Rapid Evolution in the Municipal Bond Market

Municipal Market Analytics, Inc.

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Municipal Market Analytics

- The leading independent research and consulting group in the US municipal market
- Well known thought leader on market and credit trends, infrastructure finance, related systemic risks, and regulation/policy issues
- No sales, trading, banking, or underwriting operations or affiliations; **MMA** is not a registered advisor or asset manager
- Core business: strategy and research reports and proprietary data sold to industry subscribers and regulators
- Consulting includes bank portfolio filtering for credit surveillance, and single name credit research

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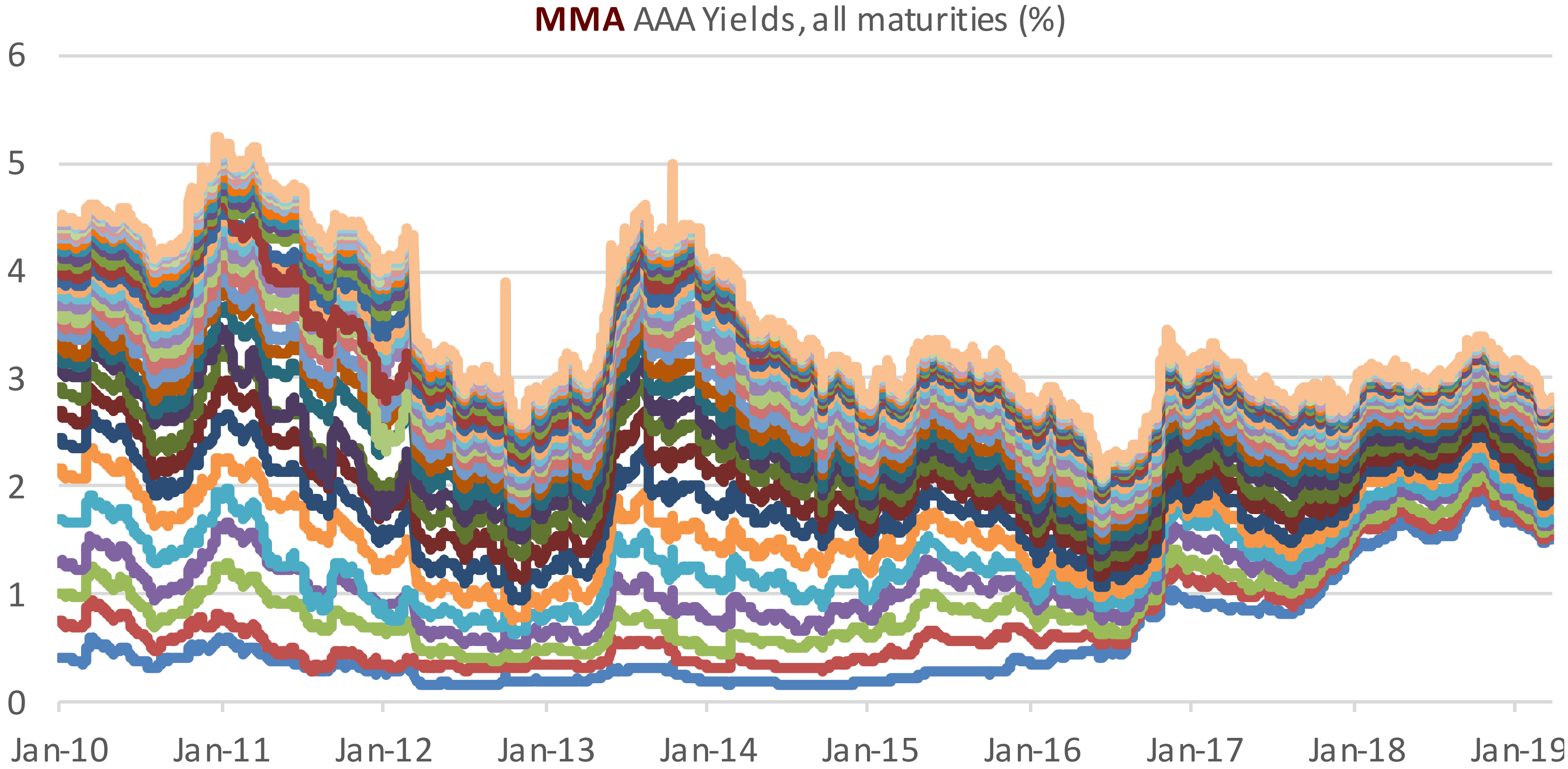
Municipal bond prices have endured FRB hikes, tax cuts, & PR attacks; spreads are tighter for it



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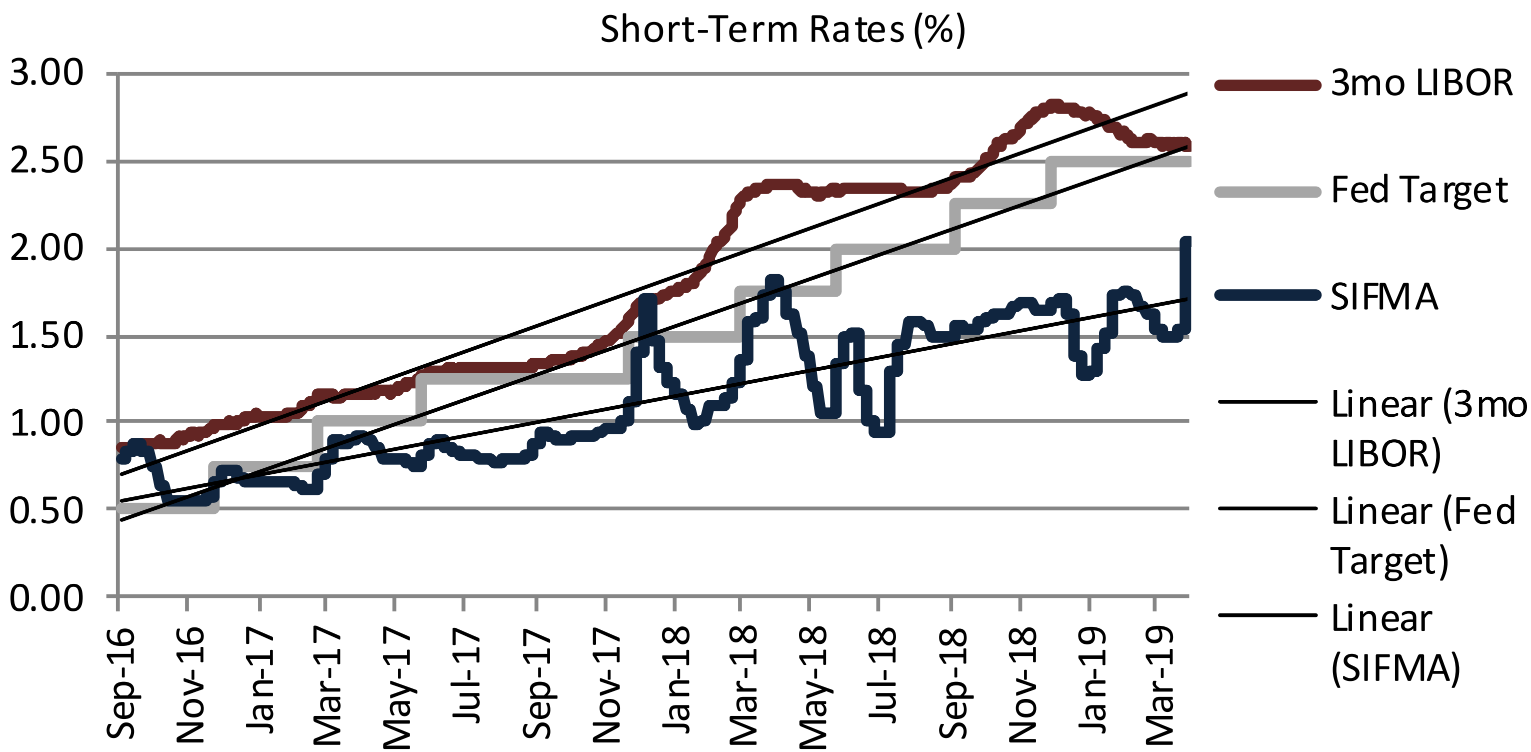
Fed has consistently raised rates over the last three years; tax-exempts outperforming



