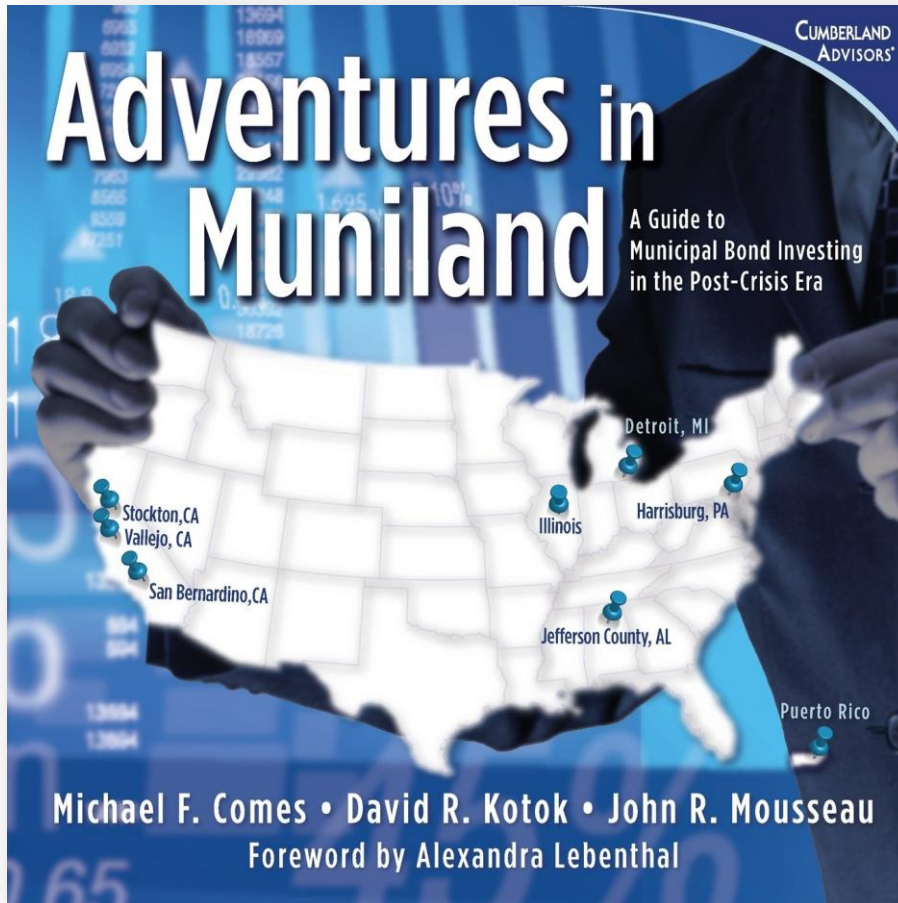


State and Local Government Debt Since the Financial Crisis

Chicago Federal Reserve
29th Annual Economic Outlook Symposium

John Mousseau, CFA
*Executive Vice President &
Director of Fixed Income*
john.mousseau@cumber.com

Adventures in Muniland!



Adventures in Muniland:
A Guide to Municipal Bond Investing in the Post-Crisis Era

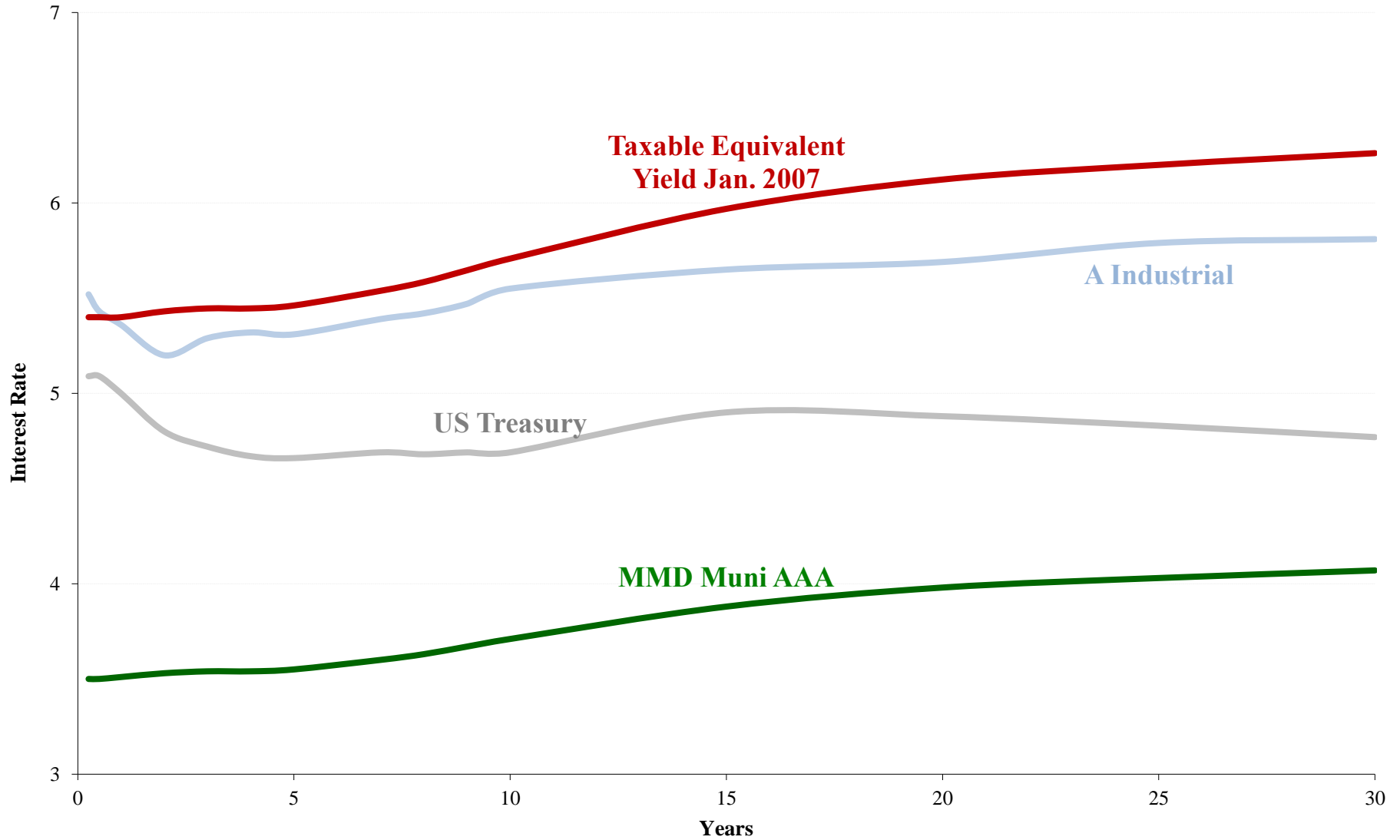
Co-Authors:
Michael Comes
David Kotok
John Mousseau

Foreword by: Alexandra Lebenthal

**Available for purchase on
[Amazon.com](https://www.amazon.com)**

With a perspective that only decades of experience can bring, *Adventures in Muniland* captures the municipal bond market's transformation from stodgy to dynamic. This concise, yet comprehensive stroll offers an insider's view, brings the reader right up to today's discussions, and carries the added benefit of providing a clear understanding of what can at times appear to be an opaque marketplace. The Cumberland team has produced an insightful review for the seasoned professional and a must read for newcomers and investors.

