
- Coupon structures and related spreads can have a major impact on overall cost and cash flow constraints.
- Callable bonds can have a considerable impact on cost and yield to maturity.

Scale Considerations

Maturity Date	Principal	Coupon	AAA MMD as of						
			July 16, 2018	Spread	Yield	Price	YTM	YTM Kick	YTM Spread
12/1/2019	\$530,000	4.000%	1.43	+10 bps	1.53%	103.245	-	-	-
12/1/2020	\$550,000	4.000%	1.56	+12 bps	1.68%	105.285	-	-	-
12/1/2021	\$575,000	4.000%	1.70	+14 bps	1.84%	106.950	-	-	-
12/1/2022	\$595,000	2.500%	1.81	+16 bps	1.97%	102.189	-	-	-
12/1/2023	\$610,000	2.500%	1.91	+18 bps	2.09%	102.057	-	-	-
12/1/2024	\$625,000	2.500%	2.04	+20 bps	2.24%	101.525	-	-	-
12/1/2025	\$640,000	5.000%	2.16	+20 bps	2.36%	117.678	-	-	-
12/1/2026	\$660,000	5.000%	2.28	+22 bps	2.50%	118.698	-	-	-
12/1/2027	\$675,000	5.000%	2.35	+22 bps	2.57%	120.047	-	-	-
12/1/2028	\$705,000	4.000%	2.41	+25 bps	2.66%	111.524	2.713%	+5 bps	+30 bps
12/1/2029	\$735,000	4.000%	2.46	+30 bps	2.76%	110.612	2.894%	+13 bps	+43 bps
12/1/2030	\$760,000	4.000%	2.51	+35 bps	2.86%	109.708	3.049%	+19 bps	+54 bps
12/1/2031	\$795,000	4.000%	2.55	+40 bps	2.95%	108.902	3.175%	+23 bps	+63 bps
12/1/2032	\$825,000	4.000%	2.59	+43 bps	3.02%	108.280	3.271%	+25 bps	+68 bps
12/1/2033	\$855,000	4.000%	2.64	+45 bps	3.09%	107.662	3.356%	+27 bps	+72 bps
12/1/2034	\$890,000	4.000%	2.68	+47 bps	3.15%	107.136	3.426%	+28 bps	+75 bps
12/1/2035	\$925,000	4.000%	2.72	+48 bps	3.20%	106.700	3.482%	+28 bps	+76 bps
12/1/2036	\$965,000	3.000%	2.75	+60 bps	3.35%	95.231	-	-	-
12/1/2037	\$1,005,000	4.000%	2.78	+50 bps	3.28%	106.006	3.567%	+29 bps	+79 bps
12/1/2038	\$1,045,000	5.000%	2.80	+18 bps	2.98%	117.104	3.786%	+81 bps	+99 bps

- Yield to Call
- Yield to Maturity
- YTM Kick

Call Option Analysis

Scenarios In Comparison to the 10yr Call (5.00% Coupon Structure)

Series 2018 New Money	7yr Call	8yr Call	9yr Call	10yr Call
Delivery Date	8/7/2018	8/7/2018	8/7/2018	8/7/2018
Par Amount	20,000,000	20,000,000	20,000,000	20,000,000
Bond Proceeds	19,841,750	19,841,750	19,841,750	19,841,750
Net Debt Service	29,530,040	29,293,762	29,253,988	29,253,988
All-In TIC	3.587%	3.501%	3.431%	3.336%
PV Benefit (Cost)	(457,163)	(299,096)	(169,006)	n/a

Tax-Exempt Refunding @ First Call Date (Current Rates)

Par Refunded	15,290,000	14,440,000	13,570,000	12,750,000
Delivery Date	6/1/2025	6/1/2026	6/1/2027	6/1/2028
PV Savings (%)	8.81%	8.17%	7.48%	6.69%
PV Savings (\$)	1,346,885	1,179,229	1,014,821	852,499
Overall Net Benefit	+889,721	+880,134	+845,815	+852,499
Benefit (Cost) vs. 10yr	+37,223	+27,635	(6,684)	n/a

Tax-Exempt Refunding @ First Call Date (Current Rates +100 bps)