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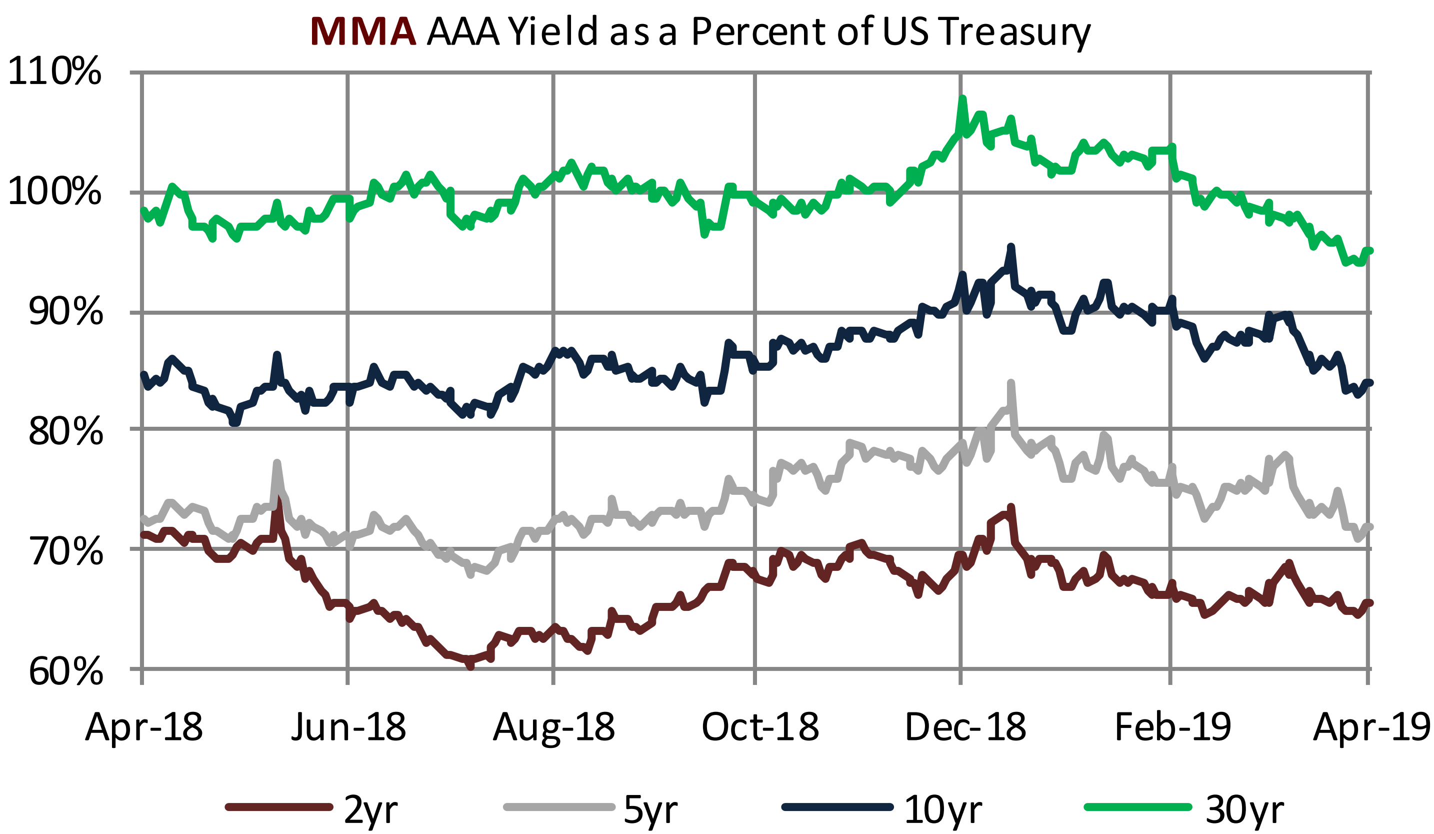
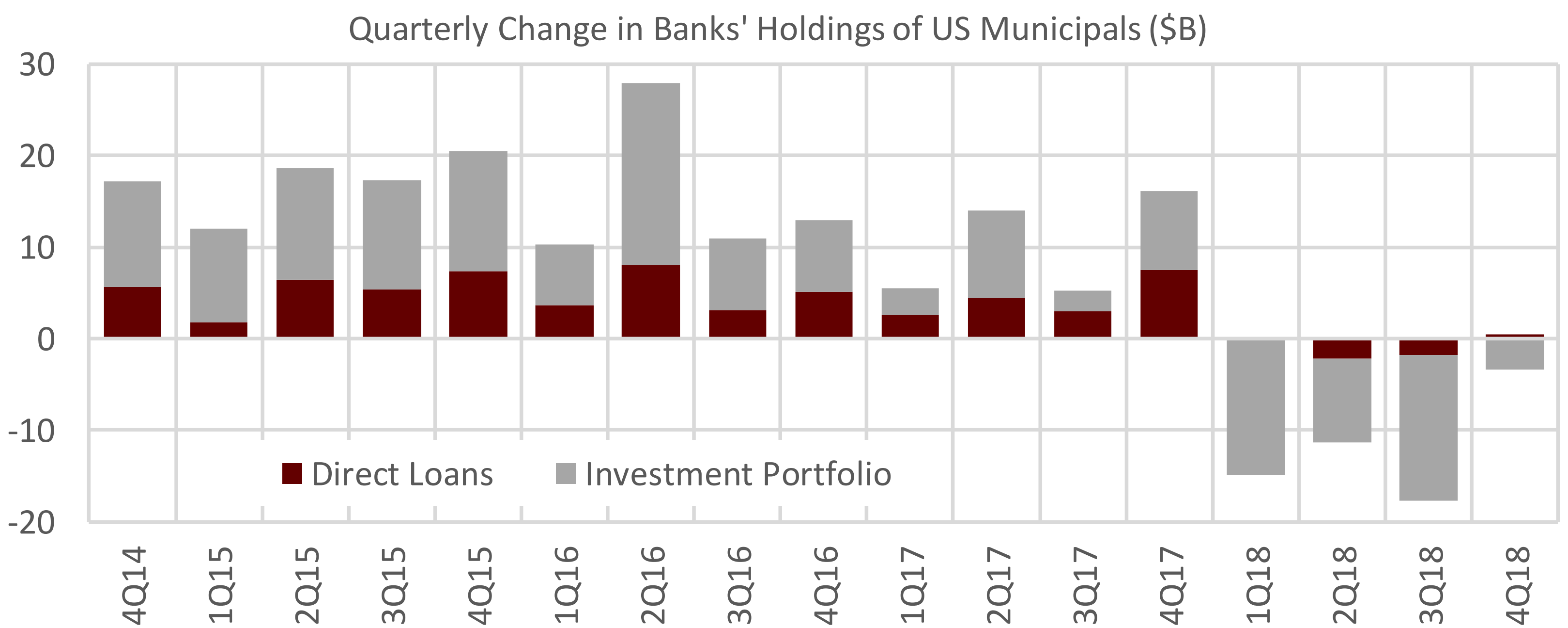
Long maturity municipals have rallied vs. US Treasuries even more



