# Brookings Municipal Finance Conference 2021

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## Calling All Issuers:
## The Market for Debt Monitoring

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# Calling All Issuers

## Incidence of Delayed Calls

**Anticipated findings**

- Smaller and lower rated issuers, infrequent issuance
- One or more prior rating downgrade events
- Municipal issuers delay more often than Corporate issuers

**Unanticipated findings**

- GO credits experience more delays than revenue credits
- Very sticky issuer-underwriter relationships may result in longer call delays
- Large number of issues which call dates occur within a specified time frame
- Type of underwriter dominance; regional general practice vs national dominance and sector specialized
- Majority of market access by competitive sale versus negotiated

**Possible explanations for some delayed call situations**

- Anticipation of a possible adverse rating event; availability of more current disclosure/audit
- Bundling with next new money issuance or current call
- Economy of scale on issuance expenses and working group administrative time
- Bundling constructive federal tax characteristics (common plan of finance)

# Calling All Issuers

## Calculating Economic Losses

**Results**

- $1.74 Billion annual cost; $31 billion over 18-year test period

**Computational Complexities**

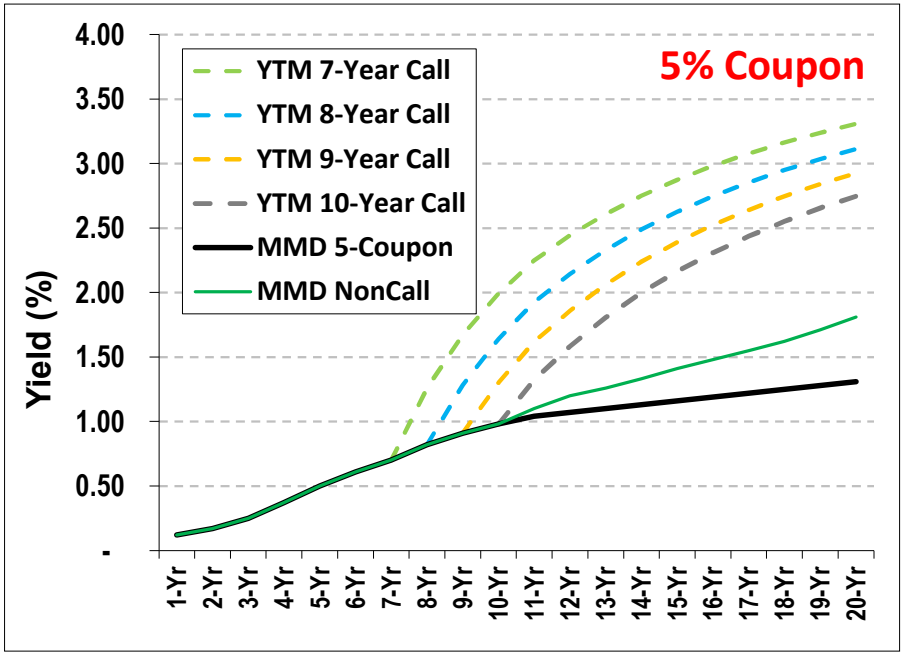
- Fluid credit and sector spreads; credit spreads also have their own tenor slope
- Locating and testing bull market yield conditions within each annual testing frame
- Replacement optionality (choice of refunding coupon and call date impact on PV)
- Overarching market liquidity climates (external headwinds such as the 2008 financial crisis)
- Exclude for intentional call delays related to external circumstances
- Subdivide analysis into groups of refunded coupons