Par Refunded	15,290,000	14,440,000	13,570,000	12,750,000
Delivery Date	6/1/2025	6/1/2026	6/1/2027	6/1/2028
PV Savings (%)	3.65%	3.52%	3.26%	2.94%
PV Savings (\$)	558,072	508,791	442,902	374,463
Overall Net Benefit	+100,909	+209,696	+273,896	+374,463
Benefit (Cost) vs. 10yr	(273,554)	(164,767)	(100,567)	n/a

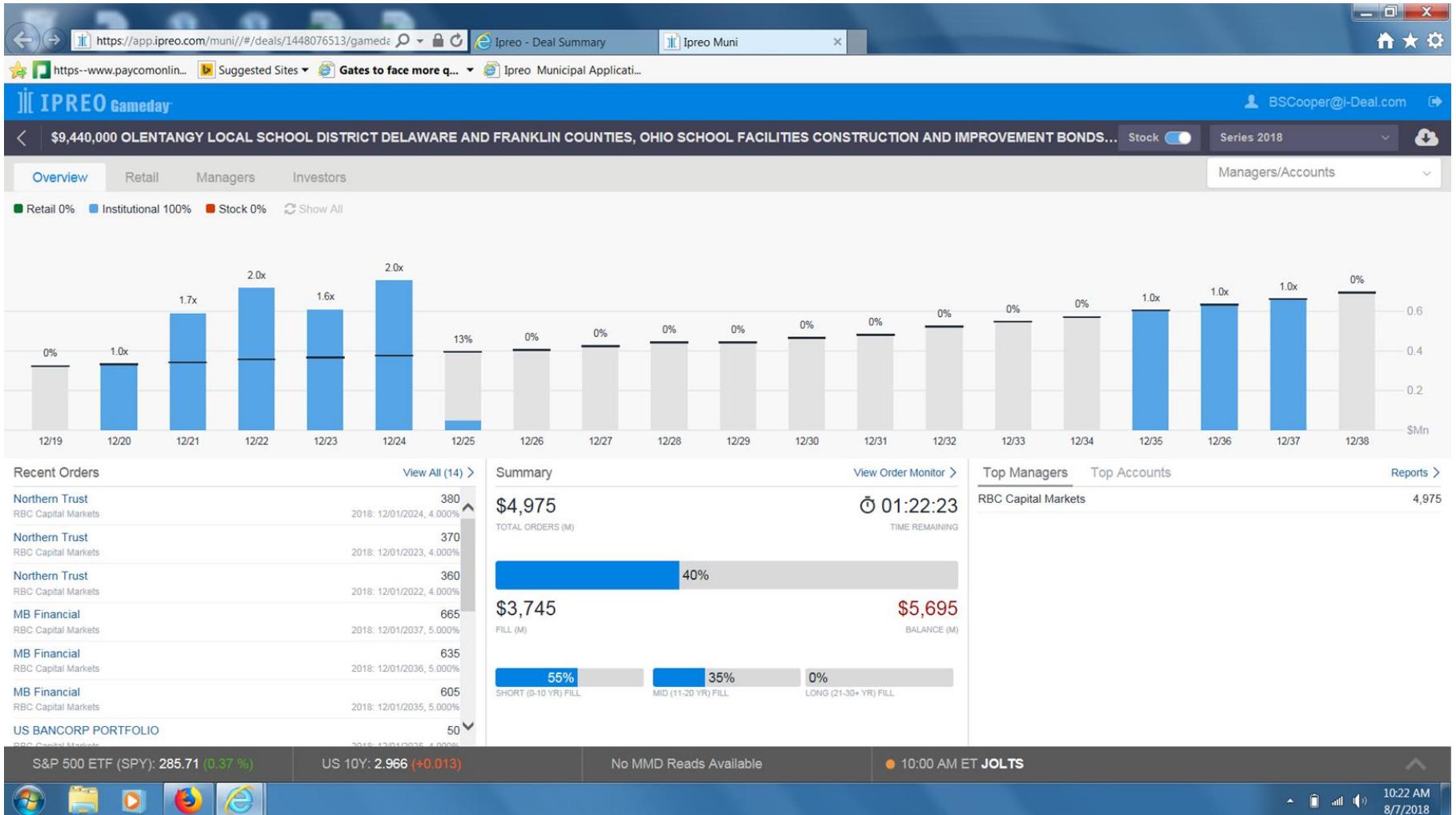
Note: Future Refundings PV'd back to 8/7/2018 at the 10yr Par Call AIC of 3.336%.