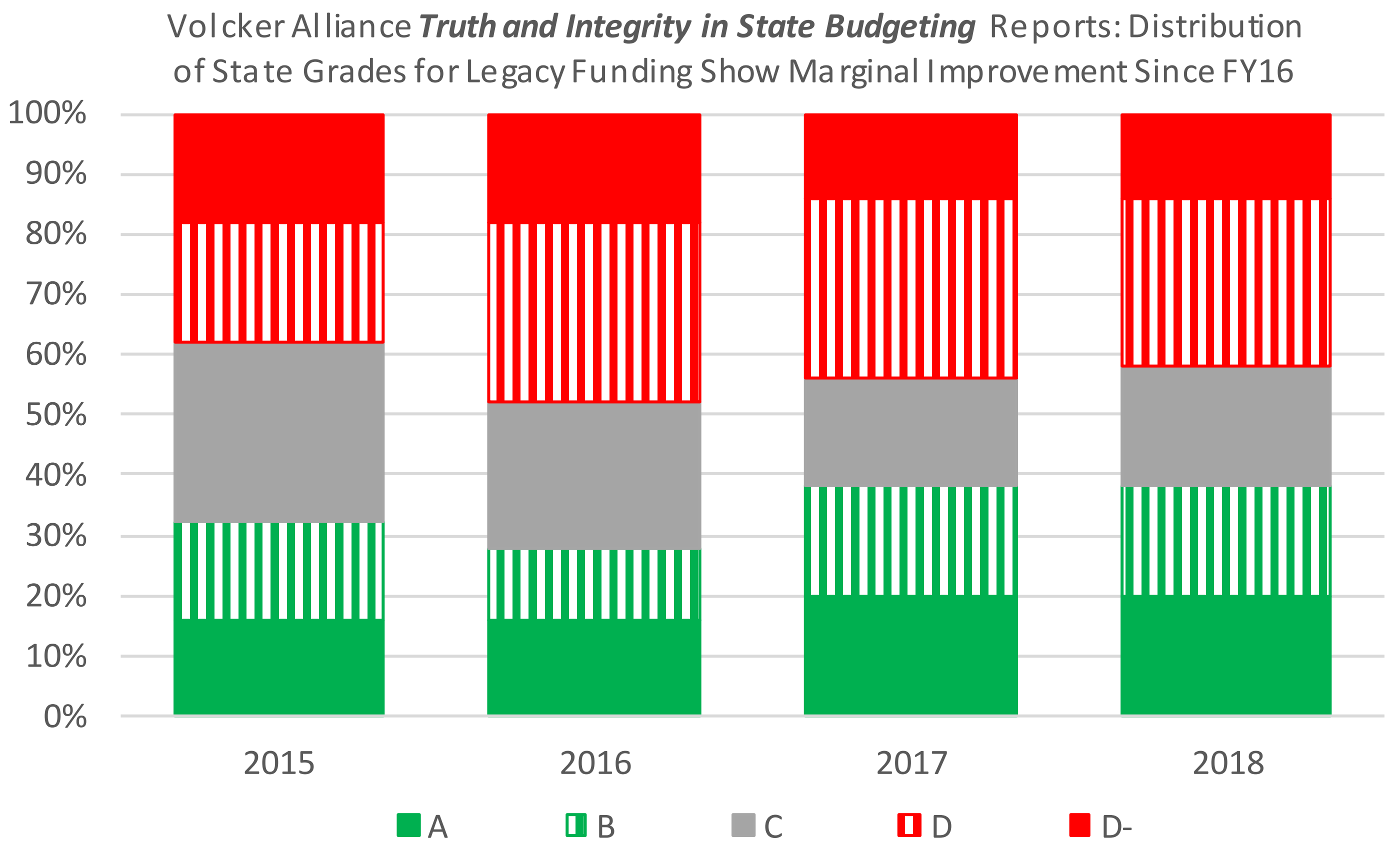
TCJA cut corporate tax rates & related municipal demand; Bank holdings fell 10.9% in 2018



Long-term credit quality threats increasing

- Federal budget deficit is widening, rapidly
- Rising costs of legacy liabilities like pensions and debt
- Slowing economic growth; contraction in rural areas
- Governments are reluctant to permanently cut spending, raise taxes, or attend to deferred infrastructure
- High profile strategies—asset transfers to pensions, revenue securitizations—create short-term budget benefit but spread long-term risk to stakeholders
- Climate change will relocate economic activity & require direct expenditures for adaptation/mitigation

Pension & OPEB funding policies aren't much better = downstream risks to local governments



This is particularly the case in Chicago

- The city’s long-term credit profile depends on its economy achieving steadily positive growth projections
- Risk 1: The state becomes more adversarial—Has materially improved with the election of Governor Pritzker
- Risk 2: City management makes bad choices—Has worsened with the city’s scooping and tossing of debt service via its new sales tax bonds (& potential sale of pension bonds)
- Risk 3: The local economy backslides—No material change but recent population decline is problematic

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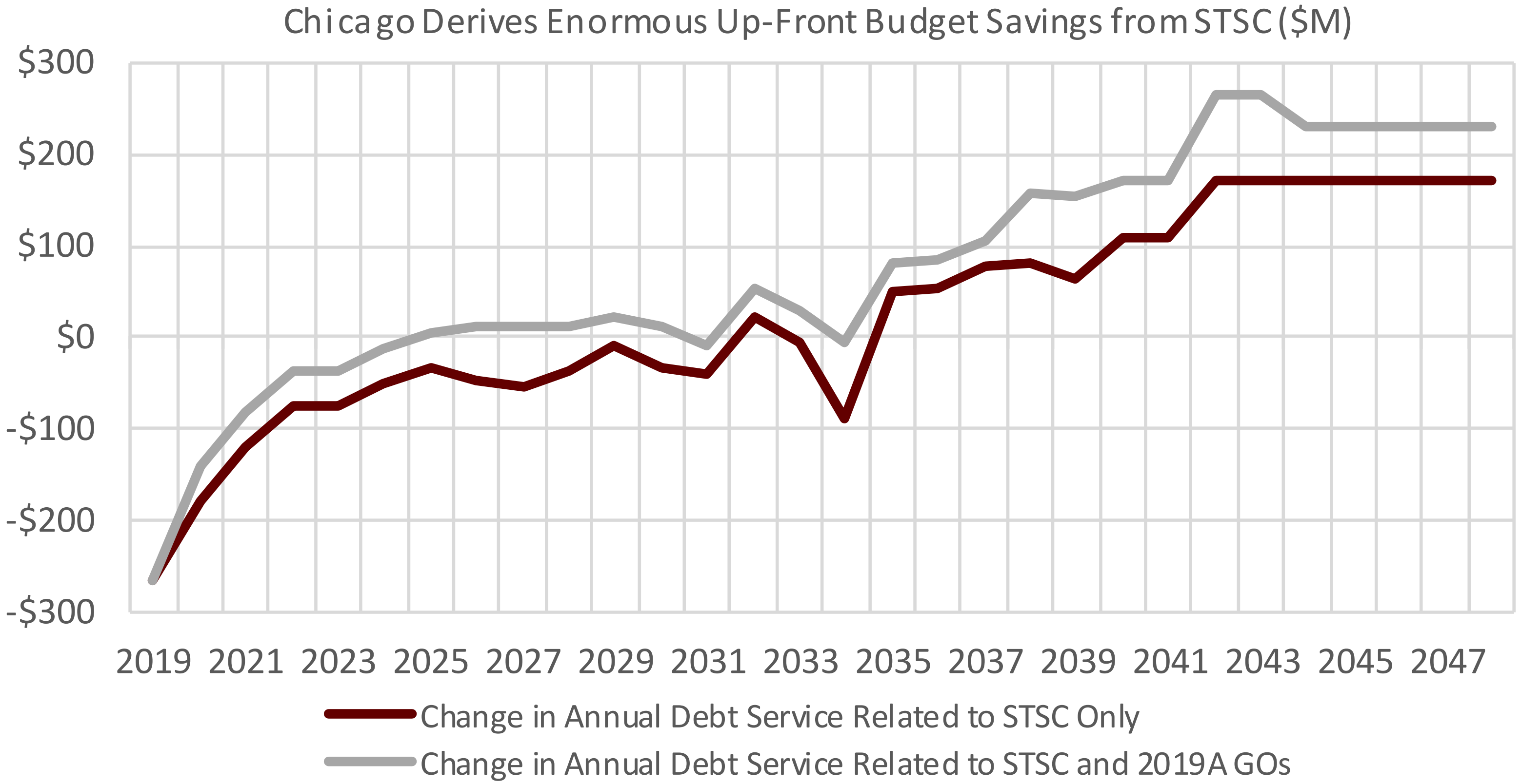
Detail: Chicago has added $0.6B to long-term debt service & extended avg. life ~20% via STSC



