Direct vs. Indirect Federal Bond Subsidies: New Evidence on Cost of Capital

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Author Backgrounds

- **Martin J. Luby**
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- **Peter Orr, CFA**
  - President, Intuitive Analytics
  - Senior Managing Partner, Public Alternative Advisors
    - Registered municipal advisor to state and local governments
  - Previously public finance investment banker (JP Morgan, Bear Stearns)

- **Richard Ryffel**
  - Professor of Practice, Washington University in St. Louis
  - 25 years of public finance investment banking experience
Research Background

- The federal government subsidizes capital finance activities either through *indirect* or *direct* subsidies

- Federal income tax exemption on municipal bond interest represents the *indirect* approach

- Providing direct subsidy to offset the interest cost of taxable municipal bonds represents the direct approach
  - The Build America Bond (BAB) program exemplifies a direct subsidy program

- The indirect approach has historically been used far more than the direct approach
Debate on Indirect vs. Direct Federal Bond Subsidies

The indirect subsidy approach has been criticized for decades based on the following:

1. Inefficient
2. Inequitable
3. Not transparent
4. Reduced access to capital

The BAB program was designed to correct all these deficiencies
BAB Program

- Allowed for a 35% subsidy of the interest cost of BABs issued by state and local governments
- Program was in effect from February 2009 through December 31, 2010
- More than $181 billion in BABs were issued
- Since 2013, direct BAB subsidies have been “haircut” between 8.7% and 5.5% each year due to the federal budget sequester
- President Obama proposed several extensions of a direct subsidy bond program (e.g., America Fast Forward Bonds), but none were passed
- Presidential candidate Trump signaled an interest in direct subsidy bonds, but no provision was provided in his 2018 infrastructure proposal
House Democrats Moving Forward Act (June 2020)

- Permanently reinstate BAB program for “qualified infrastructure bonds”
  - Taxable bonds that would otherwise qualify for tax exemption
  - 100% of the net proceeds are to be used for capital expenditures or operation and maintenance expenditures used in connection with capital expenditures

- Direct subsidy ramp down
  - 42% of interest paid from 2020-2025
  - 38% of interest paid in 2025
  - 34% of interest paid in 2026
  - 30% of interest paid in 2027 and thereafter

- Subsidy protected from budget sequestration
Missing Component of Previous Research

- Traditional tax-exempt bonds are usually sold with a ten-year par call, which makes them eligible for refinancing (refunding) if interest rates decline or to capitalize on a shorter yield curve over time (duration shortening).

- Taxable municipal bonds are sold with a make-whole call option, which makes it difficult to refinance (almost impossible) for savings, if rates decline.

- Most municipal bonds are refunded prior to maturity for interest cost savings.

- Previous research did not fully account for this call optionality difference (e.g., TIC assumes the debt service is paid to maturity).
Refunding Adjusted Yield (RAY); (Orr and Luby, 2019)

- RAY is an alternative cost of capital metric that does not necessarily assume debt service is paid to maturity.

- RAY incorporates the possibility that a municipal issuer will refinance a new municipal security sometime in the future based on a realistic modeling of future bond refinancings (refundings).

- RAY is the yield that recovers the market price from the average of simulated debt service adjusted for future refunding activity.

- Based on 5,000 simulations of current refundings using an opportunity cost index for when to refund debt.
## Estimation Step-by-Step

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
<th>Result</th>
<th>Calculation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td>Calculate BAB TIC before 35% subsidy</td>
<td>10%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Calculate BAB TIC after 35% subsidy</td>
<td>6.5%</td>
<td>(10% * (1-35%))</td>
</tr>
<tr>
<td>Step 2</td>
<td>Calculate counterfactual TIC</td>
<td>8.0%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Calculate counterfactual RAY</td>
<td>7.5%</td>
<td></td>
</tr>
<tr>
<td>Step 3</td>
<td>BAB benefit over counterfactual tax-exempt TIC</td>
<td>1.5%</td>
<td>(8.0% - 6.5%)</td>
</tr>
<tr>
<td></td>
<td>BAB benefit over counterfactual tax-exempt RAY</td>
<td>1.0%</td>
<td>(7.5% - 6.5%)</td>
</tr>
<tr>
<td>% overstatement of BAB benefit by using TIC instead of RAY</td>
<td>33.33%</td>
<td>((1.5% - 1.0%) / 1.5%)</td>
<td></td>
</tr>
<tr>
<td>Step 4</td>
<td>Neutral subsidy rate based on TIC</td>
<td>20%</td>
<td>1 – (8.0% / 10%)</td>
</tr>
<tr>
<td></td>
<td>Neutral subsidy rate based on RAY</td>
<td>25%</td>
<td>1 – (7.5% /10%)</td>
</tr>
<tr>
<td>% understatement of neutral subsidy rate by using TIC instead of RAY</td>
<td>25%</td>
<td>((25% - 20%) / 20%)</td>
<td></td>
</tr>
</tbody>
</table>
Estimation Benefit of BABs Based on All-in-TIC and All-in-RAY: One Issue

$486,100,000 Regents of the University of California Limited Project Revenue Bonds, 2010 Series F (BABs)

- Actual BAB all-in-TIC with Subsidy
- Counterfactual Tax-Exempt all-in-TIC
- Counterfactual Tax-Exempt all-in-RAY
# Estimation of Benefit of BABs Based on All-in-TIC and All-in RAY: Average of all 43 Issues

