



REFUNDING OPPORTUNITIES IN A RISING RATE ENVIRONMENT

CALIFORNIA SOCIETY OF MUNICIPAL FINANCE OFFICERS

2016 Conference

Anaheim, California

Thursday, March 3, 2016

(4:00 – 5:30 p.m.)

Panelists

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Refunding Opportunities in a Rising Rate Environment

- Introductions
- Context: The Convergence of Rates
- Current and Advance Refundings
- Negative Arbitrage
- When to Pull the Trigger
- Competitive vs. Negotiated Refundings
- Escrows and Investments
- Assorted Topics
- Audience Questions

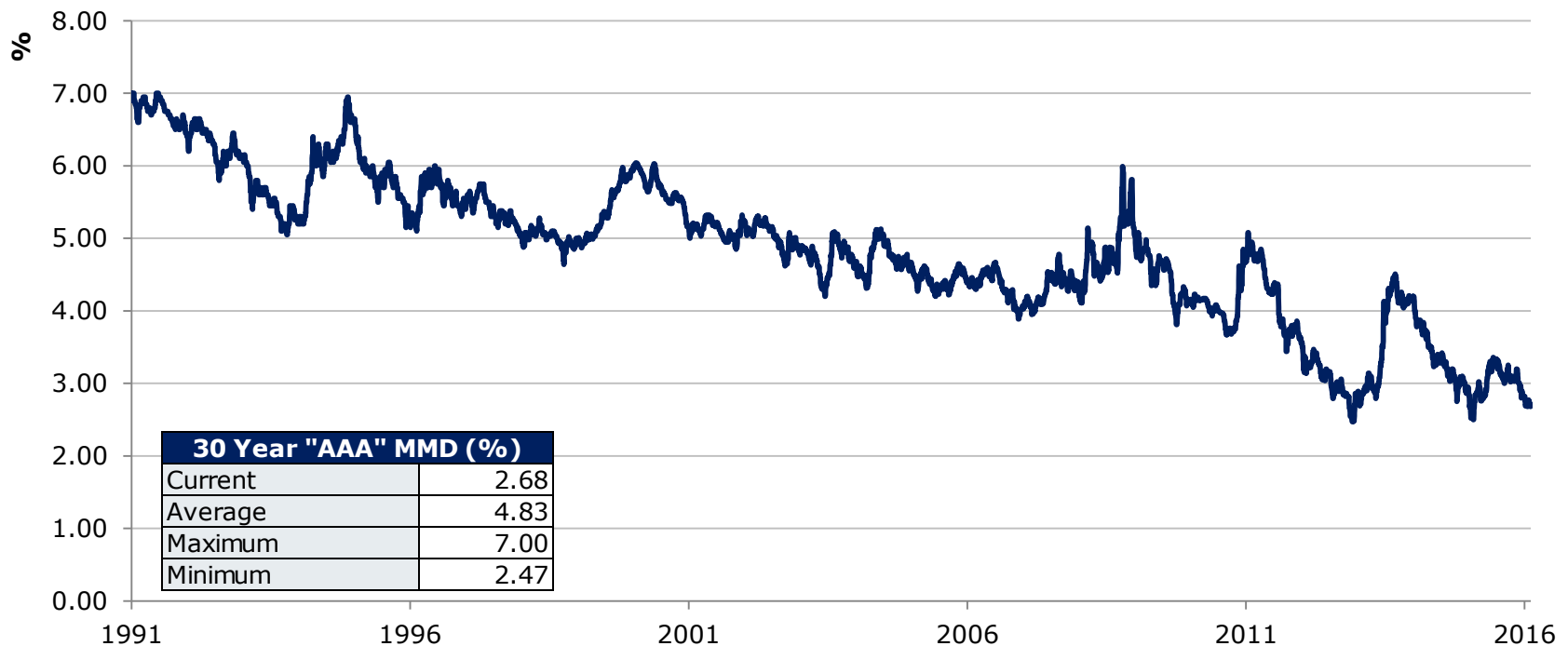


CONTEXT: THE CONVERGENCE OF RATES

Rates are Near Lowest Levels in More than a Quarter Century

- Tax exempt interest rates are again near 25 year lows, prompting interest in whether there are opportunities to refinance outstanding bonds.

25 Year History: 30-Year "AAA" MMD (%)



Source: Thompson Financial/Securities Data; as of February 10, 2016.

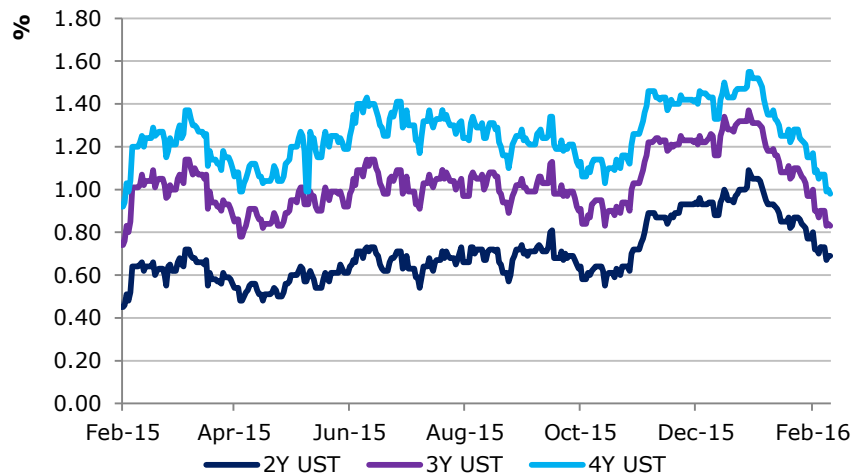


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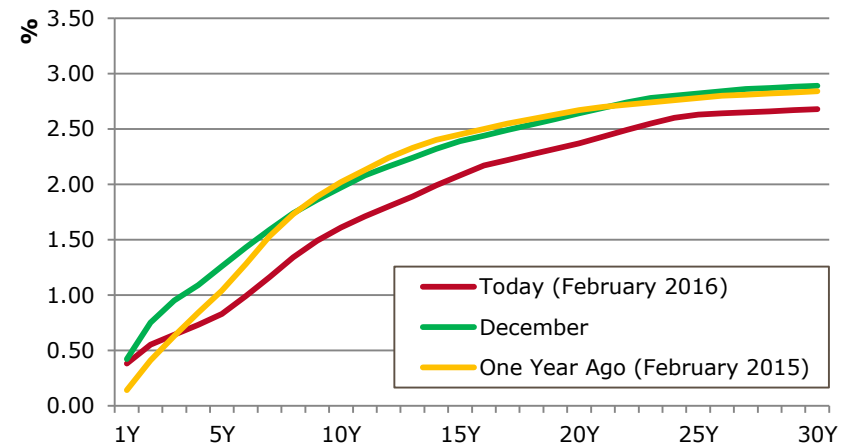
Convergence of Long-Term and Short-Term Interest Rates

- Over the past year, long term borrowing ratings are trending lower...
- But as a result of the December Federal Reserve Fed Funds Rate hike, short term taxable rates are higher
- Although those too have backed off as a result of global economic concerns