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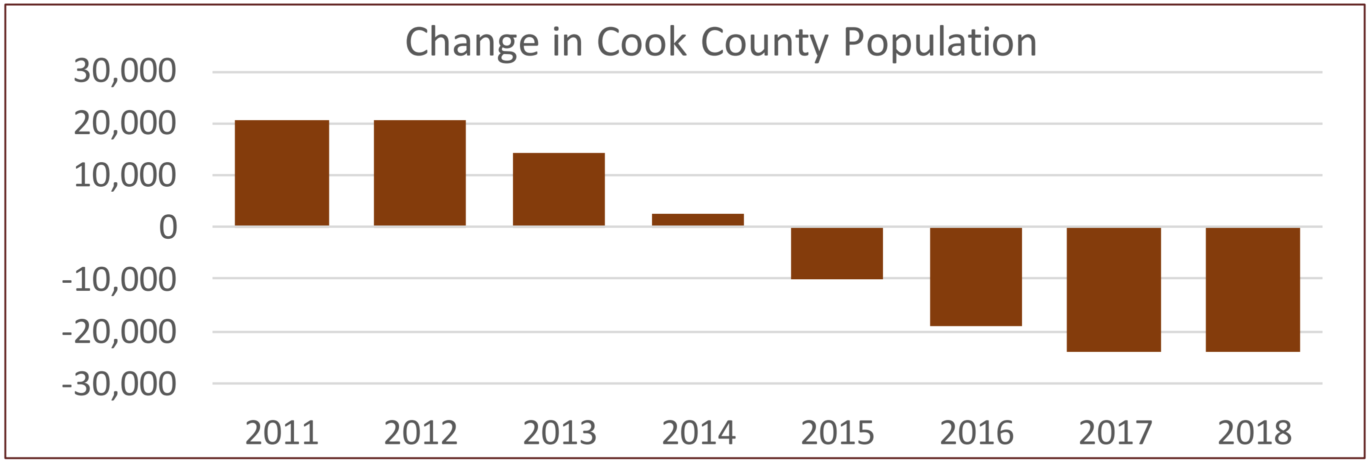
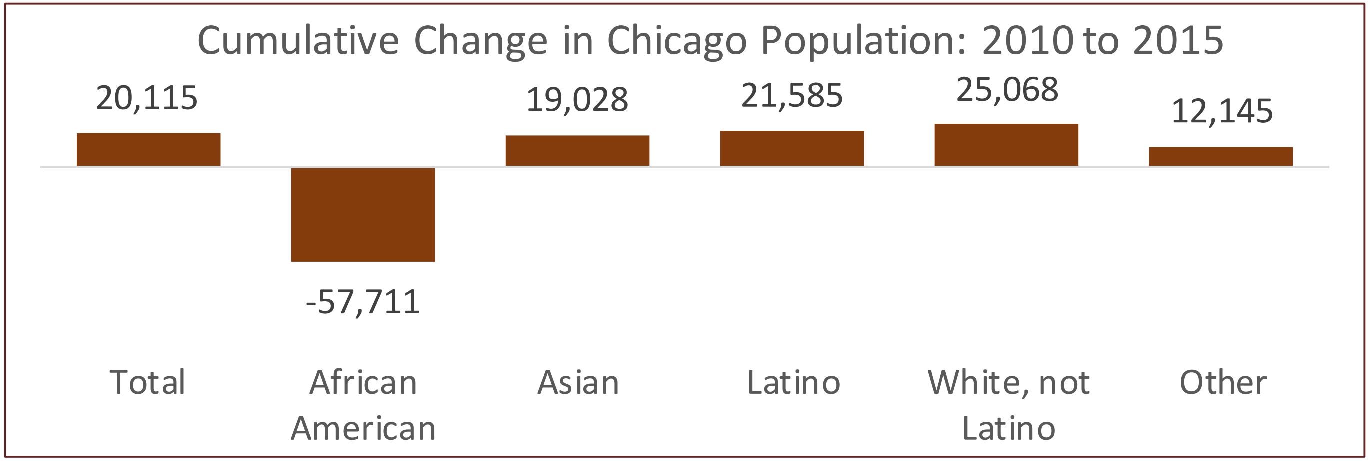
Detail: Chicago total population has begun falling, but young adult & college degree #'s rising fast