Munis & Tsys: Jan. 2, 2007



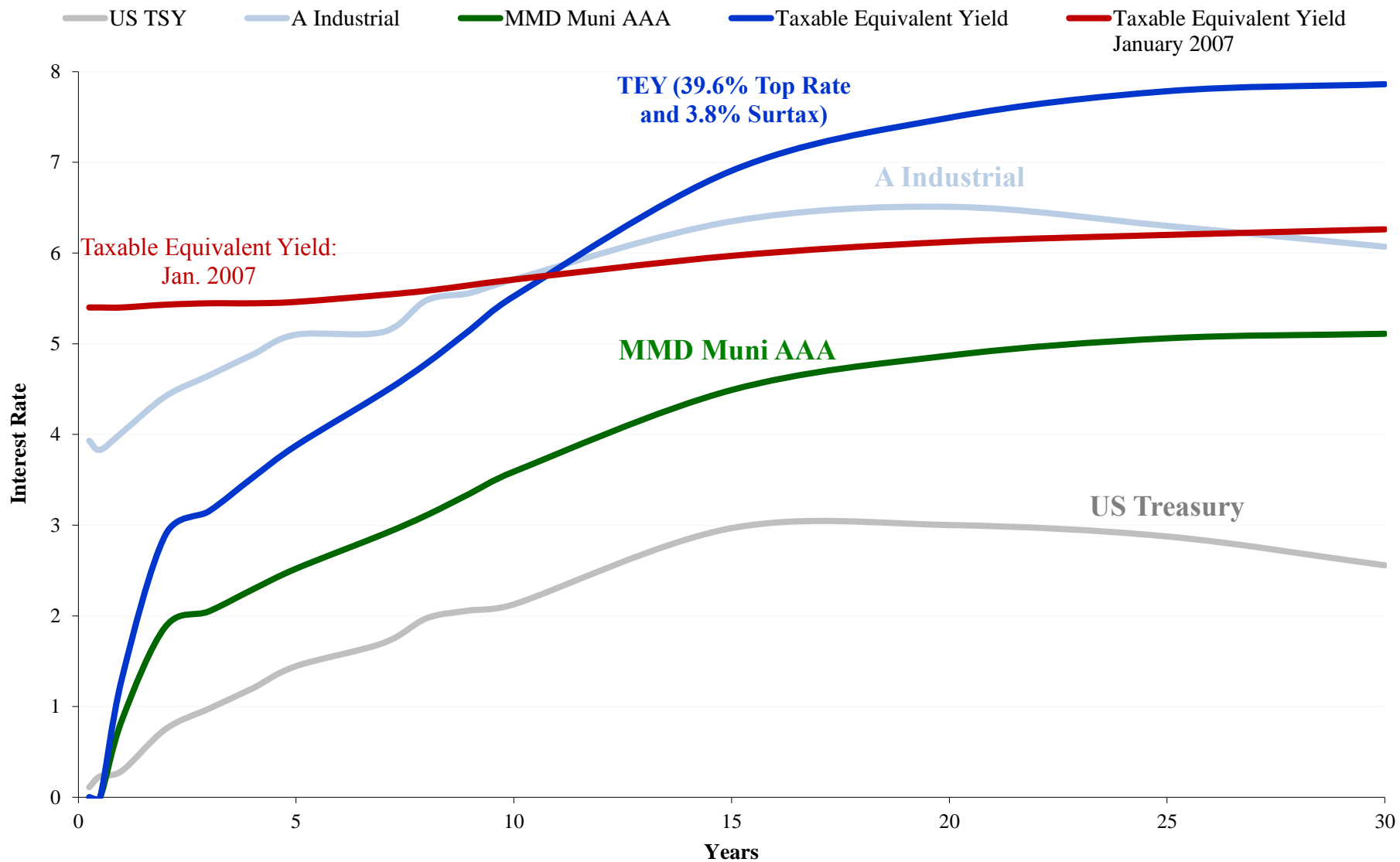
Source: Bloomberg

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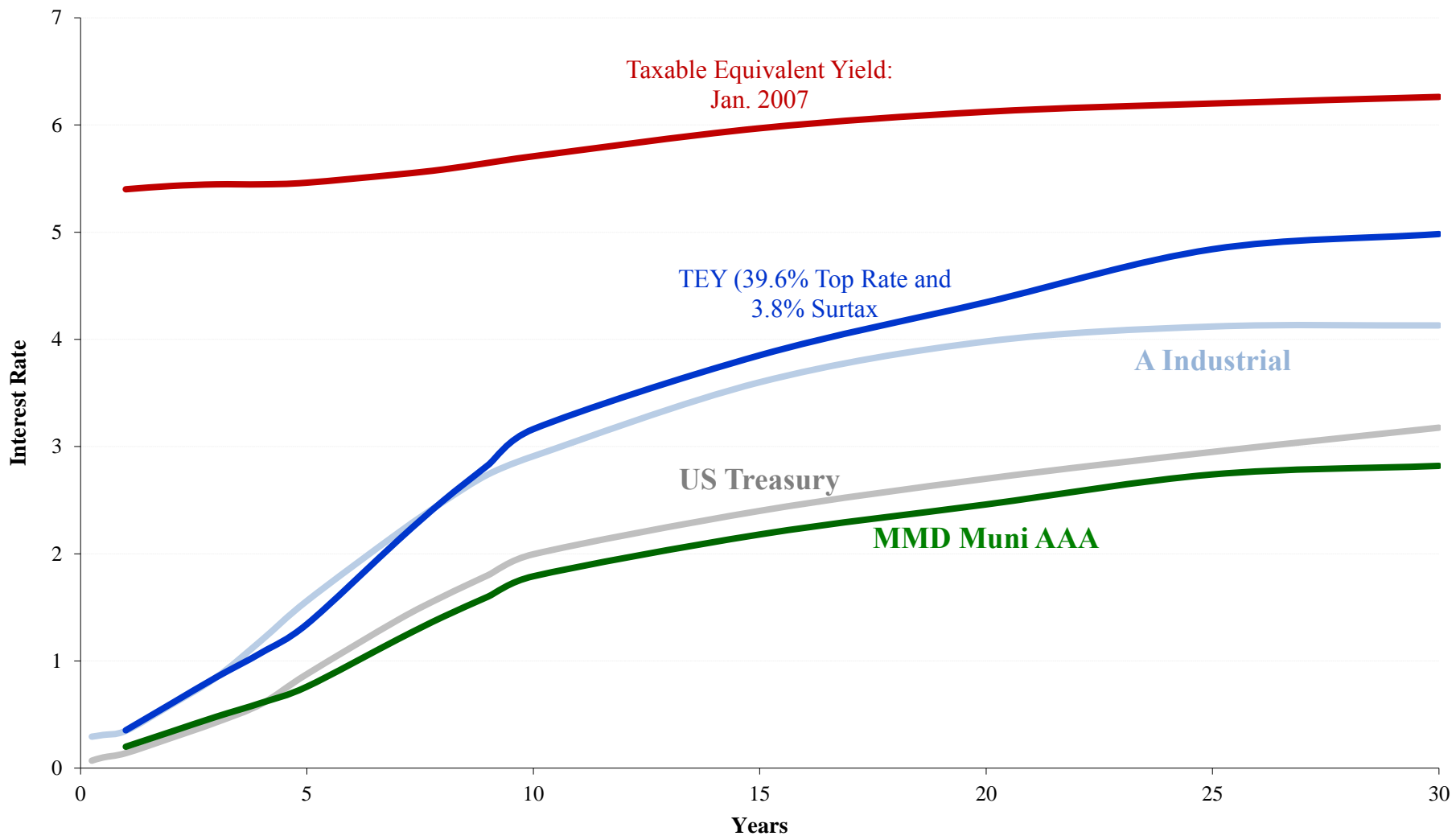
3