Higher Short-Term Rates



Yield Curve Movement



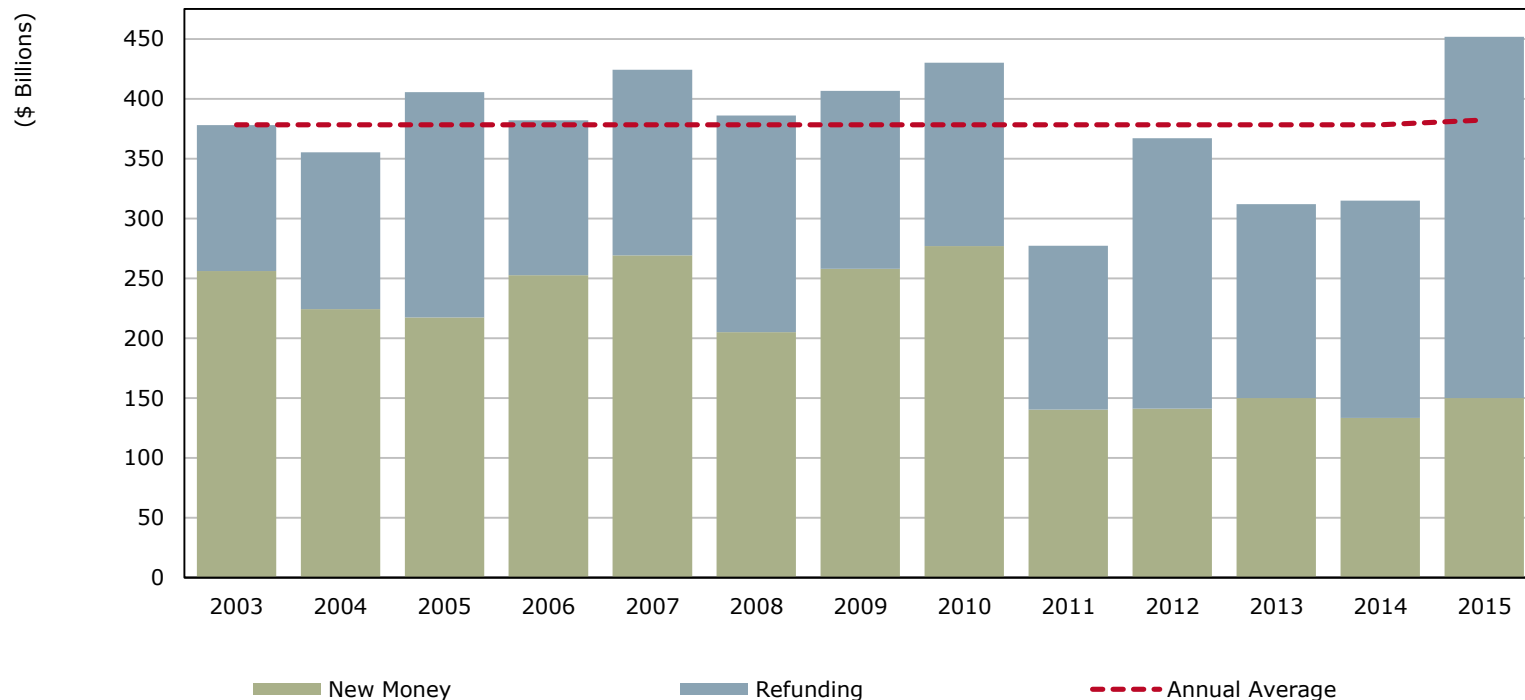
Source: Thompson Financial/Securities Data; as of February 10, 2016.



As a Result Refunding Activity Has Grown Dramatically

- While refunding activity has long been an important component of bond issuance in our industry, refunding activity grew dramatically in 2015

Annual Municipal Bond Volume*



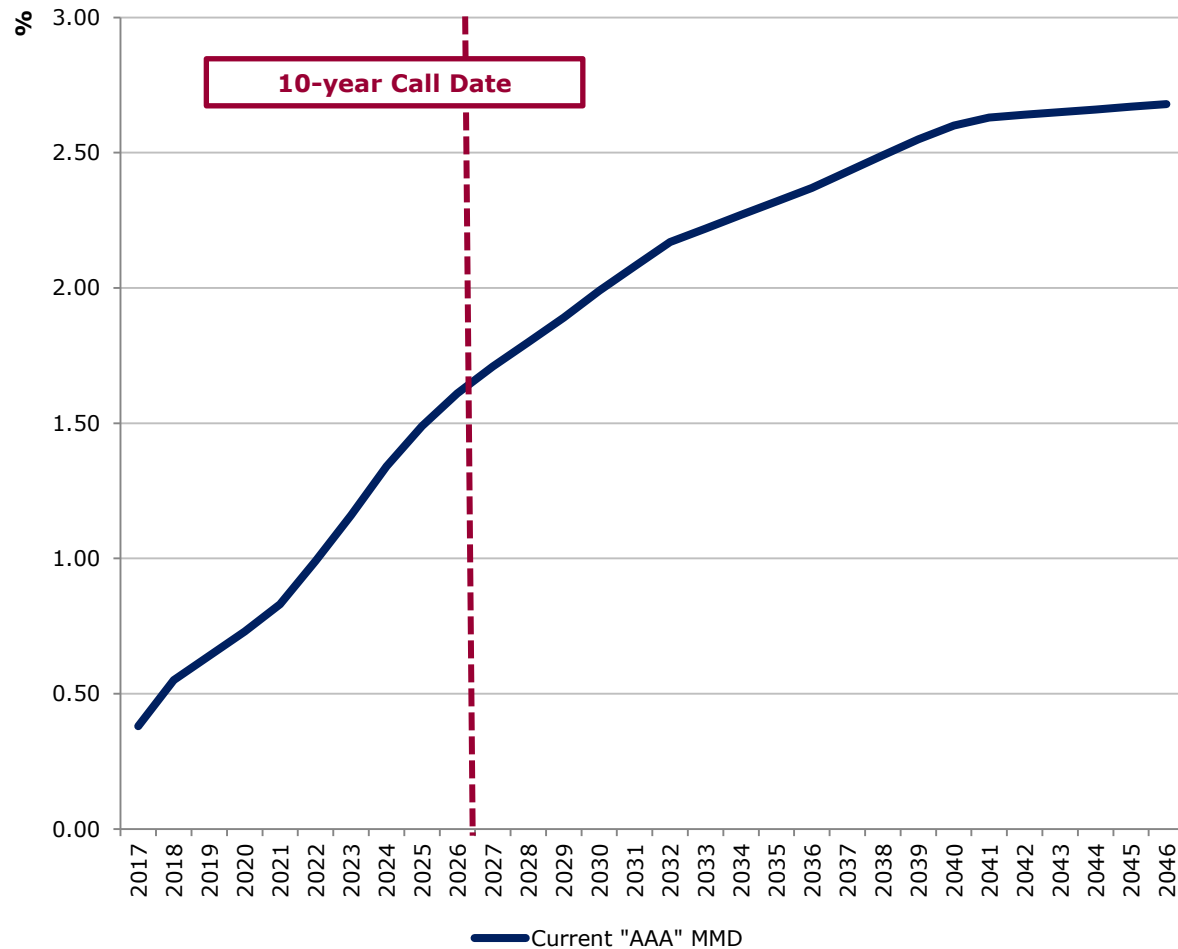
Source: Bond Buyer: "A Decade of Municipal Bond Finance," as of December 31, 2015. *Represents long-term issuance; excludes short-term notes and remarketings;