<table>
<thead>
<tr>
<th></th>
<th>BAB Par Amount ($ in millions)</th>
<th>Actual BAB all-in TIC without Subsidy</th>
<th>Actual BAB all-in TIC with Subsidy</th>
<th>Counterfactual Tax-Exempt all-in TIC</th>
<th>Counterfactual Tax-Exempt all-in RAY</th>
<th>Actual BAB all-in TIC with Subsidy minus Counterfactual Tax-Exempt all-in TIC (A) – (B)</th>
<th>Actual BAB all-in TIC with Subsidy minus Counterfactual Tax-Exempt all-in RAY (A) – (C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average of all CA bond Issues (43 bond issues)</td>
<td>12,879</td>
<td>6.530%</td>
<td>4.261%</td>
<td>4.904%</td>
<td>4.608%</td>
<td>-0.64%</td>
<td>-0.35%</td>
</tr>
</tbody>
</table>

45% overstatement of BAB benefit by using TIC instead of RAY
Estimation of Neutral Subsidy Rates Based on All-in-TIC and All-in RAY: Average of all 43 Issues

<table>
<thead>
<tr>
<th></th>
<th>(A) Actual BAB all-in TIC without Subsidy</th>
<th>(B) Counterfactual Tax-Exempt all-in TIC</th>
<th>(C) Counterfactual Tax-Exempt all-in RAY</th>
<th>(D) Counterfactual Tax-Exempt all-in TIC as a Percentage of Actual BAB all-in TIC without Subsidy (B)/(A)</th>
<th>(E) Counterfactual Tax-Exempt all-in RAY as a Percentage of Actual BAB all-in TIC without Subsidy (C)/(A)</th>
<th>Neutral Subsidy Rate Between Actual BAB and Counterfactual Tax-Exempt Based on all-in TIC (100%-D)</th>
<th>Neutral Subsidy Rate Between Actual BAB and Counterfactual Tax-Exempt Based on all-in RAY (100%-E)</th>
</tr>
</thead>
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<tr>
<td>Average of all CA bond Issues (43 bond issues)</td>
<td>6.530%</td>
<td>4.904%</td>
<td>4.608%</td>
<td>75.39%</td>
<td>70.78%</td>
<td>24.61%</td>
<td>29.22%</td>
</tr>
</tbody>
</table>

19% understatement of neutral subsidy rate by using TIC instead of RAY
Federal budget sequester increased the TIC on the BABs by almost 5 bps.

Federal budget sequester reduced the benefit of issuing BABs compared to tax-exempts from 22 bps to 17 bps based on RAY.

All-in Ray produced a capital cost estimate of 45 bps lower than All-in TIC.

<table>
<thead>
<tr>
<th>Expected BAB all-in TIC with Full Subsidy</th>
<th>Expected BAB Debt Service with Full Subsidy</th>
<th>Actual BAB Debt Service with Subsidy Adjusted for Budget Sequester</th>
<th>Actual BAB Debt Service with Subsidy Adjusted for Budget Sequester</th>
<th>Counter-factual Tax-Exempt all-in TIC</th>
<th>Counter-factual Tax-Exempt all-in TIC</th>
<th>Counter-factual Tax-Exempt all-in RAY</th>
<th>Counter-factual Tax-Exempt all-in RAY</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.165%</td>
<td>462,274,515</td>
<td>4.211%</td>
<td>464,251,941</td>
<td>4.832%</td>
<td>506,017,118</td>
<td>4.385%</td>
<td>469,823,584</td>
</tr>
</tbody>
</table>

Federal budget sequester increased the TIC on the BABs by almost 5 bps.
Summary of Subsidy Rates

Comparison of Bond Subsidy Rates

- Stated Taxable BAB Subsidy Rate
- Actual Taxable BAB Subsidy Rate Adjusted for Budget Sequester
- Neutral Tax-Exempt Subsidy Rate Based on all-in-TIC
- Neutral Tax-Exempt Subsidy Rate Based on all-in-RAY
Discussion and Policy Implications

- BABs provided interest cost benefits versus tax-exempt bonds but substantially smaller as estimated in previous research.

- This benefit is even smaller when accounting for the federal budget sequester that has reduced BAB subsidies since 2013.

- 35% subsidy is overly generous, but subsidy rates in the mid 20’s will likely not be enough to induce governments to sell direct subsidy bonds; our estimate is a minimum 30% direct subsidy rate to make issuers indifferent between bond types.

- The Moving Forward Act subsidy provisions likely meet the “hurdle” subsidy rate due to generous initial subsidy rates; Previous attempts at reinstatement of BABs, such as America Fast Forward, with a 28% subsidy rate likely would not.
Discussion and Policy Implications (continued)

- The benefit of call optionality and the “burn” many S&Ls feel related to the budget sequester needs to be considered in devising any new direct subsidy program.

- More philosophically, a direct subsidy program makes it easier for federal encroachment into state and local finances and financing.
  - In a previous Congress, some senators proposed the idea of adjusting the bond subsidy rate based on use of proceeds (e.g., education could get 35%, transportation 30%, etc.).
  - The direct subsidy mechanism also allows the federal government another mechanism to retrieve owed resources from S&L governments owed to the federal government, claw back resources previously provided to S&L governments or to hold back resources “promised” to S&L governments.

- For research and practice purposes broadly speaking, using a better estimate for cost of capital make impact outcomes and practice.
Thank You

Please send additional comments and questions to:

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