Munis & Tsys: Dec. 29, 2008



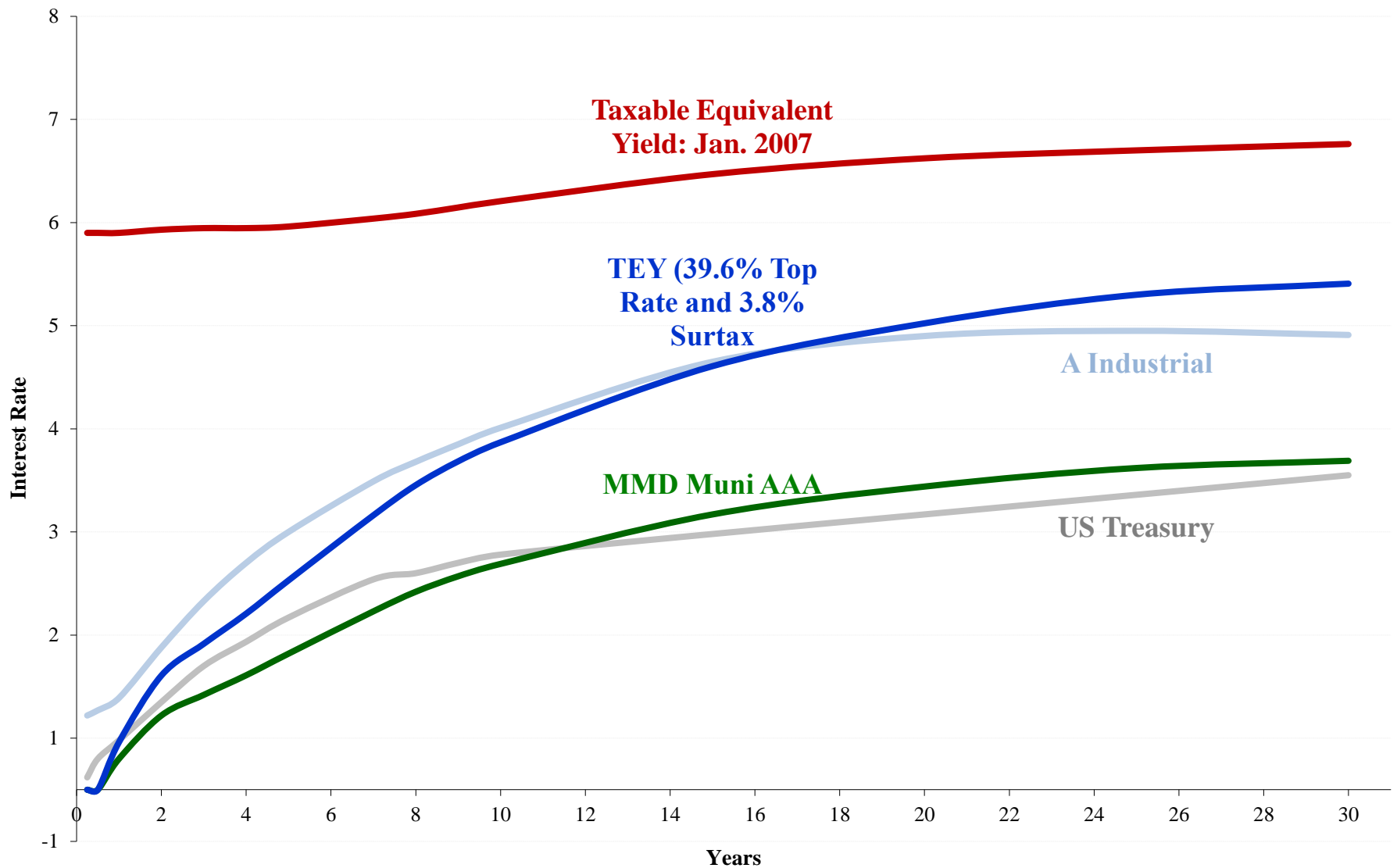
Source: Bloomberg

Munis & Tsys: Jan. 23, 2013



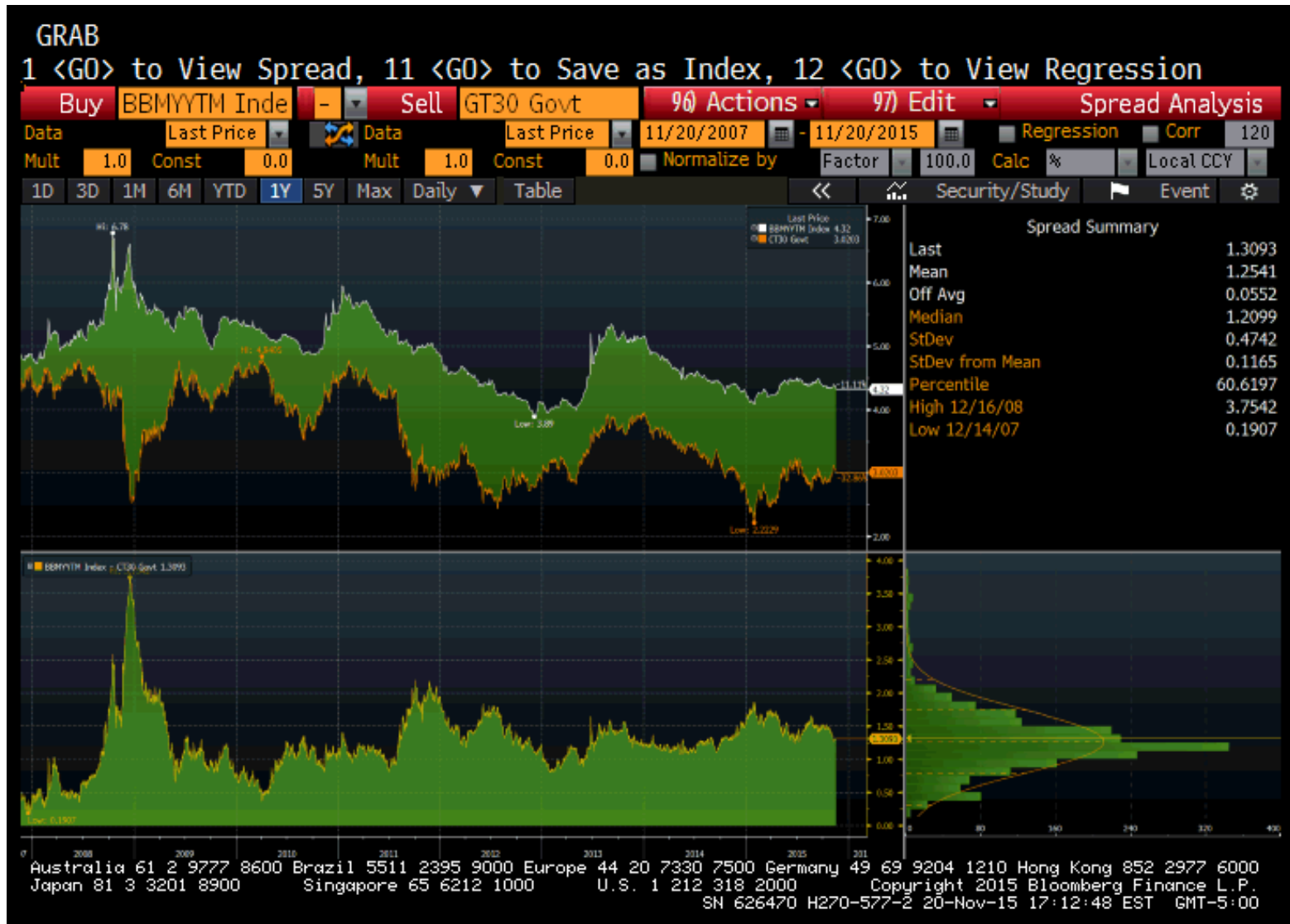
Source: Bloomberg

Munis & Tsys: Nov. 13, 2015



Source: Bloomberg

Bond Buyer 40 vs. 30-year Treasury



Source: Bloomberg and Cumberland Advisors

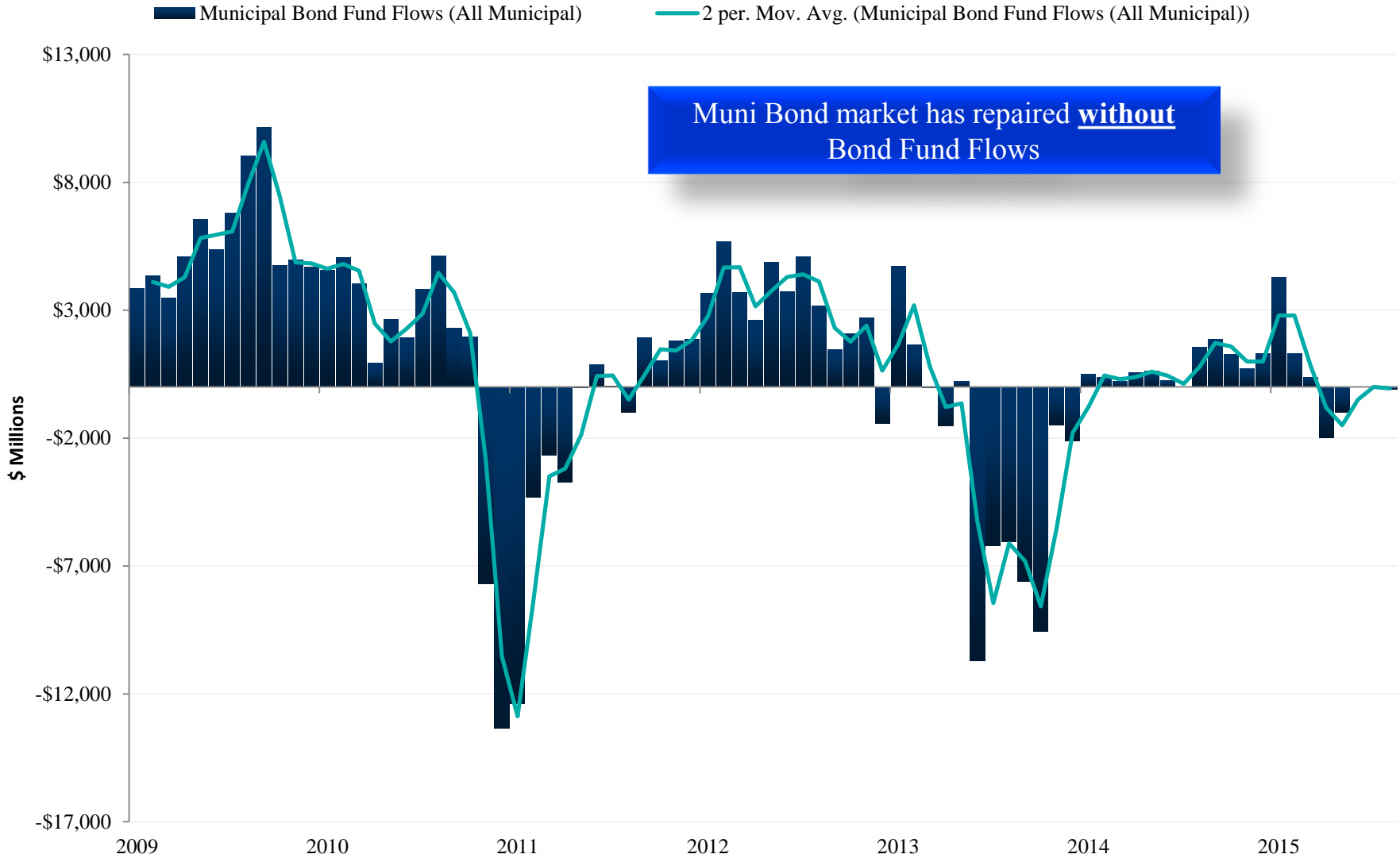
Muni Market Feast & Famine