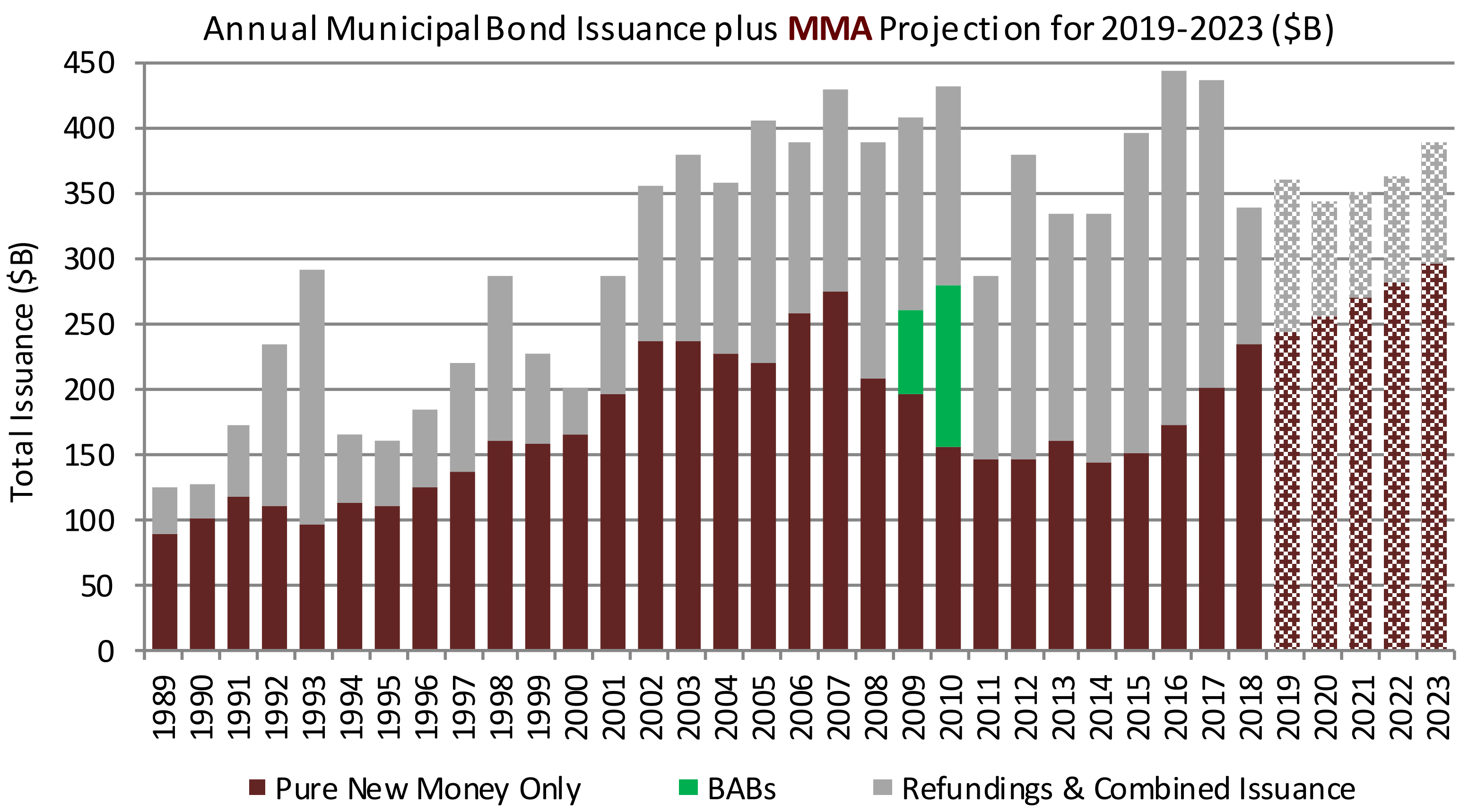




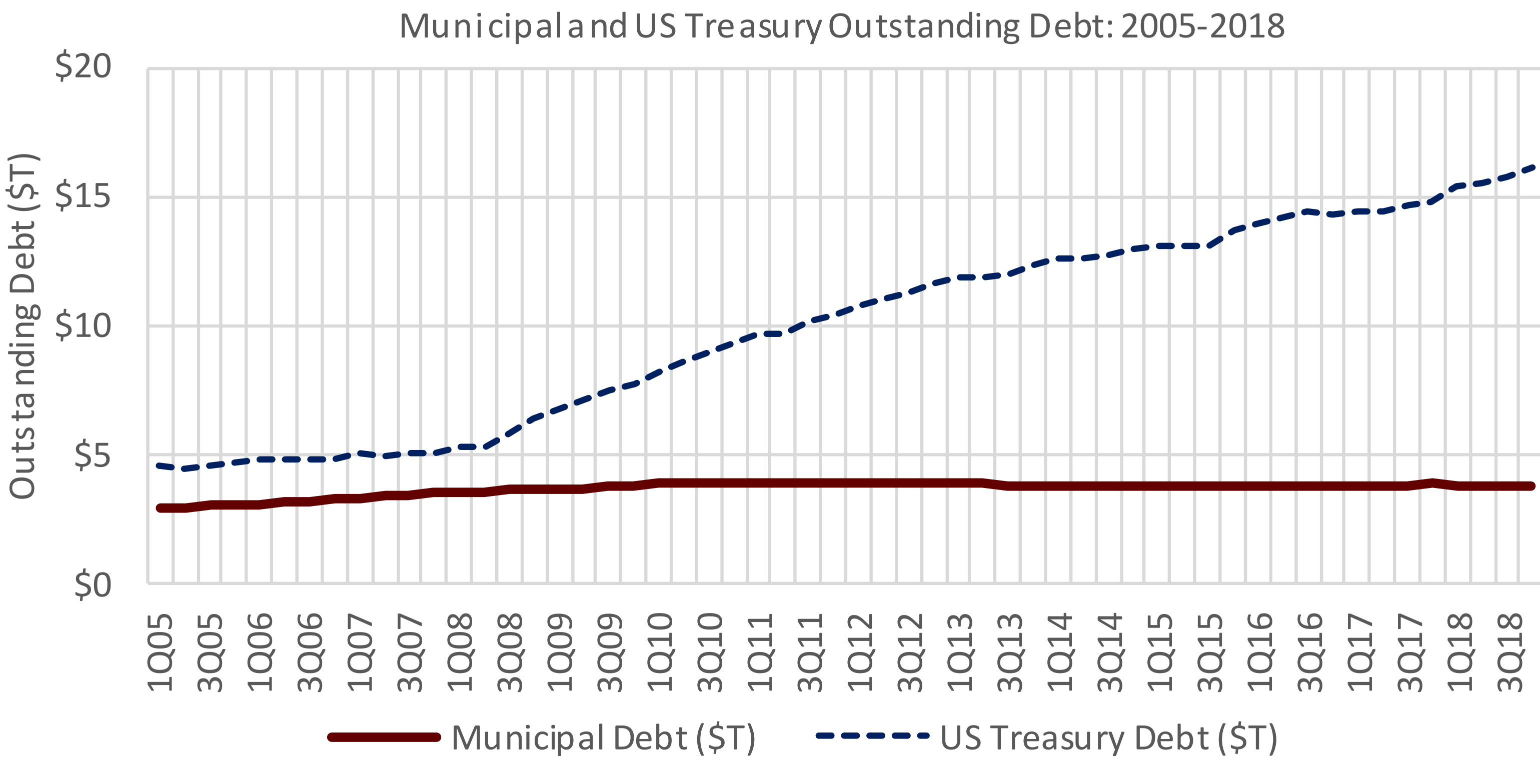
Security pledges are eroding via Puerto Rico

- Lenders can no longer assume that their bond/loan will be exempt from a sponsor government's chapter 9 bankruptcy
- If a government can file for bankruptcy, any enterprise within its control may be subject to impairment; government managers may perceive a duty to tear up debt structures
- General obligation bonds suffering; bondholders may not be able to rely on offering document opinions of validity
- In general, investors are going to lose more court opinions than they win in chapter 9, because…
- Bankruptcy courts do not speak "muni," meaning our sector's expectations have been lost in translation

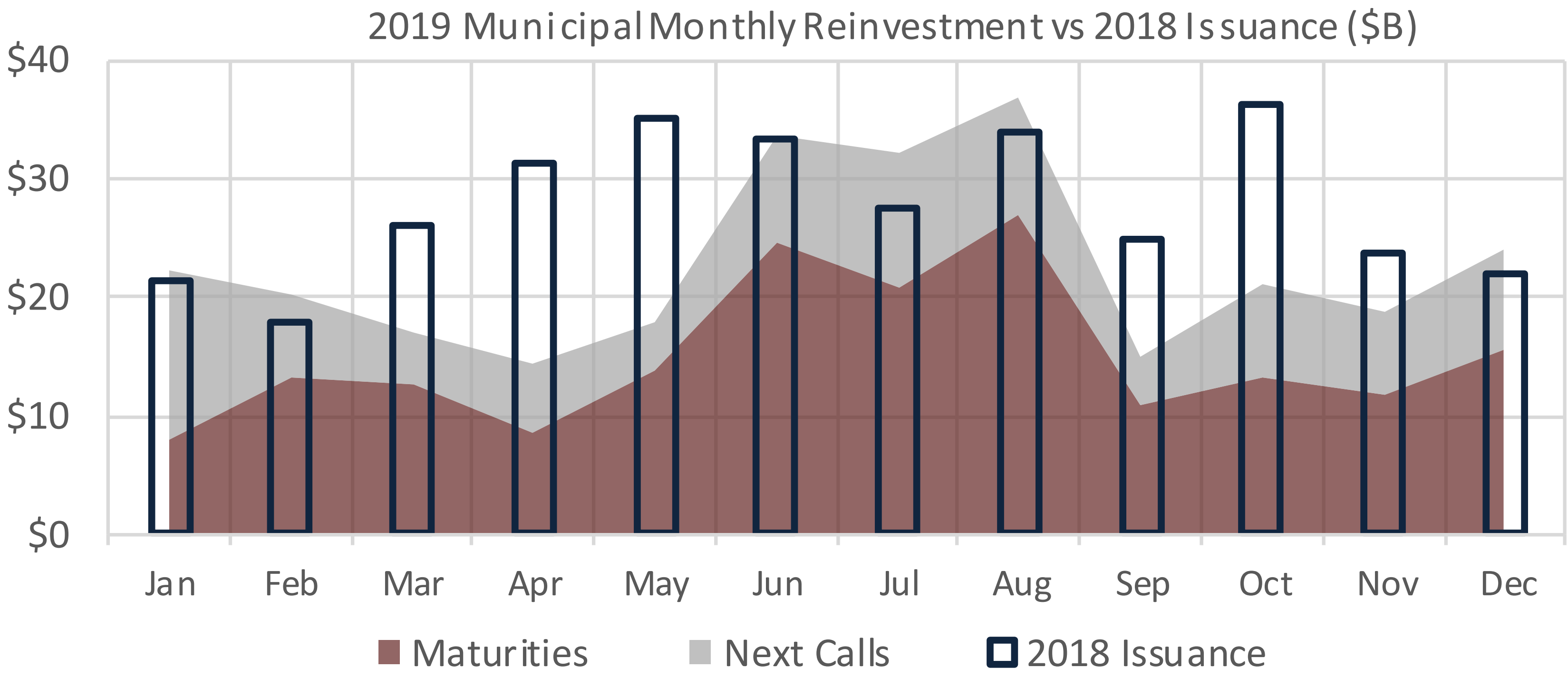
BUT, BUT, BUT: Supply is low versus demand