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CURRENT AND ADVANCE REFUNDINGS

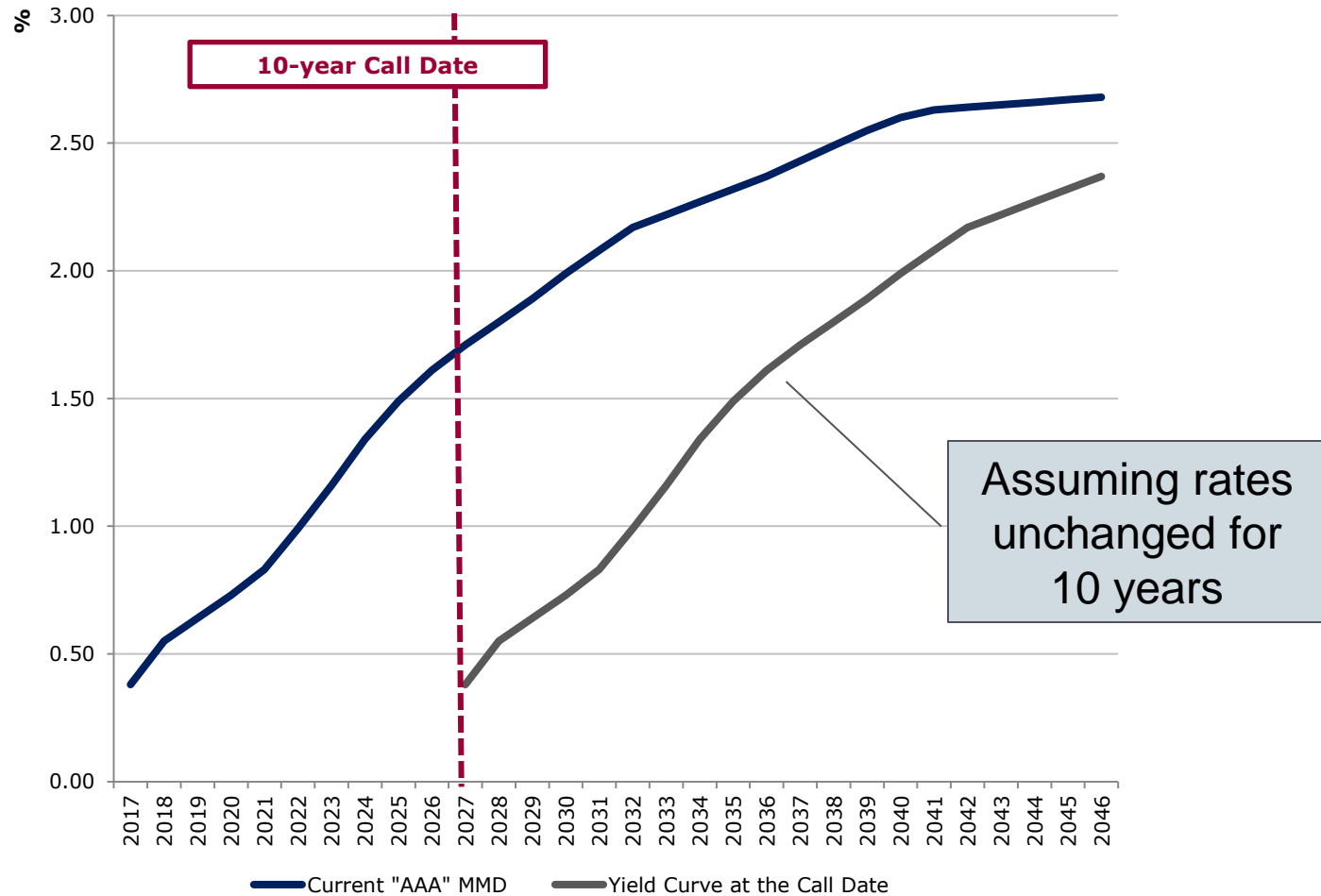
Typical Structure: 30-Year Bonds with 10-Year Call



Source: Thompson Financial/Securities Data; as of February 10, 2016.



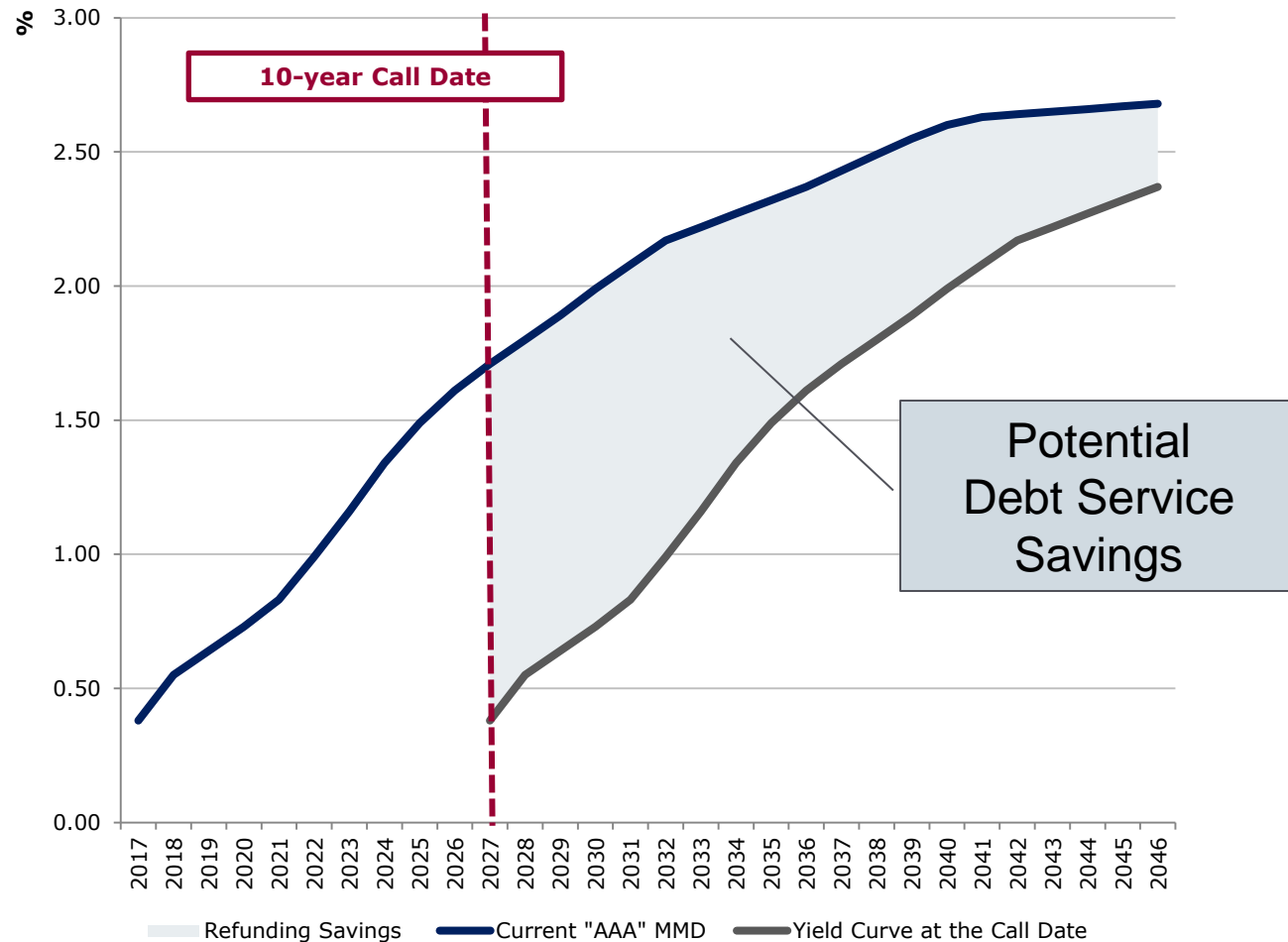
At Call Date, “Roll Down” for Corresponding Maturity