This graph illustrates the performance of the municipal bond market since 2006. Since then, the market has experienced 3 major sell-offs: 1) Flight into Treasuries out of risk, 2) Panic selling because of Meredith Whitney, 3) Fears of Fed tapering.



Source: Bloomberg and Cumberland Advisors

Muni Bond Fund Flows

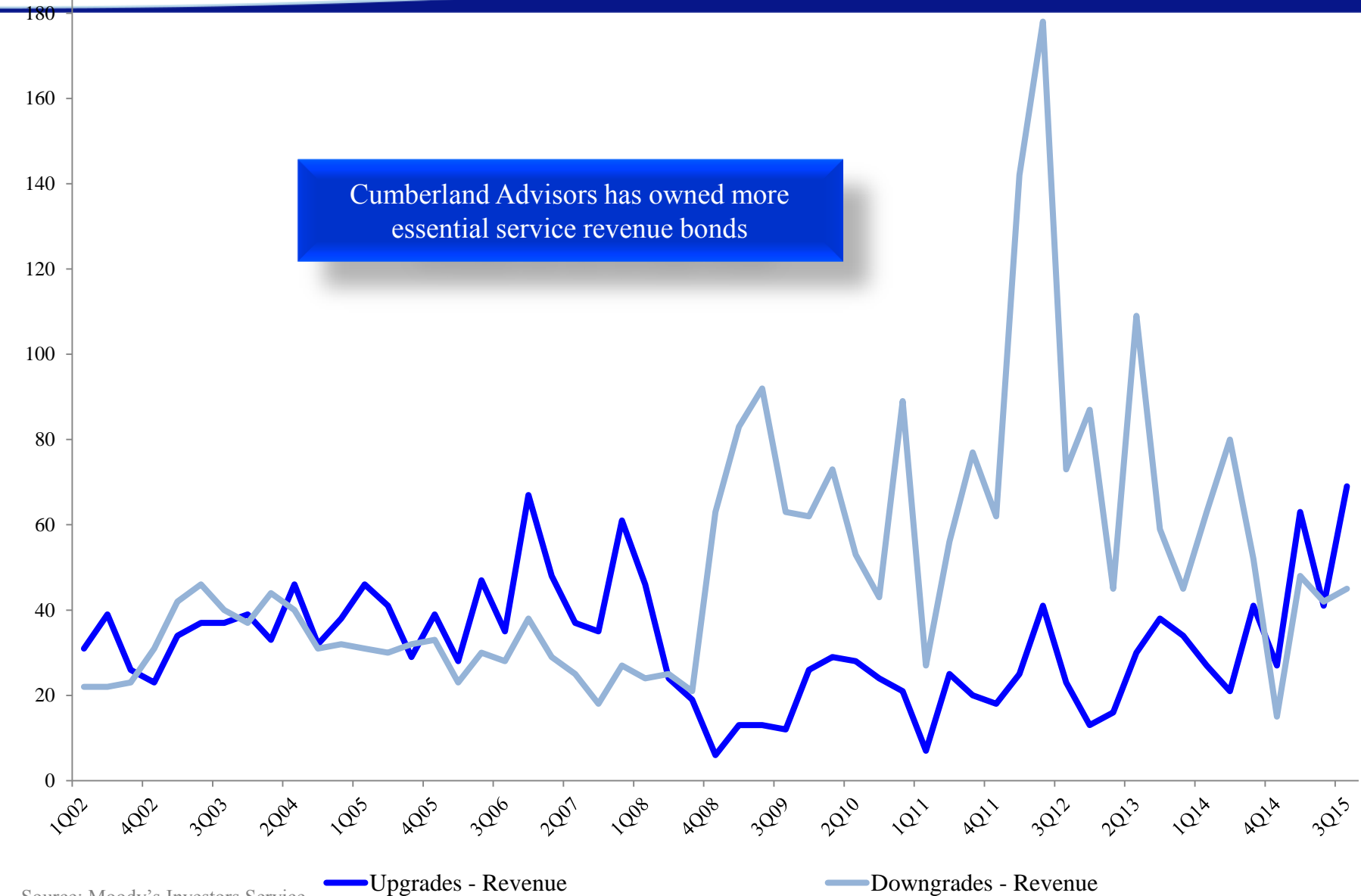


Source: Lipper

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Moody's Rating Changes: Revenue