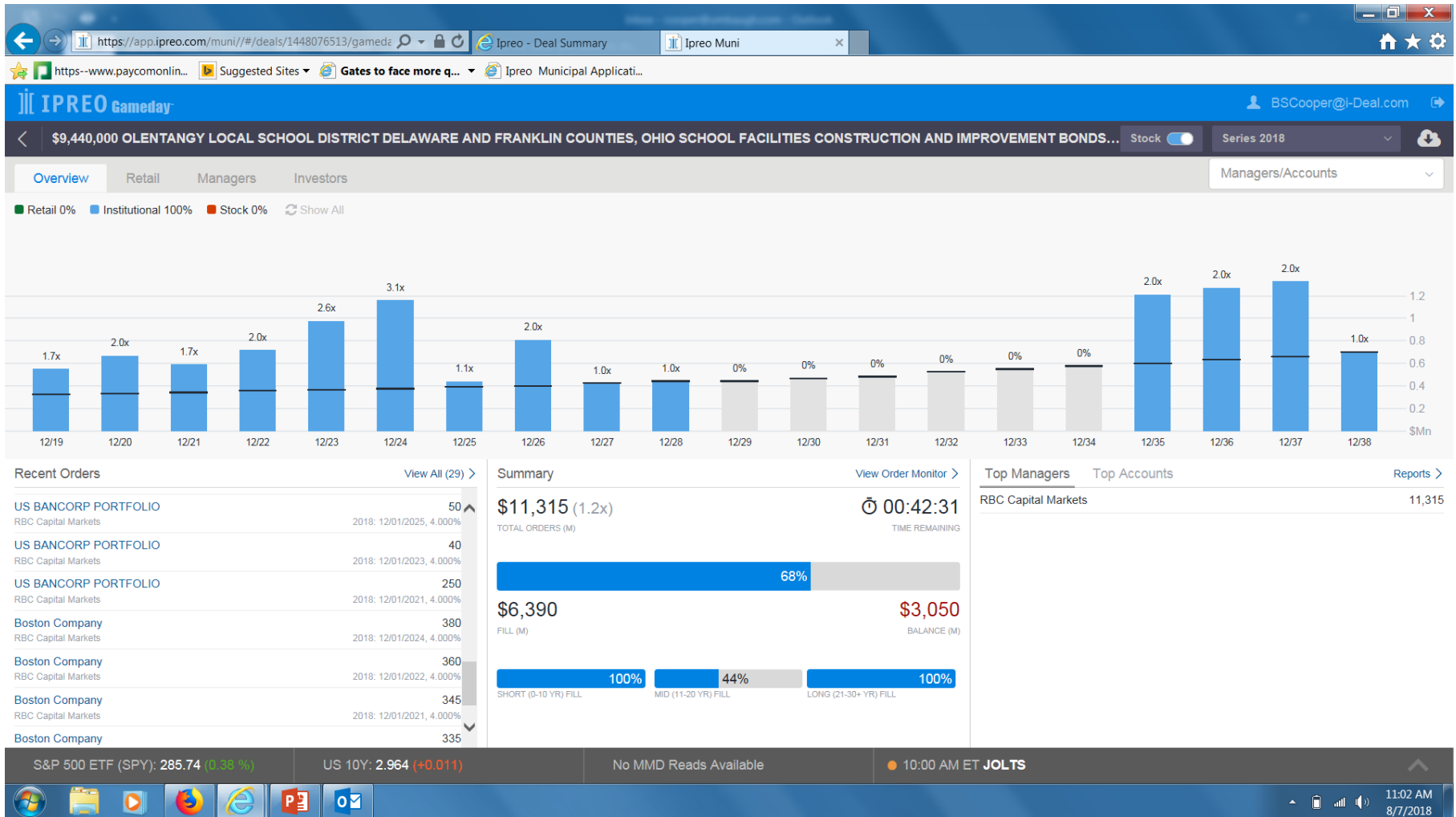
Pricing

- Pre-marketing
- Order period
- Order period adjustments (repricing if necessary)

