



Guiding Portfolio Strategies

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An Analysis of Build America Bonds

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Abstract

As the title suggests, this paper is an analysis of Build America Bonds (BABs). It describes BABs from the perspectives of issuers, investors, taxpayers and policy makers. The paper compares and contrasts BABs with traditional tax-exempt financing and with corporate bonds. Factors that affect issuers' decisions are discussed. Also, the interactions between the BAB market and the traditional tax-exempt market are given a theoretical overview through the lens of microeconomics.

Executive Summary

Build America Bonds (BAB) were created in the American Recovery and Reinvestment Act 2009 (the Recovery Act) to make it cheaper for municipalities to issue debt, which would theoretically fund capital projects that would theoretically result in job creation and economic stimulus.

Differences between BABs and Traditional Tax-Exempt Bonds

- Differences between the two types of municipal bonds are **not** attributable to the fact that one subsidy is an *implicit subsidy* “paid” to the *investor* and the other is an *explicit subsidy* paid to the *issuer*.
 - Some of the differences between BABs and traditional tax-exempts are attributable to differences in the investors in either market and to differences in the subsidy rates of the two.
 - The differences in the markets in which the two investor bases operate result in differences in how each market’s subsidy is shared between issuer and investor.
 - *BAB issuers* appear to receive 100% of the *benefits* of the BAB subsidy; whereas issuers of tax-exempt bonds appear to share that implicit subsidy with investors.
- Investor’s perspective
 - BABs have experienced higher yields over comparably rated corporate bonds.
 - Whether or not to buy BABs or traditional tax-exempt depends on the investor’s marginal tax rate that gets applied to the stream of interest income.
- Issuer’s perspective
 - When compared to issuing traditional tax-exempt bonds, BABs tend to be more attractive at higher yields – typically when durations are longer and credit quality is weaker.
 - BABs’ longer durations (relative to tax-exempts’) may be associated with how the implicit subsidy of tax-exemption is shared between issuer and investor. In the tax-exempt market, the further out the curve, the greater the portion of the implicit subsidy that benefits investors. Thus, from an issuer’s perspective, tax-exempt debt would tend to be more attractive for shorter durations and less attractive for longer durations. The result is increased attractiveness of BABs at longer durations.

Cost of BABs

- Determining the cost of BABs is not as simple as multiplying the subsidy rate by the coupons. To arrive at the true cost, the BABs' federal *subsidy expenditures* have to be compared with the *implicit subsidy costs* (forgone tax revenue) that *would have* been realized in the absence of BABs. Estimating that counter-factual is not simple.
 - One would have to estimate how much tax-exempt debt *would have been* issued in the absence of BABs and then compare the subsidy costs under those two scenarios.
 - BABs' 35% *sounds* more expensive than our assumed implicit subsidy rate of 30% of the tax-exempt market., and straightforward arithmetic confirms it is more expensive *per dollar of coupon payment*.
 - But in the absence of BABs, in an effort to provide a *given* level of economic stimulus via a *given* dollar amount of issuance in *only* the tax-exempt market, a larger subsidy than currently offered in the BAB market would be needed because the tax-exempt market's implicit subsidy is *shared* between issuer and investor. Thus in order to spur a *certain level* of borrowing in the *tax-exempt* market, the required *implicit subsidy* may cost more (in foregone revenues) than the explicit BAB subsidy in the taxable market.

Credit Considerations

- From a *static* creditworthiness perspective, there are similarities and differences between BABs and tax-exempt munis. Differences are derived primarily from concerns over timing and holding back of payments.
- A more *dynamic* credit concern, however, is that the lower cost of debt will encourage issuers to become more leveraged. BABs' ultimate affect on credit worthiness will be determined by how the increased amount of debt compares with lower costs of that debt.

Winners and Losers

- *Winners*
 - **BAB issuers** are afforded a lower cost on their longer maturity debt.
 - **New issuers of tax-exempt debt** benefit from a lower cost of debt due to a smaller pool of new issues being chased by the same pool of investors in traditional tax-exempt debt.