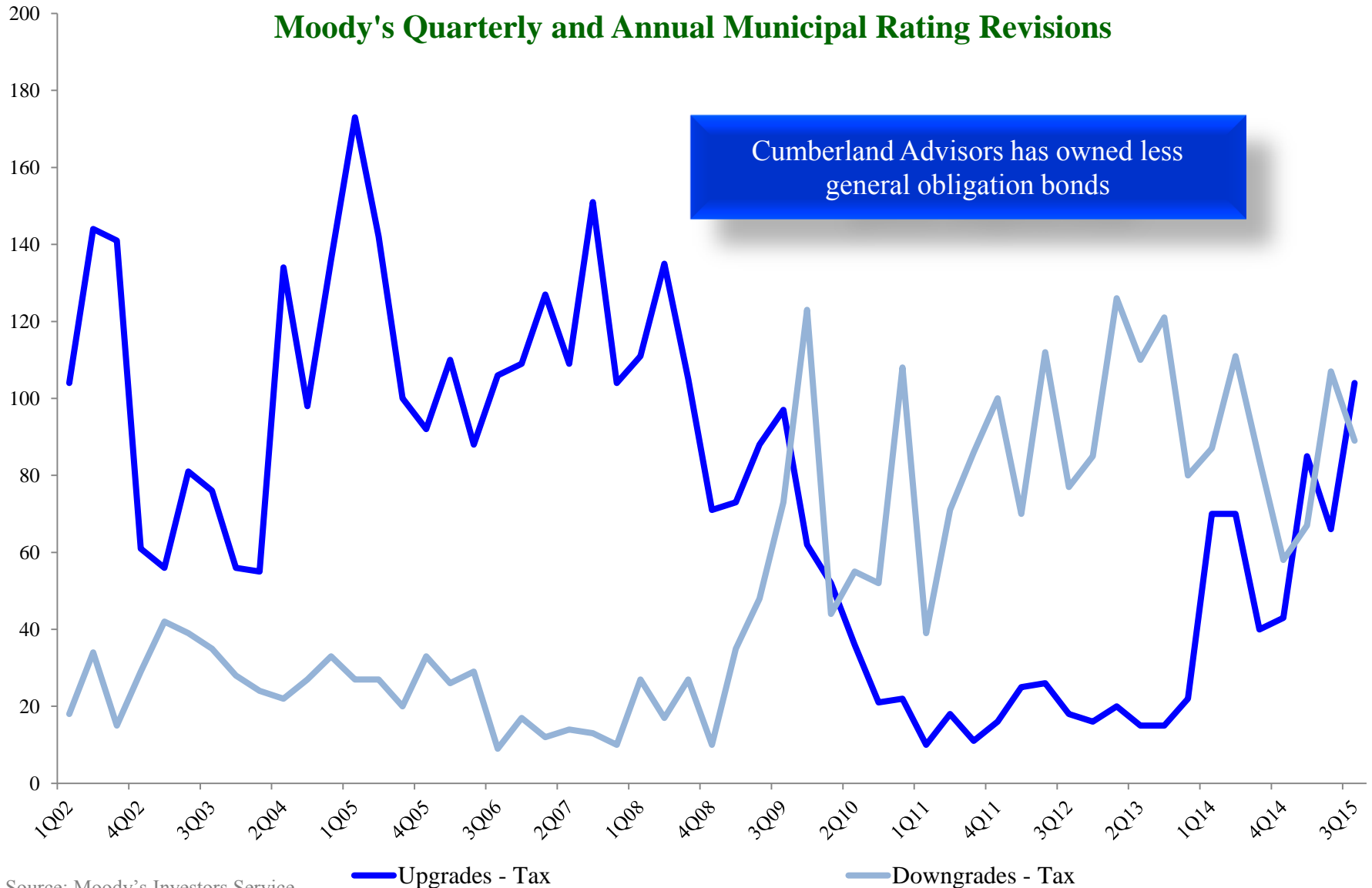
Source: Moody's Investors Service

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Moody's Rating Changes: Tax-Backed

Moody's Quarterly and Annual Municipal Rating Revisions



Cumberland Advisors has owned less general obligation bonds

Source: Moody's Investors Service

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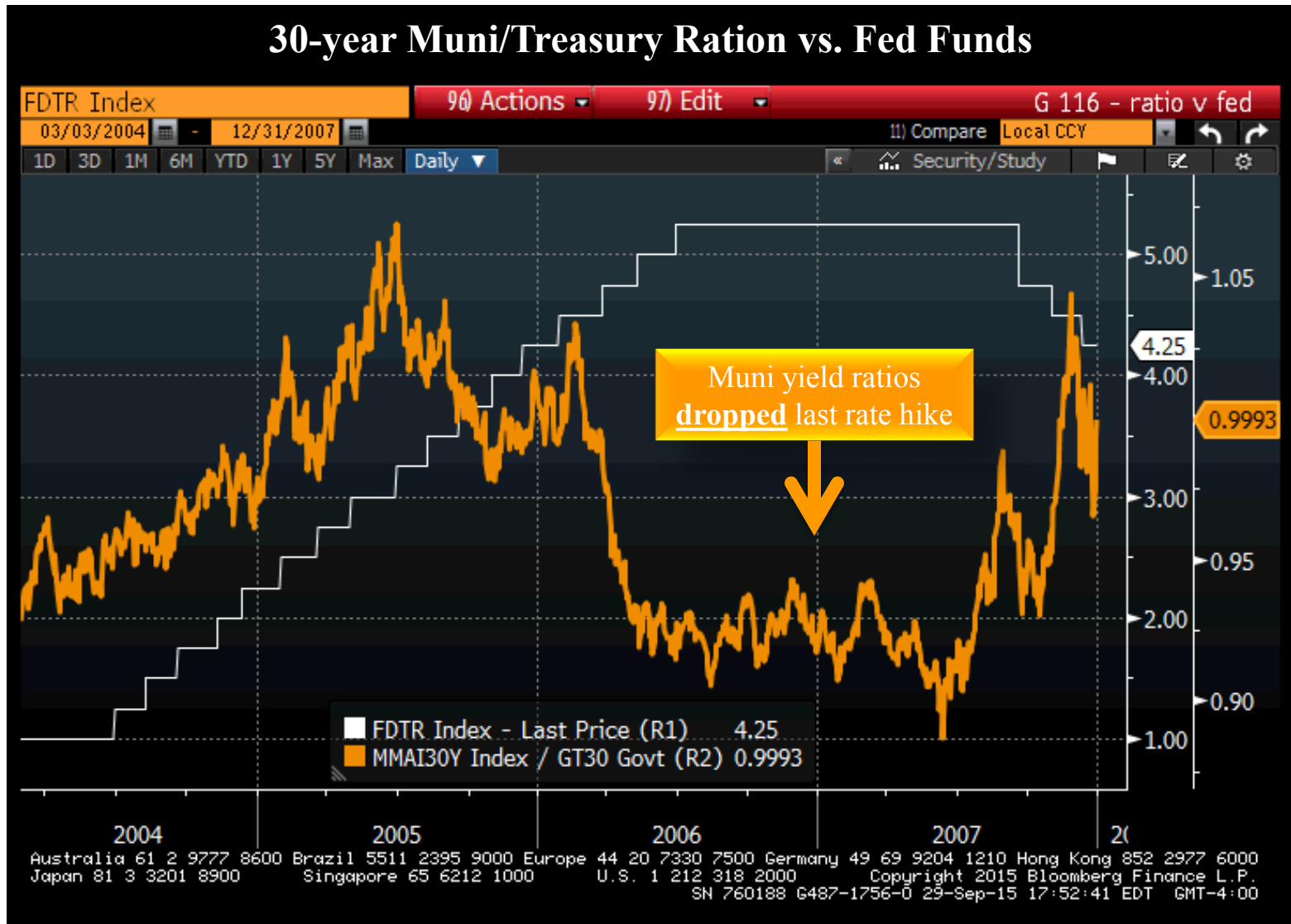
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Fed Funds vs. Treasury