Source: Thompson Financial/Securities Data; as of February 10, 2016.



With the “Roll Down” Comes Refunding Savings



Source: Thompson Financial/Securities Data; as of February 10, 2016.

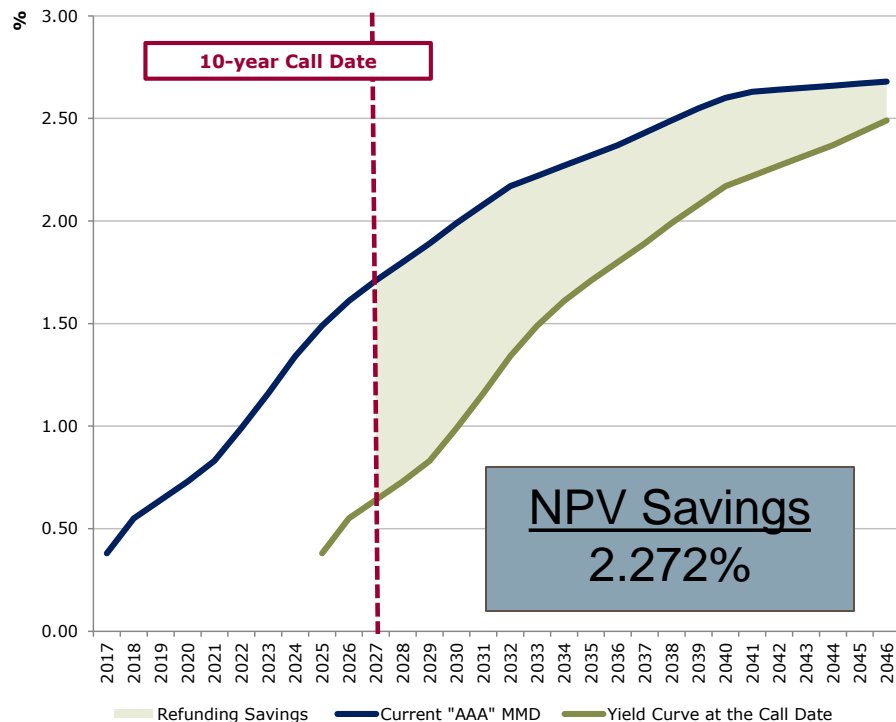


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Advance Refunding versus Current Refunding: No Rate Movement

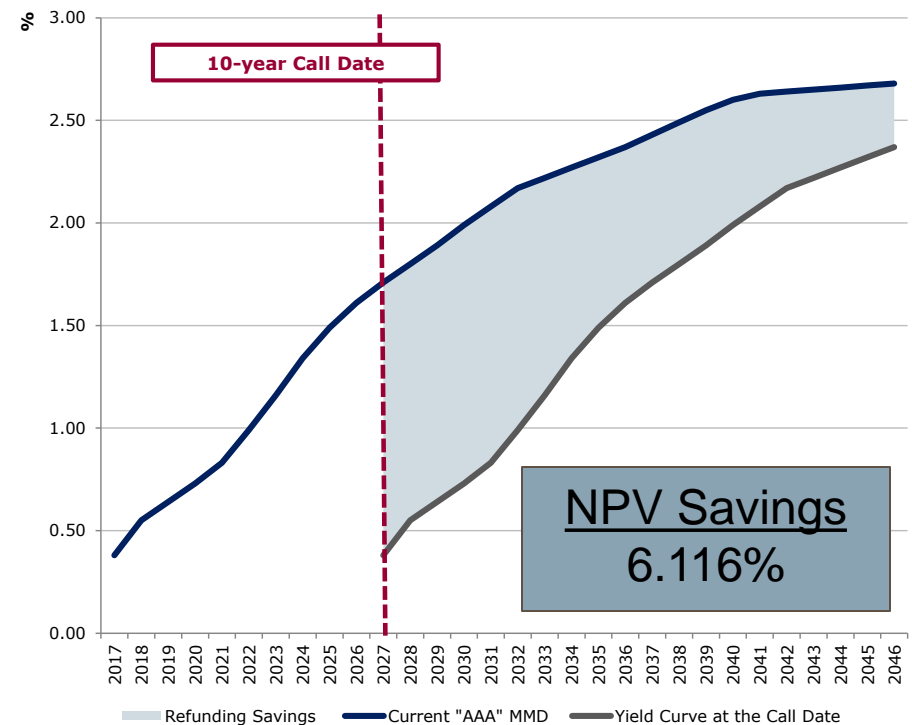
- If rates do not change, savings are greater waiting until the call date:
 - Negative Arbitrage
 - More Roll Down

Advance Refunding Two Years Prior to the Call Date



Source: Thompson Financial/Securities Data; as of February 10, 2016.