- **Ex ante investors in traditional tax-exempt debt** see an appreciation in the value of their existing holdings as tax-exempts' yields are driven lower.
- **Losers**
 - **Ex post investors in traditional tax-exempt munis** see a decline in yields from where they would have been, absent BABs, as that investor base's money chases fewer new offerings.
- **Unchanged or Uncertain**
 - Although it might seem counterintuitive, the well-being of **investors in taxable munis** is **unchanged** under BABs— even with the subsidy. The *producer surplus* of those suppliers of capital is not altered by the subsidy, and therefore they are no better or worse off.
 - The question as to whether **taxpayers** are winners or losers is **trickier**. With BABs, there is the potential for a double-whammy: greater subsidy cost to the taxpayer *per dollar* of BAB issued (than there would be per dollar of tax-exempt debt) **and** more debt being issued. But any increase in tax burden to pay for the BAB subsidies should be analyzed on two fronts: **efficiency** and **cost-effectiveness**. In addition, although typically a matter for normative analysis outside the ken of economics, the question of **equity** (i.e., fairness) can also be discussed **and** tied back into cost-effectiveness.
 - Whether or not that larger tax bill is **efficient** depends on one's assessment of the stimulative effect of the increased issuance and whether or not the additional spending's benefits outweigh the costs. Generally marginal costs outweigh marginal benefits when a subsidy pushes an activity beyond an equilibrium level of output when all social costs and benefits are taken into account.
 - The BABs market may provide a more **cost-effective** way to funnel a subsidy to the issuer than by the traditional implicit subsidy of tax-exemption. In other words, when compared to the traditional tax-exempt market, the BAB market might provide a lower cost way to increase municipal bond issuance from what it would have been. The reason for that is the taxable market's supply curve is flatter (i.e., more elastic) than that of the tax-exempt market, and therefore the amount of borrowing is more sensitive to a change in the subsidy rate.

- Traditional tax-exempts “leak” some of the implicit subsidy to investors. In the BABs market none of the subsidy “leaks” to investors; thus 100% of the subsidy’s benefits are garnered by BAB issuers.
- BABs are not without their own form of “leakage,” however. As alluded to, when a subsidy causes too much of a good to be supplied, that overproduction (in this case too much lending and borrowing in the taxable municipal bond market) results in dead weight loss.
- The question of *equity* can be considered on two fronts: equity and cost-effectiveness.
 - Equity
 - Taxpayers of high-issuance states/localities/districts/authorities see their BABs subsidized at the Federal level. Tax receipts to pay those subsidies come from all taxpayers, even ones that live in areas of little or no BAB issuance.
 - Taken in isolation, the question as to whether that arrangement is equitable is worthy of consideration and likely to garner a range of opinions. And not to dismiss the important behavioral and moral issues the question raises, if it should be addressed in the case of BABs, it should be addressed in other instances, too, such as crop subsidies, federal spending on local transportation projects, and even elsewhere in municipal finance. The implicit subsidy of tax-exempt debt results in a lower cost of capital and higher after-tax returns for local issuers and investors, respectively. Those foregone tax revenues at the Federal level means a shortfall has to be plugged (either through higher taxes or less spending) by imparting a burden on all taxpayers, even ones in low-issuance areas.
 - The apparent *cost-effectiveness* of BABs may ameliorate some of the cross-subsidy hardship, but it does not eliminate it.

Likely Extension of BABs Program

- Decisions on an extended BAB subsidy rate will have implications for the duration, credit quality, and quantity of BAB issuance.

Contents

	Section Title	Key Points
	Executive Summary	
I	Background on the BAB Program	<ul style="list-style-type: none"> • A primary goal of the BABs program was to provide a fiscal stimulus and to reduce cost of debt in the tax-exempt market. • BABs differ from traditional tax-exempt in that BABs' interest payments are taxable and the federal government pays a subsidy to the BAB's issuer in the amount of 35% of the coupon payment. In this paper, we assume that the traditional tax-exempt bonds bear an <i>implicit</i> subsidy of 30%. • As of July 15, 2010, the program is scheduled to terminate at the end of calendar year 2010, but there is a House bill and an Administration proposal to extend the program.
II	Yields and Spreads: BABs versus Tax-Exempt Munis	Apples-to-apples comparisons of BAB yields to tax-exempt yields are complicated by having to hold everything constant (maturity, size, call provisions, etc.) in order to ascertain the extent to which BABs have higher yields than their tax-exempt counterparts. We looked at bonds issued by three issuers: the State of California, by the New Jersey Turnpike Authority, and by the DC Metro.
III	BABs' Lower Cost to Issuers Versus Tax-exempts – Anecdotal Evidence	With the 35% locked in for the life of the bonds, in the small sample of BABs we examined, issuers will save 13%-22% of principal over the life of the bonds compared to what the costs might have been in the tax-exempt market. BABs' subsidized net yields are 9% to 22% below tax-exempt yield levels.
IV	BABs' Longer Durations	<ul style="list-style-type: none"> • To date larger issuers have tended to go with tax-exempt debt at the shorter end of the curve and BABs at the longer end. • BABs have offered the issuer the greater advantage at the long end of the yield curve for several of reasons. <ul style="list-style-type: none"> ○ The arithmetic of upward sloping yield curves ○ The issuer's share of the traditional implicit subsidy decreases as years to maturity increase. ○ BAB proceeds must be used to fund new capital projects (as opposed to refunding existing debt), and long-lasting capital projects tend to be better suited to debt of longer durations. • Both an increase in marginal income tax rates and a decrease in the BAB subsidy rate would tend to elongate the maturity beyond which BABs are attractive to issuers.
V	Break-even Marginal Tax Rates: BABs vs. Tax-Exempts	The most obvious difference between BABs and traditional tax-exempts is that BABs are taxable at the federal level, and tax-exempts are not. Therefore, a first consideration for investors might be how their tax-brackets compare to various "break-even" marginal tax rates.
VI	BABs vs. Corporate Bonds: Risks, Rewards, and Impacts of a Global rating Scale	<ul style="list-style-type: none"> • Based on limited historical data, BABs have been described as less risky and higher yielding than their corporate bond counterparts. • BABs have provided higher yields than comparably rated corporates. • That finding may become more pronounced as rating agencies' move to global ratings scales.
VII	Evolution of BABs	After the large initial deals in April 2009, coupon sizes, yields, and spreads have <i>generally</i> trended downward. Concerns have been raised over whether BAB subsidies flow directly to trustees and over the potential for subsidy payments to be held back.