Source: Bloomberg and Cumberland Advisors

Muni/Tsy Ratio: Last Fed Hike



Source: Bloomberg and Cumberland Advisors

Municipal Bond Issuance

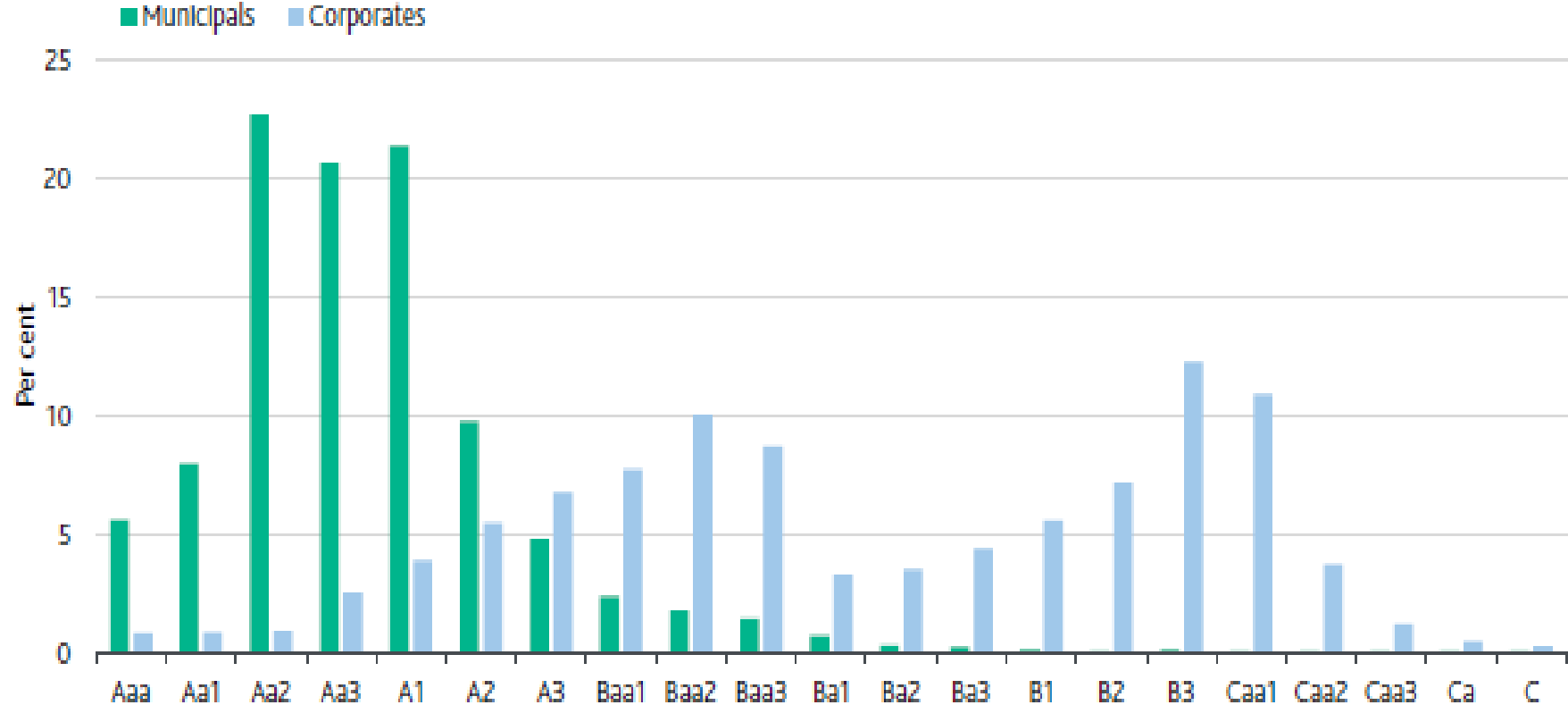
Selected Categories 2000 - 2015 Year-to-Date (\$ Billions)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
2000	9.98	13.32	18.11	15.70	15.96	23.44	15.05	16.88	16.59	19.77	20.29	15.76	200.85
2001	12.58	21.14	25.11	18.86	28.91	30.87	21.01	24.14	14.32	32.08	30.48	28.24	287.73
2002	21.77	20.98	25.42	25.86	34.00	38.46	28.02	31.58	27.57	42.41	35.60	26.73	358.40
2003	27.10	30.23	28.14	36.31	35.70	48.25	33.20	25.86	26.26	34.87	26.27	31.15	383.34
2004	20.71	26.85	38.69	31.09	37.61	35.07	25.30	27.94	25.20	32.22	25.77	33.30	359.75
2005	22.12	31.20	45.01	31.31	35.94	44.25	34.49	34.02	31.67	27.31	39.42	31.56	408.28
2006	18.78	23.87	27.07	29.35	35.04	45.33	27.86	31.59	28.03	31.57	42.77	47.58	388.84
2007	31.21	32.03	44.35	33.54	42.92	47.18	31.86	29.21	32.82	45.18	30.12	29.47	429.89
2008	19.78	21.40	43.83	51.72	43.75	50.79	37.09	32.50	20.19	21.93	25.73	20.91	389.63
2009	23.15	23.40	38.83	36.84	30.41	43.86	26.11	36.36	29.95	46.37	38.29	36.11	409.69
2010	32.66	27.05	44.69	27.50	38.32	34.68	29.15	29.71	35.70	45.73	46.07	42.05	433.31
2011	12.44	16.54	18.91	15.76	21.39	31.97	24.91	23.83	27.46	32.86	37.29	24.37	287.73
2012	17.20	26.76	34.72	34.25	37.36	42.71	28.18	32.71	25.90	33.78	33.09	26.12	372.78
2013	26.77	24.34	32.21	36.63	29.02	25.36	28.62	22.51	19.84	27.12	23.34	25.94	321.70
2014	18.87	15.44	28.29	25.79	25.75	34.78	25.61	24.60	24.07	35.26	28.93	37.83	325.22
2015	29.23	33.06	44.96	40.25	35.26	34.39	35.21	32.22	23.43	31.97			339.98

Source: Bond Buyer

Muni Credit Quality: Very High

Rating Distributions: Municipal vs. Corporate Issuers, Year End 2014



Source: Moody's

Default Probabilities Even Smaller

Cumulative Default Rates, Average over the Period 1970-2014, Municipal vs. Corporate Issuers

Rating	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Municipal Issuers	%	%	%	%	%	%	%	%	%	%
Aaa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aa	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01
A	0.00	0.01	0.02	0.02	0.03	0.03	0.04	0.05	0.06	0.06
Baa	0.01	0.04	0.08	0.11	0.15	0.19	0.24	0.29	0.33	0.37
Ba	0.28	0.81	1.27	1.85	2.39	2.80	3.24	3.59	3.88	4.11
B	2.92	5.57	8.03	10.26	12.38	13.82	14.66	15.44	16.30	17.48
Caa-C	7.83	11.01	12.99	14.12	14.71	15.21	15.76	16.37	16.88	16.88
Investment-Grade	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.08
Speculative-Grade	1.31	2.42	3.36	4.29	5.13	5.74	6.26	6.72	7.13	7.52
All Rated	0.02	0.03	0.05	0.06	0.08	0.09	0.11	0.12	0.13	0.14

Source: Moody's

Higher Corp. Default Experience

Cumulative Default Rates, Average over the Period 1970-2014, Municipal vs. Corporate Issuers

Rating	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Corporate Issuers	%	%	%	%	%	%	%	%	%	%
Aaa	0.00	0.01	0.01	0.04	0.10	0.17	0.24	0.31	0.39	0.48
Aa	0.02	0.07	0.14	0.26	0.40	0.54	0.67	0.78	0.88	0.99
A	0.06	0.20	0.43	0.67	0.95	1.26	1.60	1.97	2.36	2.72
Baa	0.17	0.48	0.86	1.32	1.78	2.27	2.75	3.23	3.78	4.41
Ba	1.07	2.96	5.18	7.55	9.70	11.70	13.44	15.18	16.90	18.69
B	3.71	8.86	14.14	18.82	23.11	27.11	30.82	33.94	36.72	39.16
Caa-C	14.96	25.68	34.29	41.18	46.97	51.21	54.73	58.01	61.26	63.77
Investment-Grade	0.09	0.27	0.51	0.78	1.09	1.41	1.73	2.07	2.43	2.81
Speculative-Grade	4.34	8.92	13.29	17.15	20.52	23.48	26.08	28.36	30.47	32.41
All Rated	1.66	3.37	4.95	6.32	7.49	8.51	9.39	10.17	10.90	11.58

Source: Moody's

2015 Timeline: Chicago



May 8, 2015

- Illinois Supreme Court unanimously rules that the State's pension reform act is unconstitutional



May 12, 2015

- Moody's lowers \$8.9 billion of Chicago GO, sales, and motor fuel tax debt from Baa2 to Ba1 (neg) citing the ruling and "the city's options for curbing growth in its own unfunded pension liabilities have narrowed considerably." The rating action creates a "trigger event," creating a potential liquidity crisis.



May 14, 2015

- S&P lowers its rating to A- from A+ and placed it on Credit Watch with Negative Implications citing "the current need to address potential liquidity pressure due to rating triggers." Fitch lowers its rating to BBB+ on May 15, 2015.



May 20, 2015

- City postpones GO bond sale (converting variable rate to fixed rate) and enters into forbearance negotiation with its liquidity providers. Banks agree not to exercise termination actions.



August 17, 2015

- Chicago Board of Education downgraded to junk (BB) by S&P



September 8, 2015

- Mayor Rahm Emanuel introduces budget with tax hikes featuring middle class loophole.