Current Refunding at Call Date

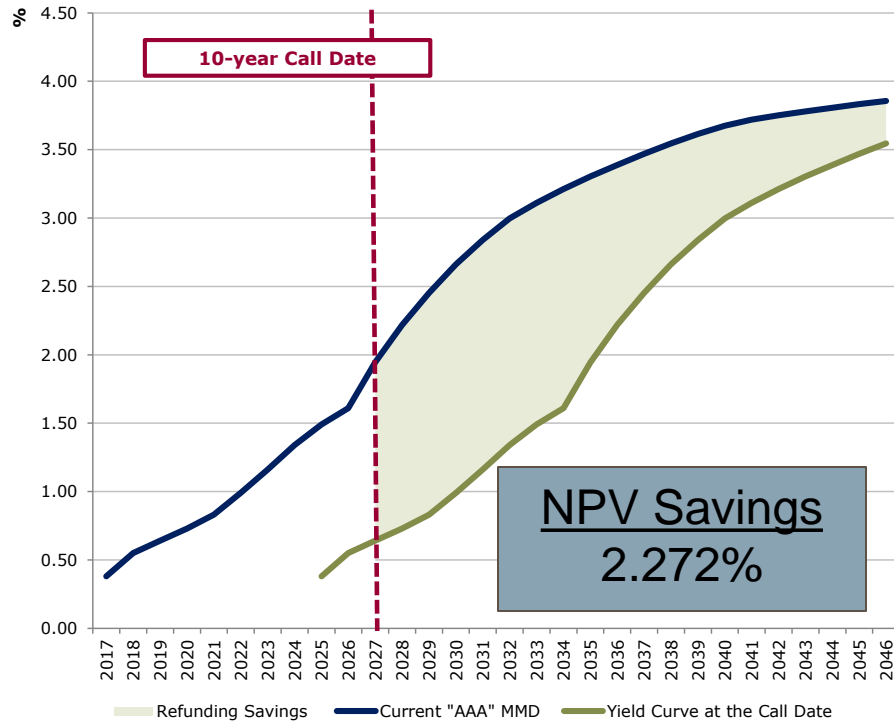


Refunding Opportunities Panel

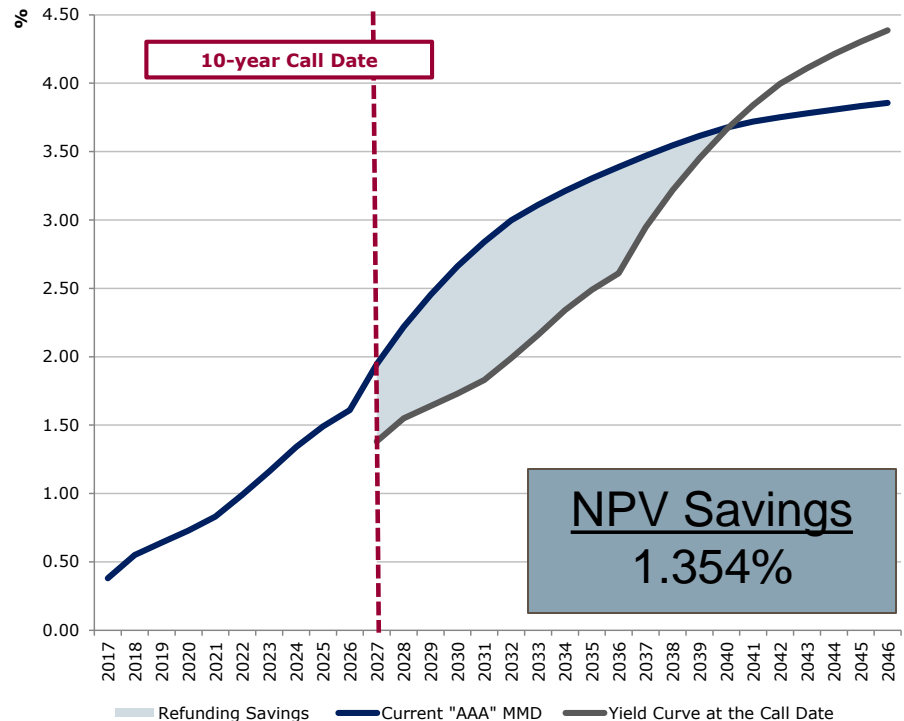
Advance Refunding versus Current Refunding: 100 bps Increase

- Alas rates are dynamic and movements in rates can erode (or increase) savings

Advance Refunding Two Years Prior to the Call Date



Current Refunding at Call Date (Interest Rates Increase 100 bps)



Source: Thompson Financial/Securities Data; as of February 10, 2016.



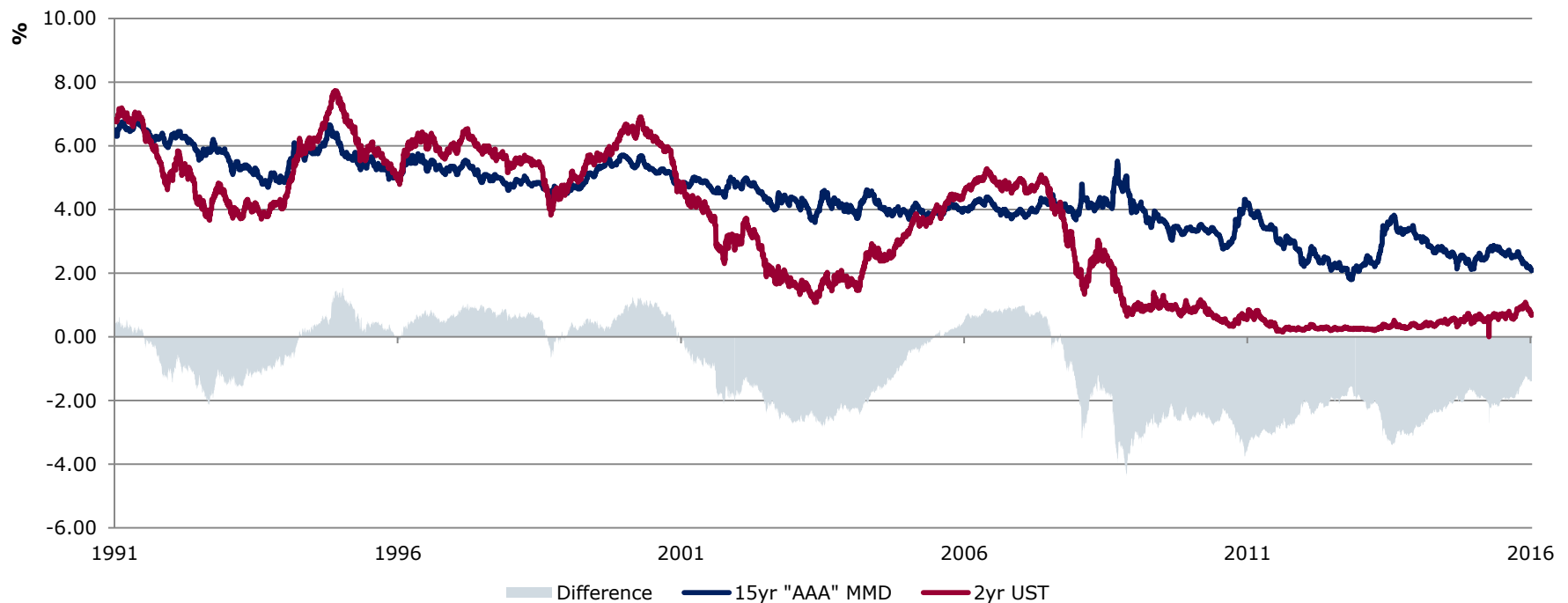
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NEGATIVE ARBITRAGE

Negative Arbitrage: A History

- In advance refunding, the proceeds are escrowed until the bonds are called
- Negative arbitrage: Cost of paying long term tax exempt rates until the call date but not being able to recover the rate in escrow earnings

Borrowing Rates versus Investment Rates: 25 Years of History



Source: Thompson Financial/Securities Data; as of February 10, 2016.