Fewer municipals relative to other asset classes



$190B maturities + $100B calls in '19 – advance refundings = most bonds already spoken for



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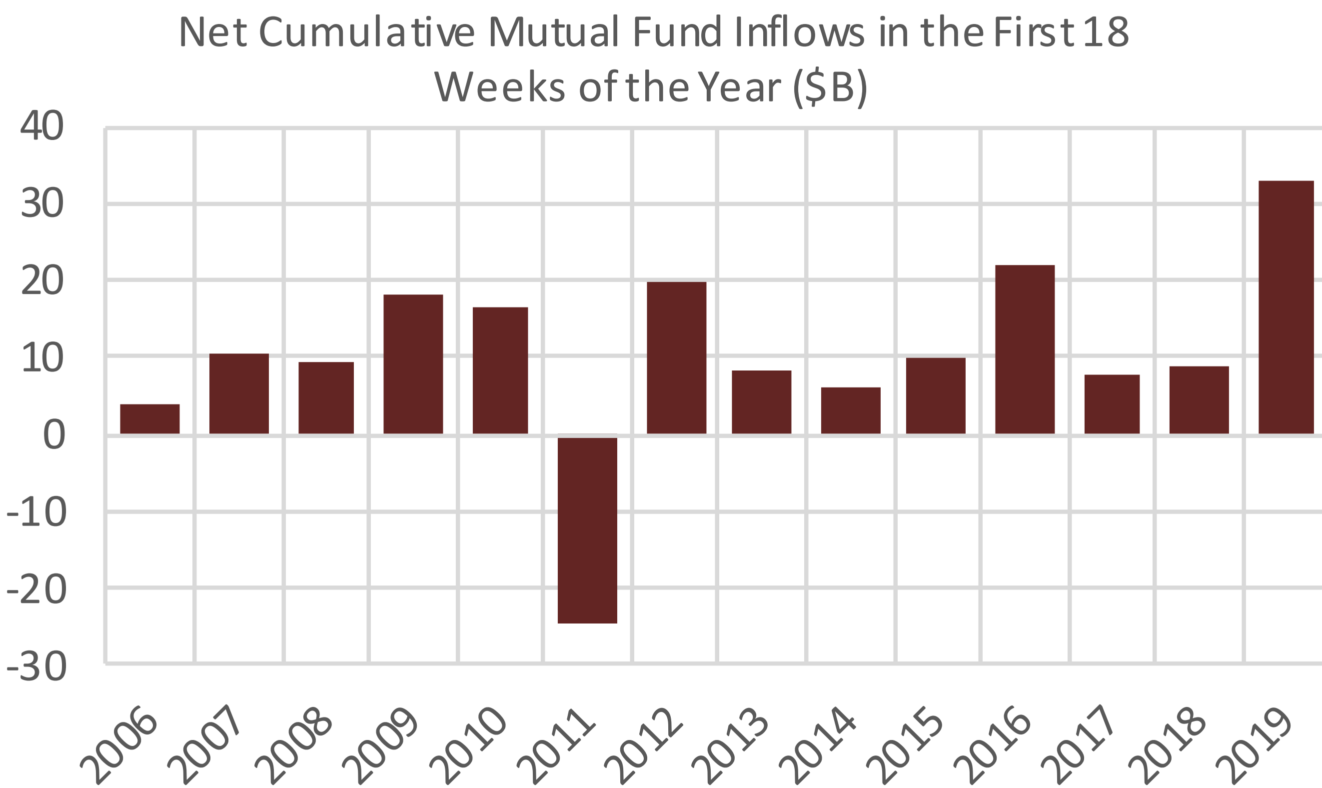
No shortage of fresh capital in 2019 as individuals experience higher Federal tax bills & buy munis



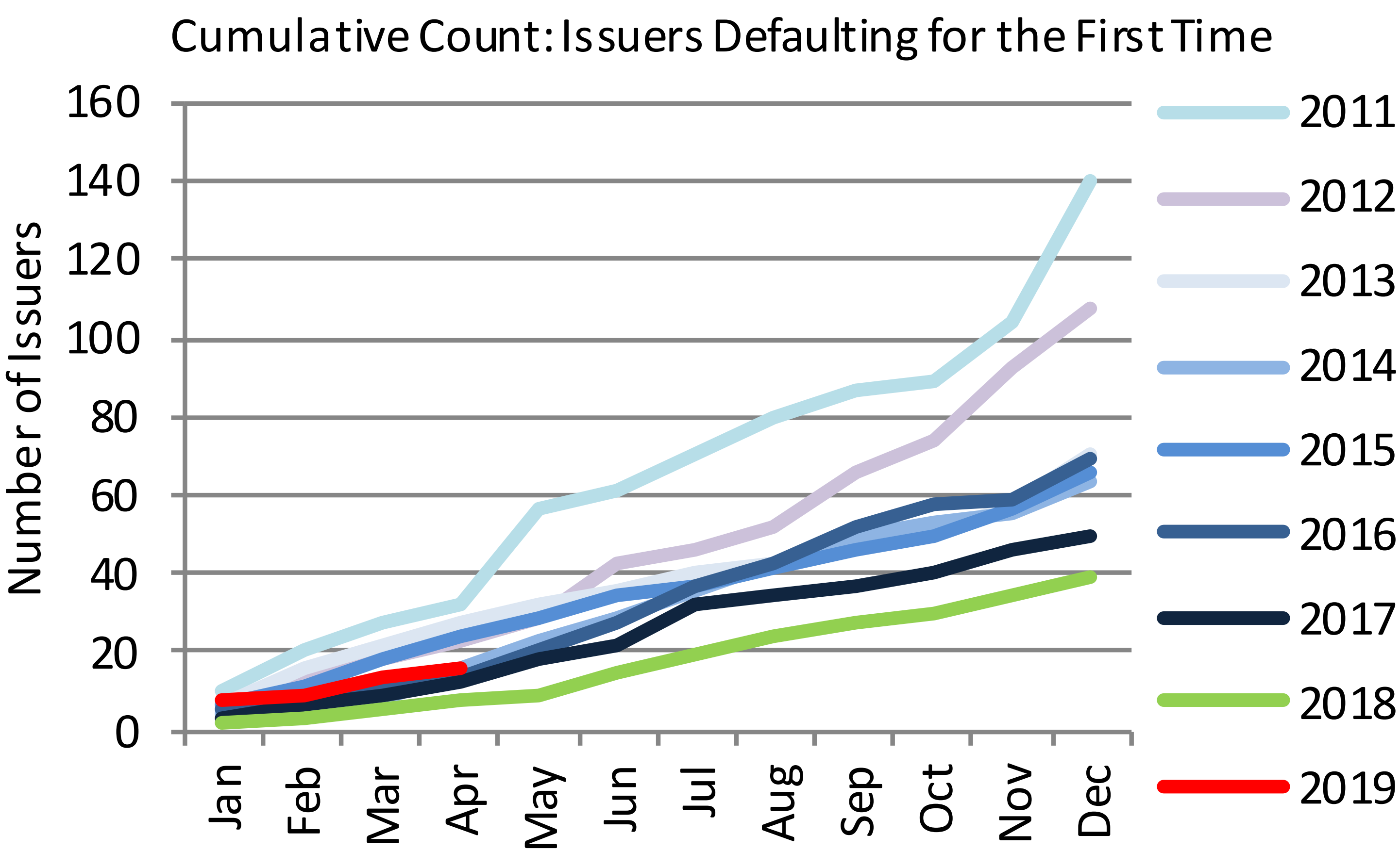
The nature of demand is being disrupted; things will not return to how they were