October 22, 2015

- Illinois GO downgraded to Baa1 from A3; Met Pier downgraded to Baa2 from Baa1 on budgetary stalemate



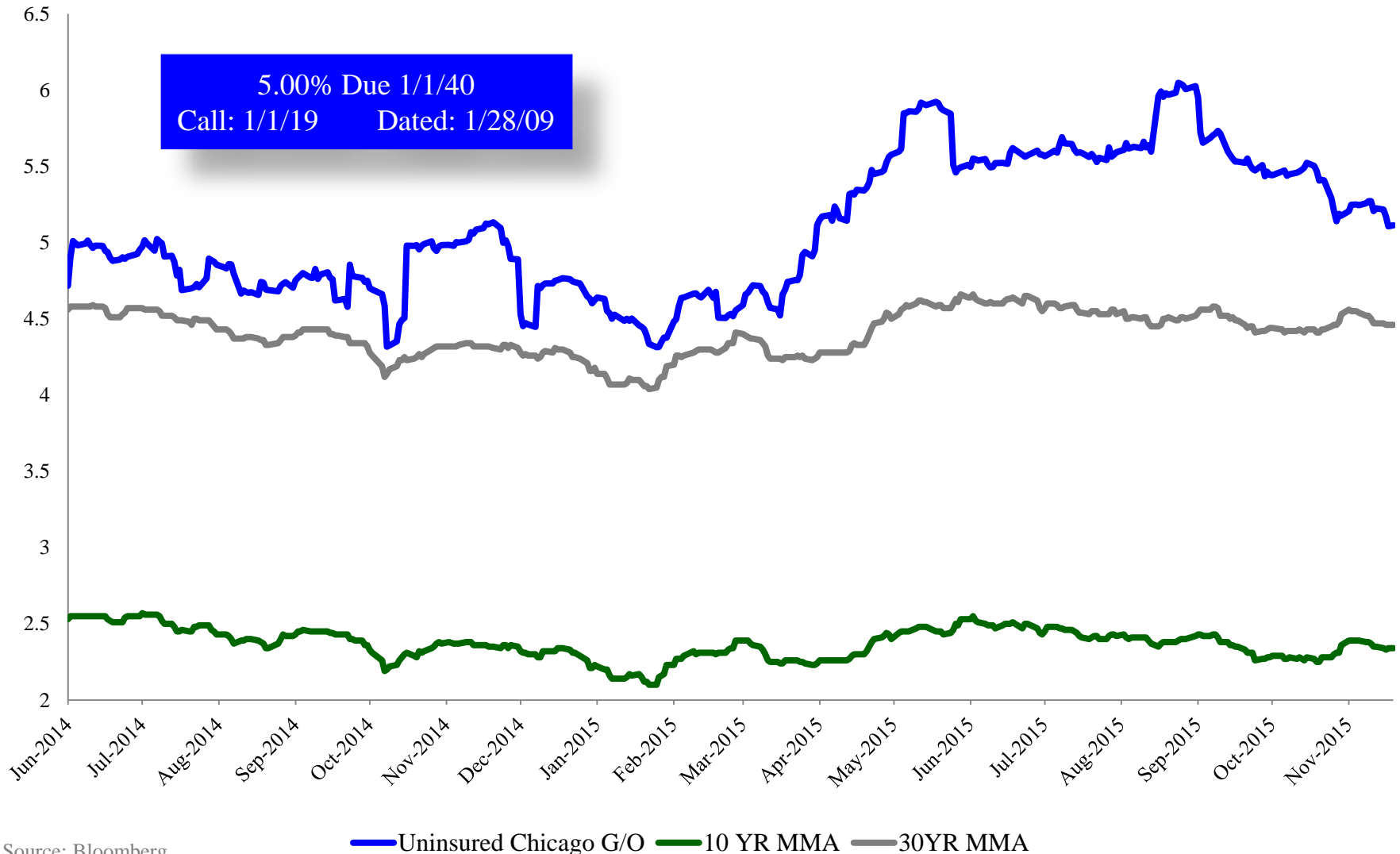
November 23, 2015

- Chicago Board of Ed GO Rating (BB) put on Credit Watch Negative by S&P; Chicago Sales Tax bonds lowered to AA from AAA, Outlook Negative

Source: Steve Schrage (Thomson Reuters)

Windy City vs. the World

Uninsured Chicago GO vs. MMA Curves

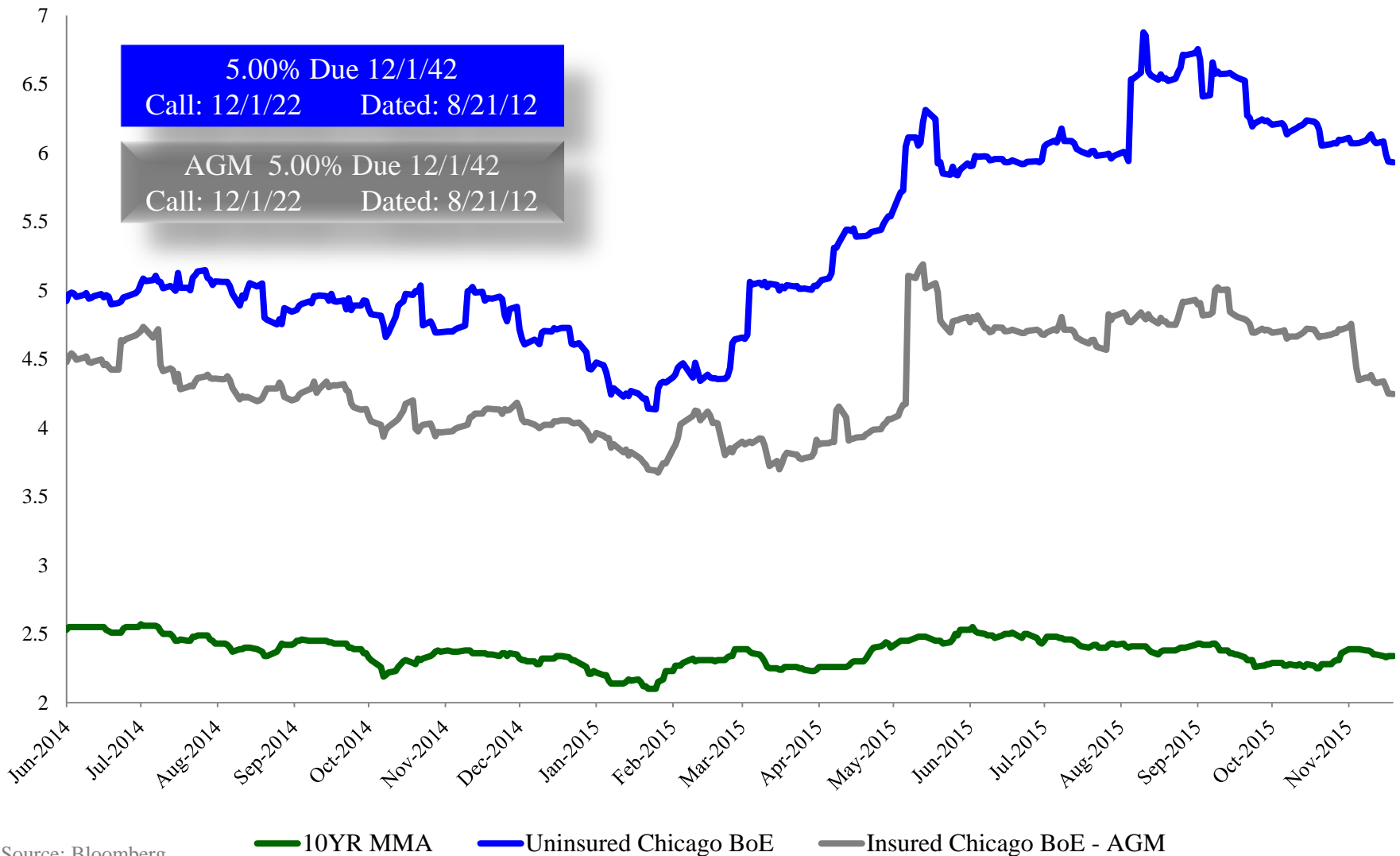


Source: Bloomberg

— Uninsured Chicago G/O — 10 YR MMA — 30YR MMA

Insured Chicago A Buy?