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Negative Arbitrage in the Context of Refundings

- Many issuers look at refundings as the relationship between savings and negative arbitrage on a maturity by maturity basis
- Refunding Efficiency: $(\text{Savings}) / (\text{Savings} + \text{Negative Arbitrage})$

SAMPLE ISSUER								
Maturity	Series	Coupon (%)	Refunded Par (\$)	Call Date	NPV Savings (\$)	NPV Savings (%)	Negative Arbitrage (\$)	Refunding Efficiency
Series 2008 Refunding Savings by Maturity								
5/1/2019	2008	4.000%	10,000,000	5/1/2018	54,841	0.548%	79,593	40.74%
5/1/2020	2008	5.000%	10,000,000	5/1/2018	471,579	4.716%	73,465	86.51%
5/1/2021	2008	5.000%	10,000,000	5/1/2018	746,240	7.462%	107,871	87.37%
5/1/2022	2008	5.000%	10,000,000	5/1/2018	973,452	9.735%	150,608	86.60%
5/1/2023	2008	5.000%	10,000,000	5/1/2018	1,144,057	11.441%	195,224	85.42%
5/1/2024	2008	5.000%	10,000,000	5/1/2018	1,291,400	12.914%	231,192	84.82%
5/1/2025	2008	5.000%	10,000,000	5/1/2018	1,416,766	14.168%	264,886	84.25%
5/1/2026	2008	5.000%	10,000,000	5/1/2018	1,523,370	15.234%	294,260	83.81%
5/1/2027	2008	5.000%	10,000,000	5/1/2018	1,437,909	14.379%	315,177	82.02%
5/1/2028	2008	5.000%	10,000,000	5/1/2018	1,373,186	13.732%	331,874	80.54%
5/1/2029	2008	5.000%	10,000,000	5/1/2018	1,298,658	12.987%	350,636	78.74%
5/1/2030	2008	5.000%	10,000,000	5/1/2018	1,239,275	12.393%	365,182	77.24%
5/1/2031	2008	5.000%	10,000,000	5/1/2018	1,164,412	11.644%	383,844	75.21%
5/1/2032	2008	5.000%	10,000,000	5/1/2018	1,106,226	11.062%	398,346	73.52%
5/1/2033	2008	5.000%	10,000,000	5/1/2018	1,065,858	10.659%	408,689	72.28%
5/1/2034	2008	5.000%	10,000,000	5/1/2018	1,024,727	10.247%	419,004	70.98%
5/1/2035	2008	5.000%	10,000,000	5/1/2018	983,196	9.832%	429,314	69.61%
5/1/2036	2008	5.000%	10,000,000	5/1/2018	940,616	9.406%	439,617	68.15%
5/1/2037	2008	5.000%	10,000,000	5/1/2018	898,229	8.982%	449,914	66.63%
5/1/2038	2008	5.000%	10,000,000	5/1/2018	835,381	8.354%	460,183	64.48%

Source: Thompson Financial/Securities Data; as of February 10, 2016.



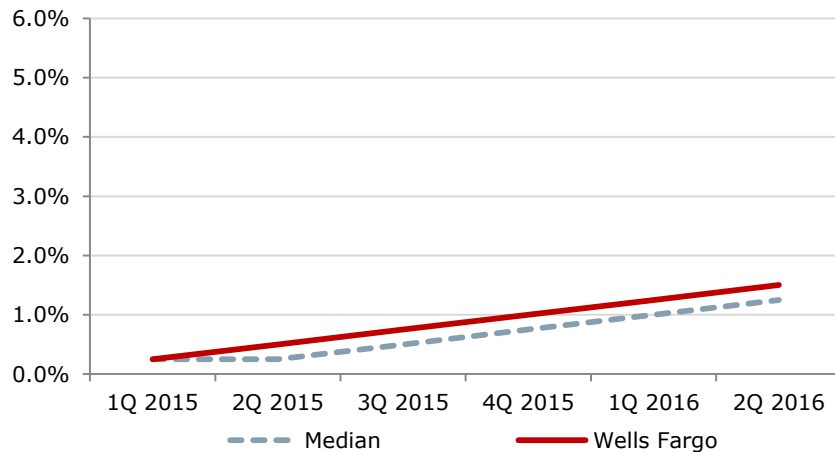
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WHEN TO PULL THE TRIGGER

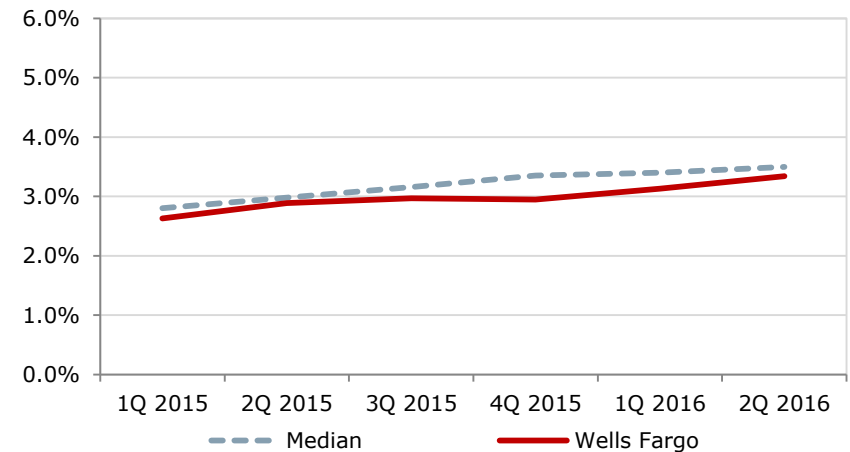
Interest Rate Expectations – A Year Ago

- Last summer, the market was awaiting the Fed to raise rates for the first time in many years, and was expected a long term trend of rising rates as reflecting the 50 economic forecasts tracked by Bloomberg.

Federal Funds Rate Projections



30yr UST Rate Projections



Source: Thompson Financial/Securities Data; as of February 9, 2015.

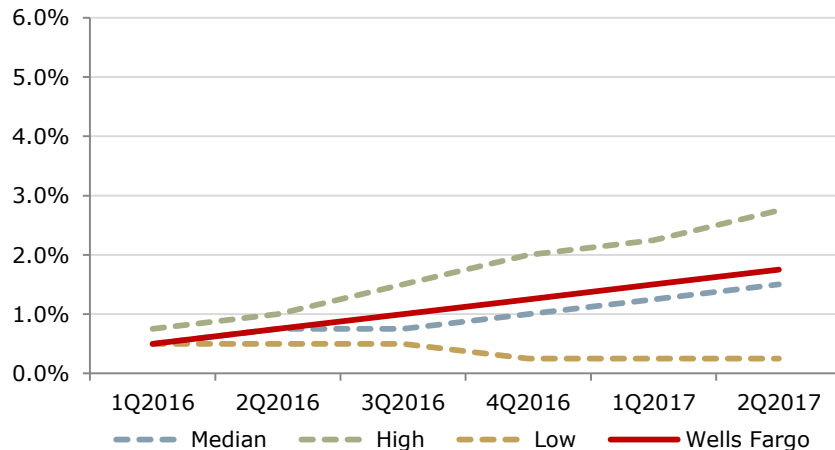


Refunding Opportunities Panel

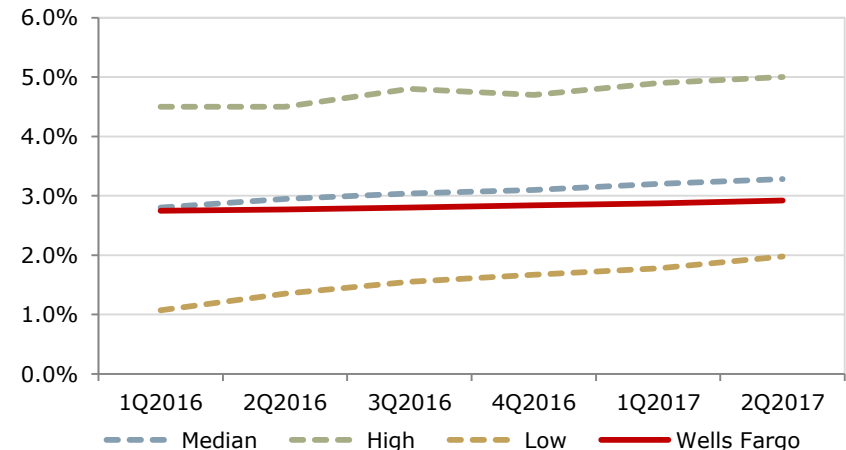
Interest Rate Expectations – Today (“A Whole New World”)