- Regulation/yields chase assets to professional managers who invest more aggressively vs. traditional retail
- Massive growth in a handful of mutual fund groups who can **use diversification in lieu of credit analysis**
- Accelerating shift to passive management vehicles **outsources credit to rating agencies**/index providers
- Manager **fee pressure demands shortcuts in credit selection**/surveillance/management
- Amid low supply, reinvestment risk outweighs credit risk
- Low yields force income investors to own more bonds

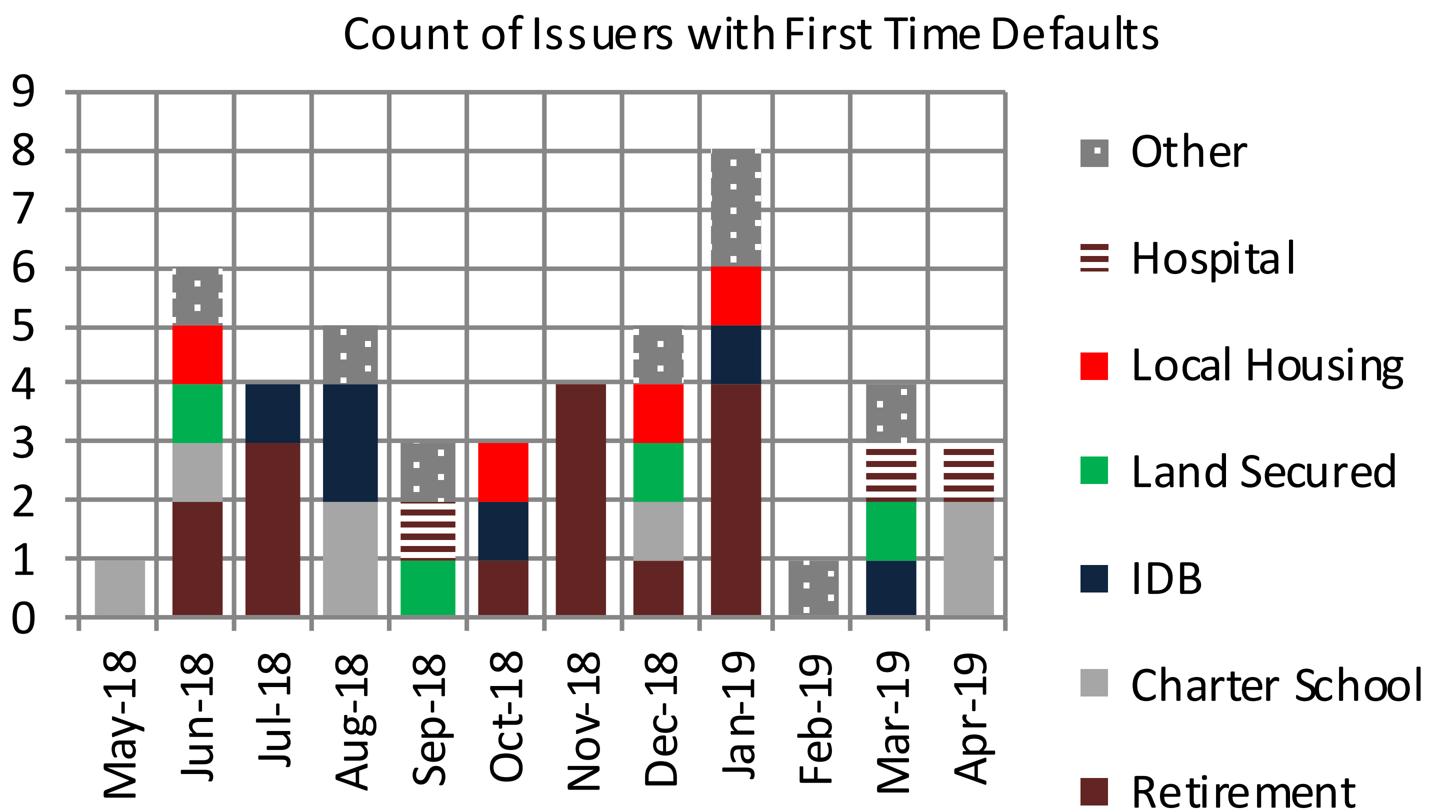
Principal systemic risk is DC, but this probably skews to the positive at present

- Very unlikely Congress further limits the tax-exemption
- Reasonable chance for return of advance refunding in some way, bank qualified limit raise
- SALT deduction cap sunsets in 2025; Dems would accelerate if given the chance
- Infrastructure bill is possible but limited real dollar effects
- However…
  - Regulatory incursions are still likely
  - SEC is pushing for improved disclosure, maybe XBRL
  - MSRB will continue recent transparency efforts