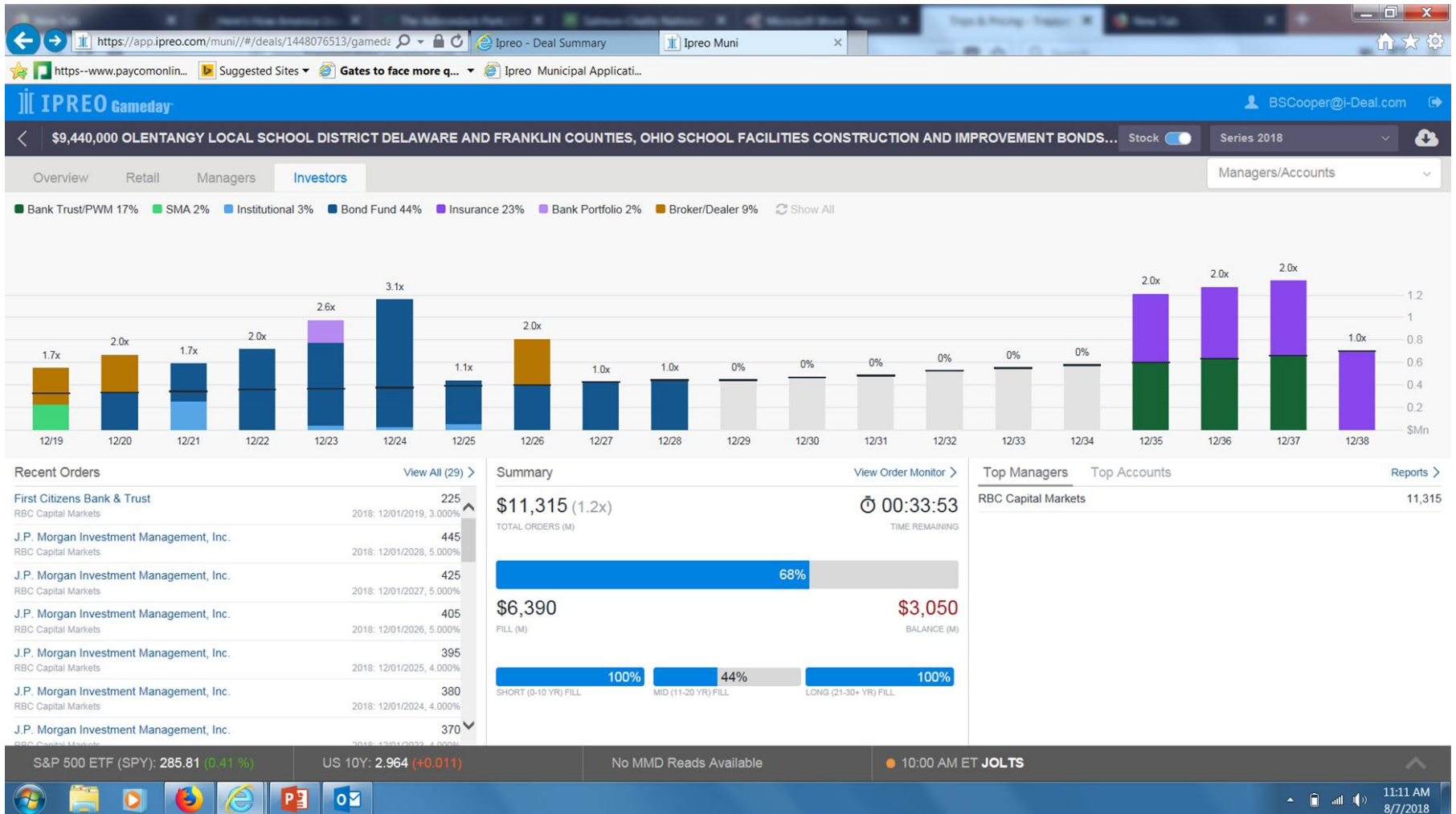
Order Period



Order Period



Order Period Adjustments





Post-Pricing

- Verbal Award
- Bond Purchase Agreement (BPA)
- Certificate of Award (Competitive sale)
- Bond Counsel will finalize the legal documents including the tax certificates, final disclosure documents and bond opinion.
- Final closing letter with settlement instructions circulated to working group to coordinate closing process.
- Closing call via DTC scheduled with working group to (1) confirm receipt of funds and (2) release of bonds.



Closing Flow of Funds

At Closing

- Funds: Investors → Underwriter → Issuer
- Bonds: Issuer → Underwriter → DTC (Investors)

DTC = Depository Trust Company



Questions and Discussion

Brian S. Cooper

Baker Tilly

614-353-7457

brian.cooper@bakertilly.com

Thomas J. Ricchiuto

Baker Tilly

614-987-1686

Tom.ricchiuto@bakertilly.com