- While the Fed increase did result in rising short term taxable rates, global concerns about the world economy have dramatically transformed rate expectations
- Now economists expect short term rates to rise more steeply, while long term rates rise more modestly

Federal Funds Rate Projections



30yr UST Rate Projections



Source: Thompson Financial/Securities Data; as of February 10, 2016.



Policy vs. Expectations: When to Pull the Trigger

- Using San Francisco's Debt Policies as an example. How to apply policy thresholds to dynamic markets? When to proceed with refunding?

computer model... the various components...
least \$100,000. The... will be in excess of three...
least 120% of the financing and refinancing term.

- Refunding Obligations: Refunding Bonds will be issued typically to achieve debt service savings for the City, although other non-economic factors may support the issuance of such obligations. Pursuant to section 43.8.4(b) of the City's Administrative Code, the Board of Supervisors will establish by resolution the minimum savings to be generated by the issuance of such refunding.

Absent any significant non-economic factors, it is the policy of the City that a refunding should produce minimum net debt service savings (net of reserve fund earnings and other offsets) of at least 3% of the par value of the refunded bonds on a net present value basis, using the refunding issue's True Interest Cost ("TIC")¹ as the discount rate.

- Special Limited Obligations: Special limited obligations are issued by the City, which powers authority on behalf of... make proceeds available... for acquisition, construction... facilities.

Source: Debt Policy of the City and County of San Francisco, Controller's Office of Public Finance, Last Update: June 2013





COMPETITIVE VS. NEGOTIATED REFUNDING

The Great Competitive vs. Negotiated Sale Debate

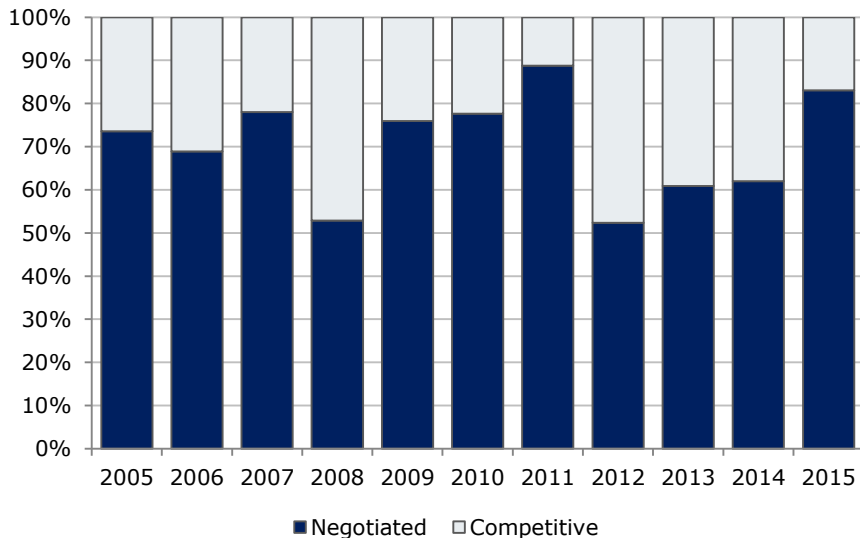


Refunding Opportunities Panel

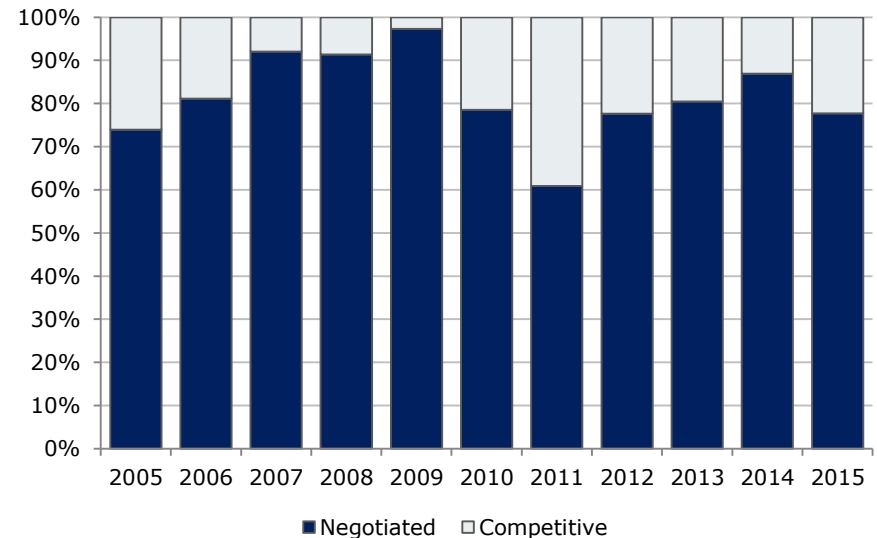
California Trends: Competitive vs. Negotiated

- Most California City and County bonds are sold on a negotiated basis, but the percentage has typically been even higher for refunding bonds, with nearly 80-90% of such bonds sold negotiated in the last four years.
- Why consider one or the other?

New Money Financings



Refunding Financings



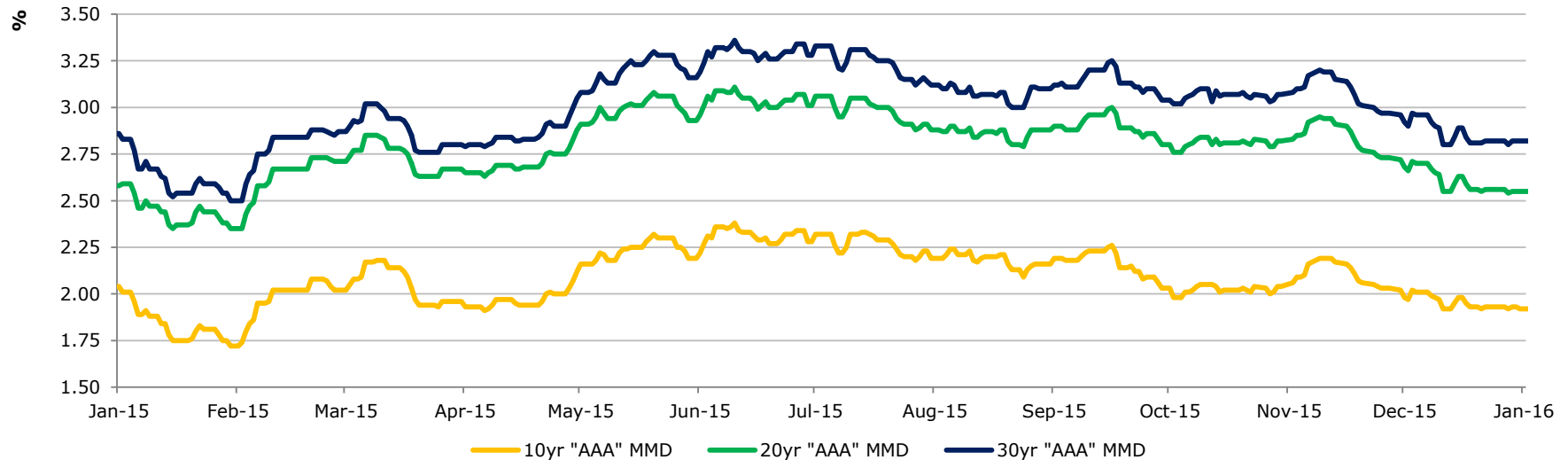
Source: Thompson Reuters; revenue bonds issued by California City and County entities; as of December 31, 2015.