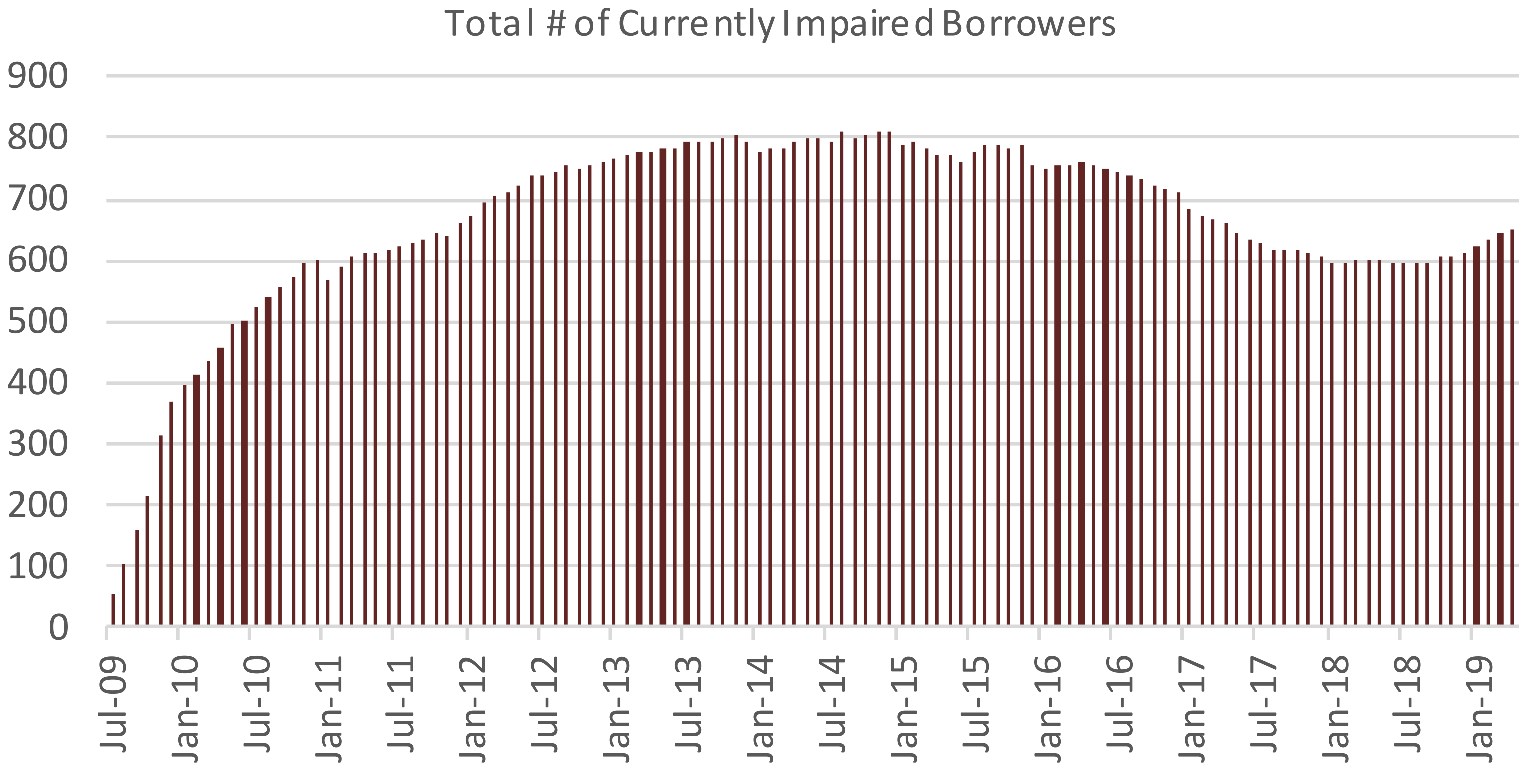
Current credit conditions are still benign, but default trends are growing worrisome



2019 defaults have been isolated to risky sectors; BUT YTD GO impairments at record pace



And the total impaired universe is growing again



Investors should allocate more strategically

- Risky sector payment defaults appear likely to increase; avoid recent vintages, “trending” bankers, vulnerable structures
- Governmental credits more at risk in the long term: small GO, appropriation, special tax credits, & now revenue bonds
- **PR will encourage more & more aggressive chapter 9 filings that affect all bonds sold by a sponsor government**
- Deeper analysis needed for communities considered poor, working class, rural, slowly growing, isolated, dependent on legacy industries & in low tax/low spend states
- Climate change is not yet impacting credit selection, but a behavioral pivot by investors is 1-2 years away

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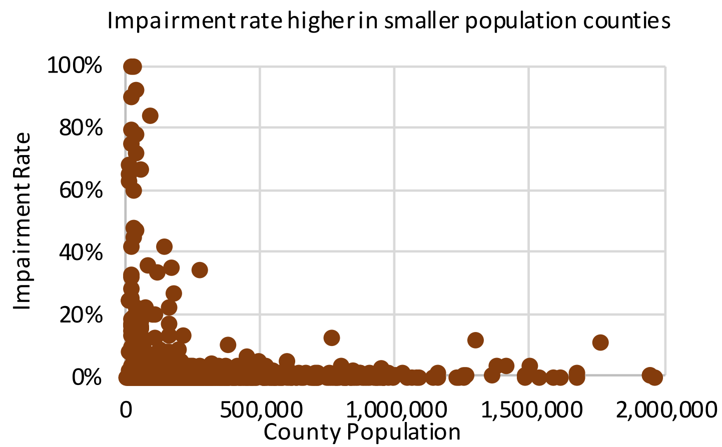
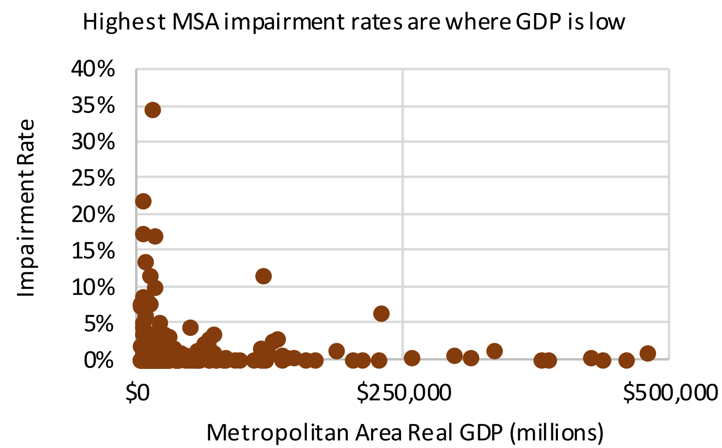
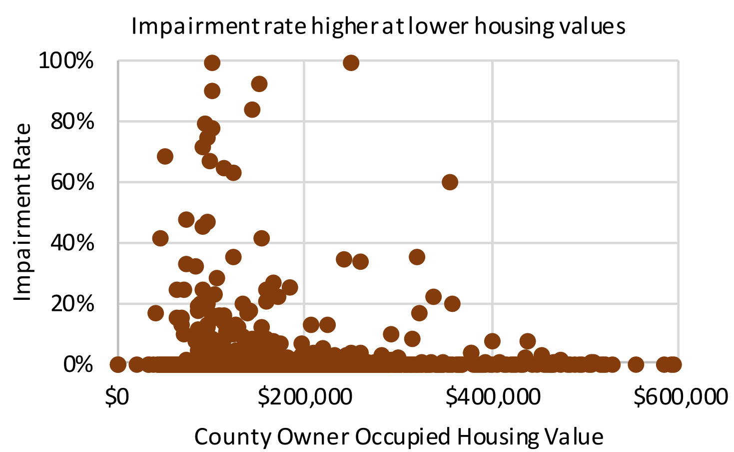
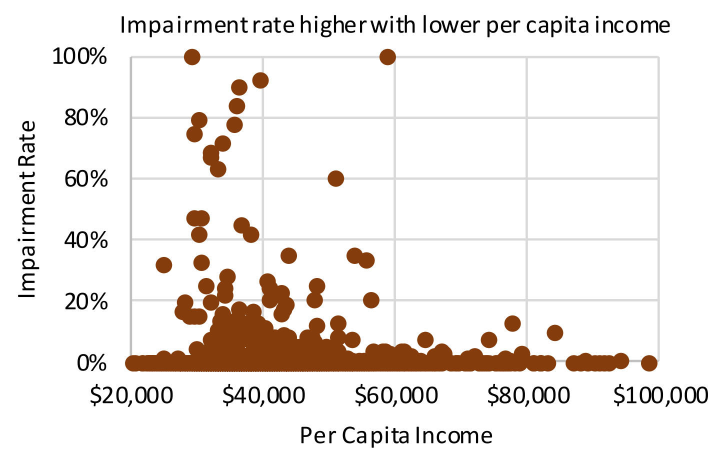
New: Counties with high impairment rates









Other topics MMA is covering

- Rating trends: in general, fewer ratings per transaction esp. among risky sector financings + rapid growth of single rated bonds
- Tracking rating methodology changes/uncertainty
- Evolving issuer disclosure requirements post-PR
- Rise of merchant banking operations in high yield space & how their demand creeps into mid-grade segments
- Climate change cost ramps vs. pension cost ramps
- In-kind asset transfers from governments to pensions, potentially aided by Congress but slowed by new accounting guidance