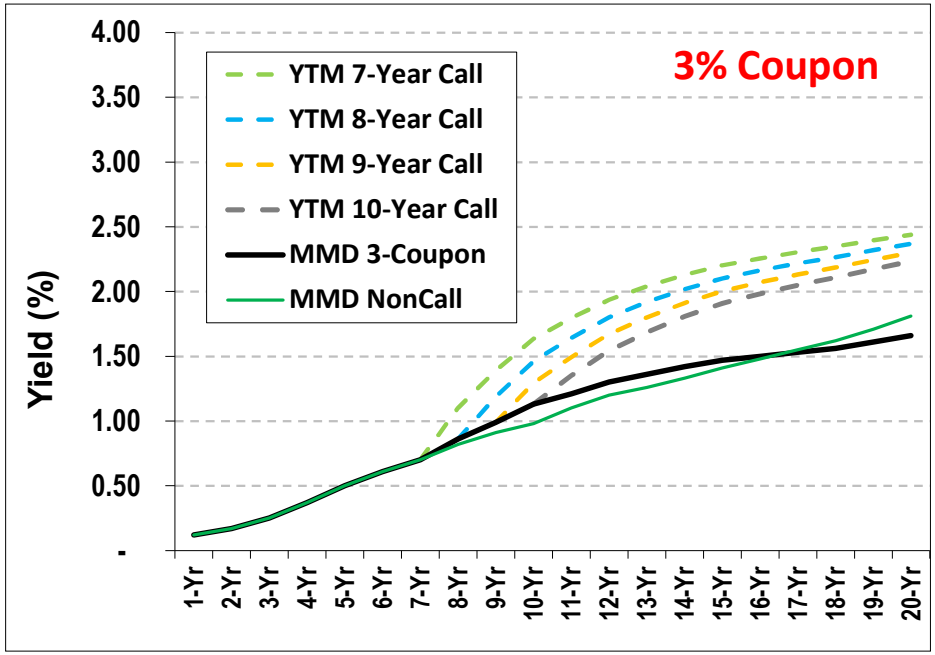
**Simple "par ratio" placeholders backing into annual loss = $1.74 billion; up to 7.6% of $3.8tn market**

| Un-Called Par at Coupon: | 5.00% | 4.00% | 3.00% |
|---|---|---|---|
| Gross Coupon in post call "Overtime" | 34,800,000,000 | 43,500,000,000 | 58,000,000,000 |
| Refunding D/S = 80% of Refunded DS | 174,000,000,000 | 217,500,000,000 | 290,000,000,000 |

# Calling All Issuers

Cost of Funds by coupon and call feature from an Original Issue Perspective (AAA Rated issuers)




**20-year** maturity costs **1.31%** if the call is exercised
If not exercised, a **10-year** call costs **2.75%**
If not exercised, a **7-year** call costs **3.31%**

**20-year** maturity costs **1.66%** if the call is exercised
If not exercised, a **10-year** call costs **2.23%**
If not exercised, a **7-year** call costs **2.44%**

# Calling All Issuers

## Example Call Date Tests 2000-2018 for $100m 30-year Level Debt Structure Issued in 1990

| Prior Issue Coupon | 5.00% | | | PV Decision % | 3.00% | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Test Year | Call Date | MMD Curve Date | Credit Spread | Refunding PV Savings | PV % Refunded | Bonds Called | Annual D/S Svgs / (Cost) | Refunding TIC | Forgone Annual Savings (A) | Current Refunding PV (B) | Value After Prior Forgone Savings (B-A) |
| 2000 | 01/01/00 | 12/31/99 | 20 | (5,216,417) | -6.43% | 81,075,000 | (450,100) | 5.797 | | - | - |
| 2001 | 01/01/01 | 12/29/00 | 20 | (393,050) | -0.50% | 78,625,000 | (35,011) | 5.061 | - | - | - |
| 2002 | 01/01/02 | 12/31/01 | 20 | (39,972) | -0.05% | 76,050,000 | (7,246) | 5.007 | - | - | - |
| 2003 | 01/01/03 | 12/31/02 | 20 | 4,782,919 | 6.52% | 73,345,000 | 395,959 | 4.167 | - | 4,782,919 | 4,782,919 |
| 2004 | 01/01/04 | 12/31/03 | 20 | 5,415,750 | 7.68% | 70,505,000 | 461,647 | 3.980 | (395,959) | 5,415,750 | 5,019,791 |
| 2005 | 01/01/05 | 12/31/04 | 20 | 4,814,981 | 7.13% | 67,525,000 | 429,705 | 3.999 | (461,647) | 4,814,981 | 3,957,374 |
| 2006 | 01/01/06 | 12/30/05 | 20 | 3,372,513 | 5.24% | 64,395,000 | 320,077 | 4.213 | (461,647) | 3,372,513 | 2,053,258 |
| 2007 | 01/01/07 | 12/29/06 | 20 | 3,237,815 | 5.30% | 61,110,000 | 325,110 | 4.153 | (461,647) | 3,237,815 | 1,456,913 |
| 2008 | 01/01/08 | 12/31/07 | 20 | 3,528,115 | 6.12% | 57,660,000 | 372,079 | 3.964 | (461,647) | 3,528,115 | 1,285,566 |
| 2009 | 01/01/09 | 12/31/08 | 20 | 4,472,146 | 8.28% | 54,040,000 | 494,660 | 3.515 | (461,647) | 4,472,146 | 1,767,949 |
| 2010 | 01/01/10 | 12/31/09 | 20 | 6,043,603 | 12.03% | 50,235,000 | 695,736 | 2.727 | (494,660) | 6,043,603 | 2,844,746 |
| 2011 | 01/01/11 | 12/31/10 | 20 | 5,392,249 | 11.66% | 46,240,000 | 676,850 | 2.593 | (695,736) | 5,392,249 | 1,497,657 |
| 2012 | 01/01/12 | 12/30/11 | 20 | 6,634,085 | 15.78% | 42,045,000 | 884,397 | 1.510 | (695,736) | 6,634,085 | 2,043,756 |
| 2013 | 01/01/13 | 12/31/12 | 20 | 5,547,137 | 14.74% | 37,640,000 | 832,531 | 1.342 | (884,397) | 5,547,137 | 72,411 |
| 2014 | 01/01/14 | 12/31/13 | 20 | 3,846,307 | 11.65% | 33,015,000 | 677,057 | 1.655 | (884,397) | 3,846,307 | (2,512,816) |
| 2015 | 01/01/15 | 12/31/14 | 20 | 2,833,753 | 10.06% | 28,160,000 | 591,191 | 1.629 | (884,397) | 2,833,753 | (4,409,766) |
| 2016 | 01/01/16 | 12/31/15 | 20 | 1,870,672 | 8.11% | 23,065,000 | 485,590 | 1.717 | (884,397) | 1,870,672 | (6,257,243) |
| 2017 | 01/01/17 | 12/30/16 | 20 | 964,951 | 5.45% | 17,715,000 | 333,176 | 2.214 | (884,397) | 964,951 | (8,047,361) |
| 2018 | 01/01/18 | 12/29/17 | 20 | 413,524 | 3.42% | 12,095,000 | 210,870 | 2.684 | (884,397) | 413,524 | (9,483,184) |