What's New About This Debate?

- 2015 characterized by extreme volatility due to low supply, changing demand and interest rate expectations and global events – timing matters!

“AAA” MMD Volatility during 2015

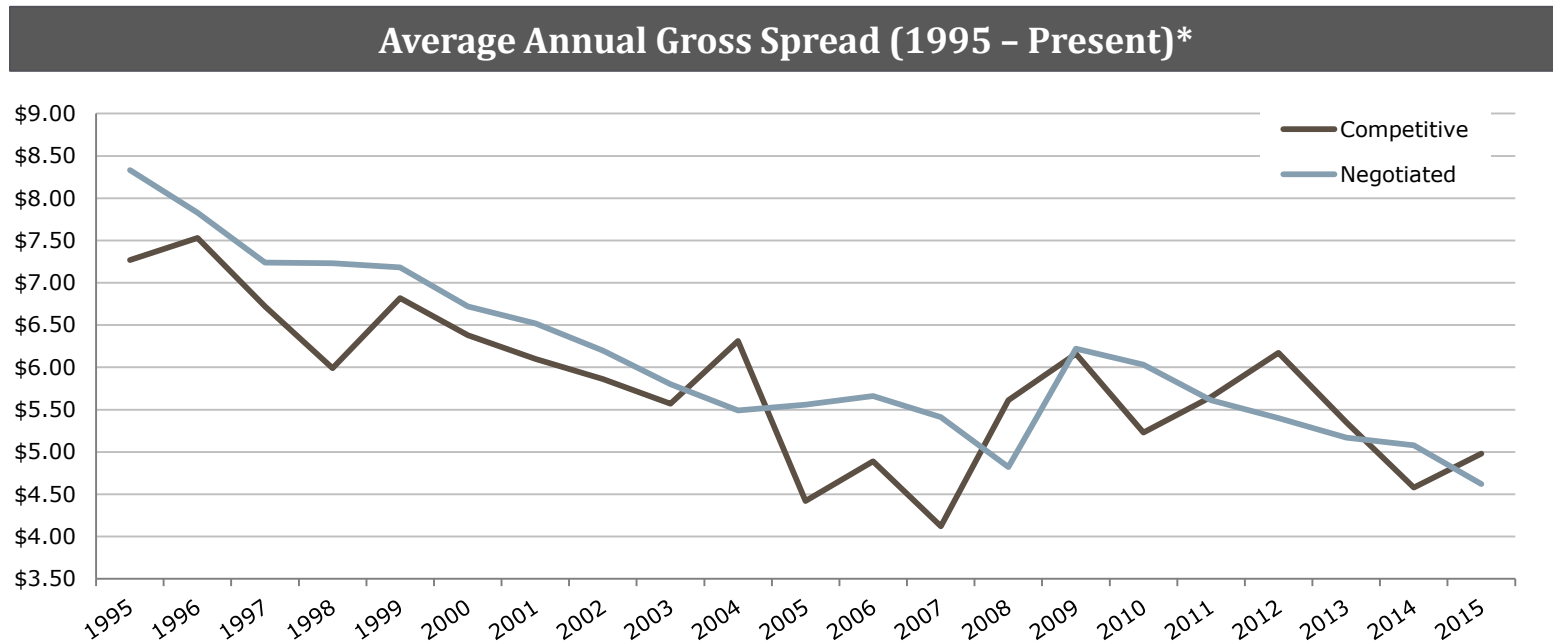


Source: Bloomberg; as of December 31, 2016



What's New About This Debate?

- Volatility, means risk to bidders.
- Competitive underwriting fees sometimes higher than negotiated fees, as desks build in risk premium and numbers of bidders more limited



Source: Source: The Bond Buyer, "2015 in Statistics ,Midyear Review" & "2014 in Statistics, Annual Review"

*Represents underwriting spreads for competitive and negotiated municipal new issues issued from 1/1/1995 - 6/30/2015



Negotiated vs. Competitive

- Limited number of firms able to bid sizeable competitive sales
 - According to Thomson Reuter's, 2/3 of competitive bonds were purchased by only six firms in the first half of this year
 - Many larger bids only get 4 to 6 bidders
- Competitive underwriting fees sometimes higher than negotiated fees, as desks build in risk premium and numbers of bidders more limited
 - According to the Bond Buyer, Competitive Sale underwriting fees have been higher than negotiated fees in four of the past five years*
- While RFPs often focus on fees, they translate into a fraction of a basis point of cost for most long term sales – the key is rates...

Source: The Bond Buyer, "2015 in Statistics ,Midyear Review" & "2014 in Statistics, Annual Review"; Rankins sourced to Thomson Reuters
*Represents underwriting spreads for competitive and negotiated municipal new issues issued from 1/1/2011 - 6/30/2015 (YTD)



Considerations

- Greater flexibility in pricing date; ability to accelerate or delay as conditions warrant
- Greater ability to manage couponing/structure and explore optimal options with buyers
- Ability to pre-market bonds
- Ability to target buyers – for example through Retail Order Periods, Priority of Orders, Designation Policies
- Ability to move orders to different maturities, re-size based on demand, manage premium
- Manage “Call Optionality” through managing coupons



ESCROWS AND INVESTMENTS

Escrows and Investments

- State and Local Government Series (“SLGS”)
- Open Market Securities (“OMS”)
- Cash
- Bidding



ASSORTED REFUNDING TOPICS

Debt Service Reserve Funds

- The Disappearing Debt Service Reserve Fund
 - Rating Agency Transparency
 - Investor Appetite
 - The “Drag” of Negative Arbitrage
 - Reserve fund “alternatives”
- But if a DSRF is Needed...
 - Handling DSRF Sureties from “Fallen” Insurers
 - Using New Sureties vs. Cash Funding a Reserve



Other Topics

- Budgeting and Refunding Decisions
- Debt Policies and Savings Thresholds
- Build America Bonds / Taxable Bonds
- Issues Unique To:
 - General Obligation Bonds
 - Lease Revenue Bonds and COPS
 - Revenue Enterprise Bonds
 - Mello Roos and Assessment Bonds
 - Tax Allocation Bonds



AUDIENCE QUESTIONS

Continue the Dialogue...

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