Chicago BoE - Uninsured vs. Insured



Source: Bloomberg

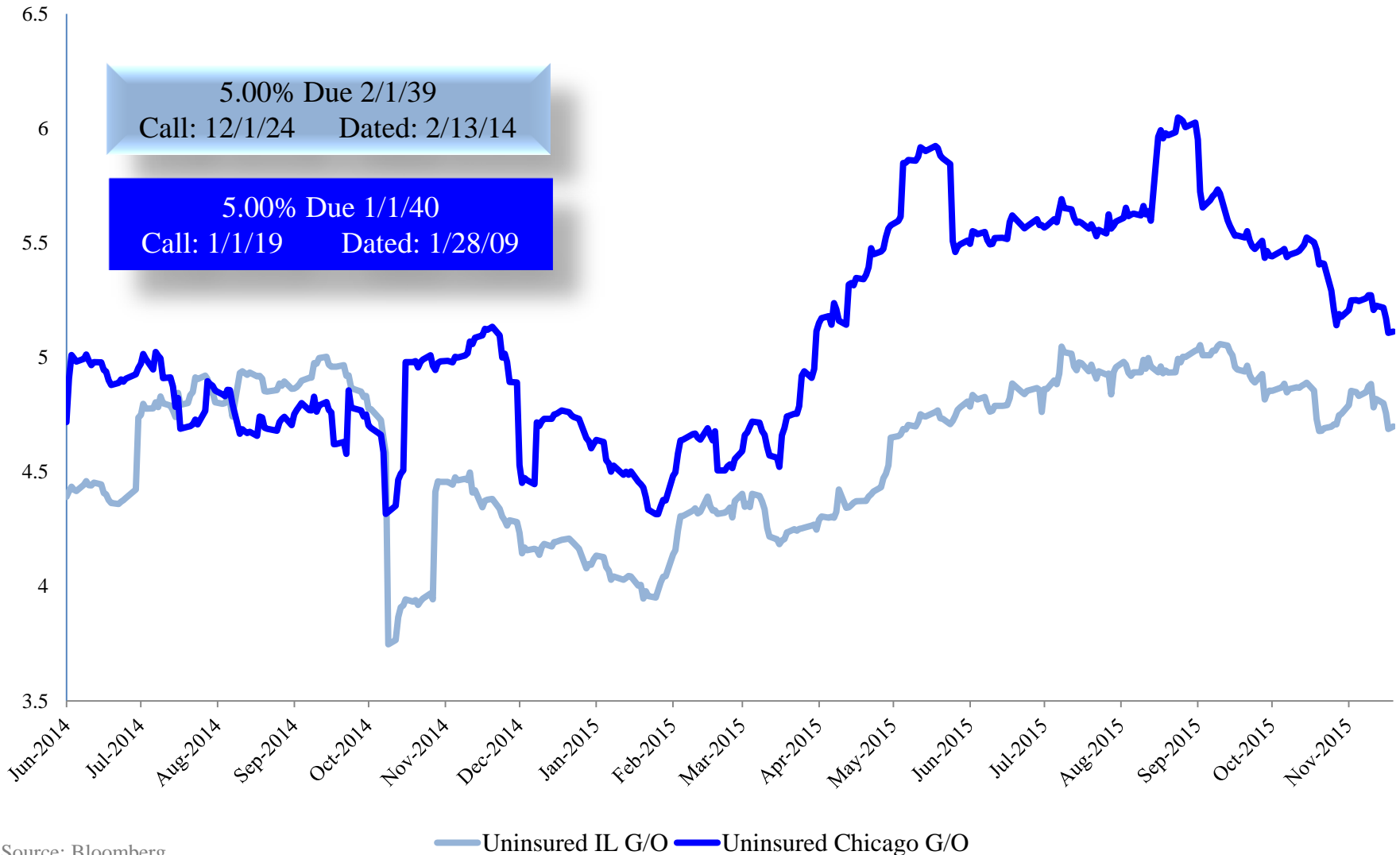
— 10YR MMA

— Uninsured Chicago BoE

— Insured Chicago BoE - AGM

As Goes Illinois, So Goes Chicago

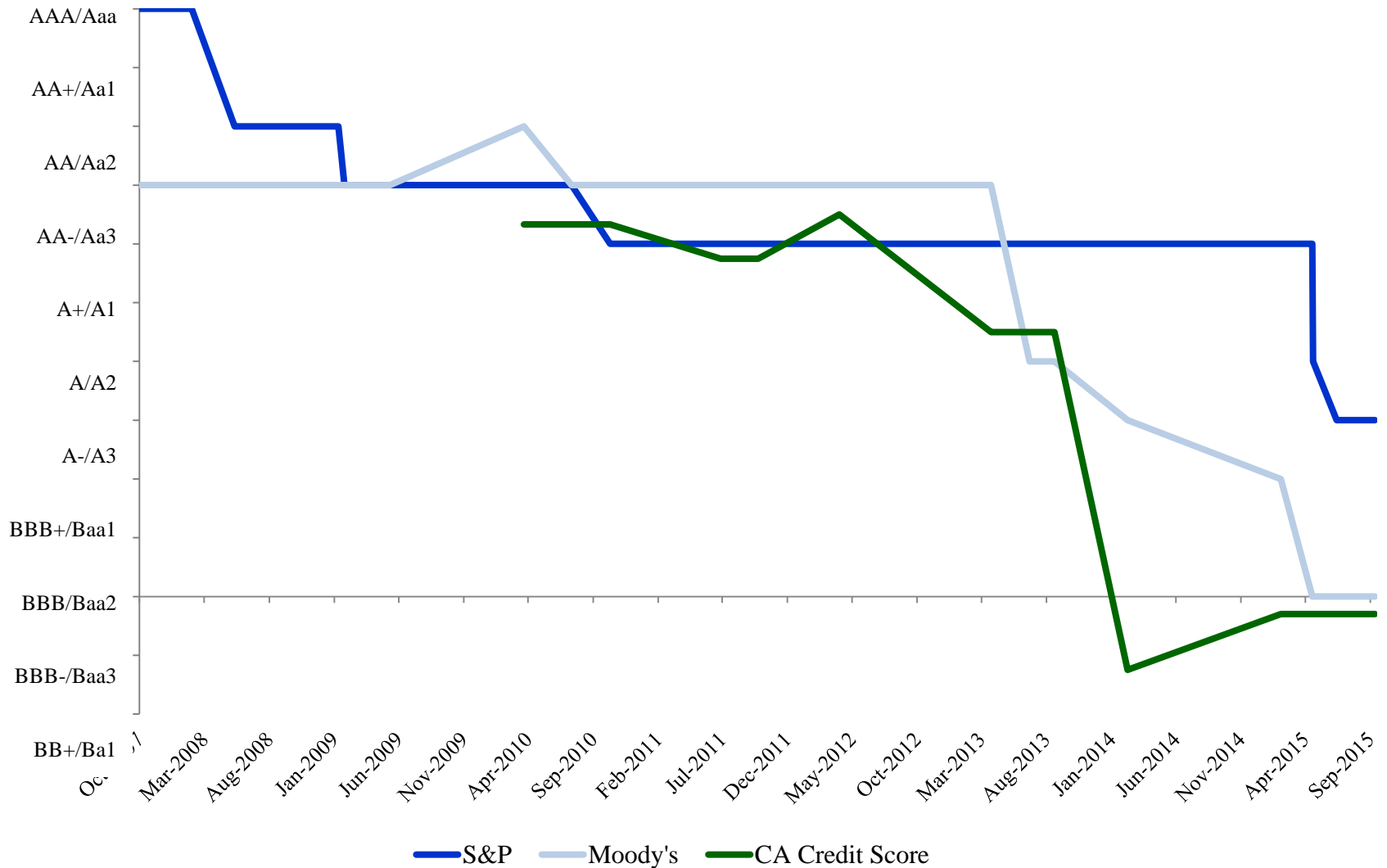
Uninsured General Obligation (GO) - Illinois vs. Chicago



Source: Bloomberg

Chicago Ratings & CA Scoring

Chicago General Obligation Ratings



Source: Bloomberg, Cumberland Advisors

The Bad Boy of Bonds

Puerto Rico Uninsured vs Insured



Source: Bloomberg

Disclosure

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