Key:
- First Year at/above PV% Decision
- Best Year w/ forgone Prior Svgs
- Highest PV % Year

Comments: Refundings are all-or-none; $15/Bond Expenses; 5% coupon scale with 10-year call. Once Refunded Bonds meet a minimum PV Criteria, the PV of later exercise dates are progressivly handicapped by ongoing previously foregone annual savings.

# Calling All Issuers

## Example Call Date Tests 2000-2018 for $100m 30-year Level Debt Structure Issued in 1990

| Refunded Coupon | AAA Rated "+20" First Year | AAA Rated "+20" Best Year | AAA Rated "+20" Highest PV% | BBB Rated "+100" First Year | BBB Rated "+100" Best Year | BBB Rated "+100" Highest PV% |
|---|---|---|---|---|---|---|
| 5.000 | 2003<br>6.5% | 2004<br>7.7% | 2012<br>15.8% | 2009<br>3.7% | 2012<br>11.8% | 2012<br>11.8% |
| 4.000 | 2010<br>6.6% | 2012<br>11.1% | 2012<br>11.1% | 2012<br>7.3% | 2012<br>7.3% | 2012<br>7.3% |
| 3.000 | 2012<br>6.6% | 2012<br>6.6% | 2012<br>6.6% | 2013<br>3.3% | 2013<br>3.3% | 2013<br>3.3% |

Historical lookback suggests that lower refunded coupons and lower ratings groups may be at their optimum execution when and as they first reach their “Minimum PV” policy threshold.

Significantly simplified assumptions may distort impact observation

- General practice is to make refunding decisions by refunded maturity date vs. whole series
- Lower refunding coupons produce higher immediate Refunding PV, but at cost of future option value
- Annual call date testing may not recognize intra-year bull interest rate markets

# Calling All Issuers

## Policy Implications and Market Environment Comments

**Market preferences around callable coupons**

- Premium coupons – avoid taxable income in secondary market trading
- Deep discount coupons - windfall to bondholder; outside example “inverse numeric”
- Taxable buyers indifferent to couponing; new issues priced at par

**Issuer Attributes**

- Governments generate taxes & user fees – practical necessity for restructuring of serialized amortization
- Corporations use debt markets for operating liquidity – roll bullet structures to yield curve sweet spots
- Treasury Regulations Federal tax-exempt remediation for change of use

**Related subjects**

- Lower couponing with Competitive Sale method (Award based on TIC-to-Maturity)
- Financial efficacy of short calls (shorter than 7 years) on very long maturities (longer than 25 years)
- Ceded insurance premium when the refunded bond is credit enhanced (taxable vs tax-exempt may differ)
- Structuring call dates with an eye for “slope aging” of the yield curve
- Non-call is itself an issuance strategy; taxable refunding with make-whole calls already do this.