VIII	Graphical Representations of Two Muni Markets: Tax-exempt versus Taxable	<ul style="list-style-type: none"> • Some themes from microeconomics can be used to understand the two types of subsidized muni debt, how the subsidies affect issuers and investors, and how the taxable and tax-exempt markets affect each other. • The graphical representation of the taxable muni market will have one subtle but important difference between it and a graphical representation of the tax-exempt market. Like the tax-exempt market, the demand curve will be downward sloping. Unlike the tax-exempt market, however, the taxable market's supply curve will be assumed to be horizontal.
IX	BABs Versus Tax-Exempt: Issuer's Perspective	<ul style="list-style-type: none"> • The taxable market's horizontal supply curve means that the subsidy's "wedge" imparts 100% of the benefits on the issuers in the form of lower cost of debt. In contrast, the tax-exempt market's implicit subsidy is shared between issuer and investor. • As issuers have shifted to the taxable market, their demand for tax-exempt capital has decreased. The result has been less issuance of and lower yields on tax-exempt debt than otherwise would have occurred. • "Offset" subsidy payments have occurred at the state level (Maryland) and at the local level (Austin, TX). Offsets have discouraged South Carolina and Florida from issuing BABs; they opted for issuance of tax-exempt debt instead.
X	Credit Considerations	<ul style="list-style-type: none"> • From a <i>static</i> creditworthiness perspective, there are similarities and differences between BABs and tax-exempt munis. Differences are derived primarily from concerns over timing and holding back of payments. • A more <i>dynamic</i> credit concern, however, is that the lower cost of debt will encourage issuers to become more leveraged. BABs' ultimate affect on credit worthiness will be determined by how the increased amount of debt compares with lower costs of that debt.
XI	Impact of top marginal tax-rate reverting to 39.6%: Tax-exempt Market Versus Taxable Market	<ul style="list-style-type: none"> • Absent BABs, the result of higher marginal tax rates would tend to increase tax-exempt issuance and lower tax-exempt yields from where they otherwise would have been. • With BABs <i>and</i> the tax increase, it is would be an empirical question as to how the quantity of tax-exempt debt would be affected. Theory alone cannot tell us whether the reduced demand by issuers for tax-exempts would affect issuance more or less than investors' increased willingness to supply tax-exempt capital. • With a tax increase, BAB yields would not be affected, but the quantity of BABs issued would decline from where it would have been. • Spreads of BABs over tax-exempts would increase. • The break-even marginal tax rate for investing in the tax-exempt market would increase.
XII	Cost of 2009-2010 BABs	<ul style="list-style-type: none"> • The true cost of the BABs subsidy comes from two sources: 1) the more generous subsidy and 2) any additional subsidized debt that stems from that generosity. The relevant cost that should be considered is the incremental cost of the explicit BABs subsidy over cost of the implicit tax-exemption subsidy of what would have occurred in the absence of BABs. • Maybe there is an important perceived difference between the <i>foregone tax revenue</i> of the implicit subsidy of the tax-exempt market and the <i>line-item expenditure</i> of the explicit BABs subsidy.
XIII	Winners and Losers	<ul style="list-style-type: none"> • Winners: BABs issuers, issuers of tax-exempt debt, and ex ante investors in traditional tax-exempt debt. • Losers: ex post investors in traditional tax-exempt munis. • Unchanged: investors in taxable munis • Uncertain: taxpayers
XIV	Outlook for the BABs Program Past Sunset of 12/31/10	The program will likely be extended. It is not known yet what the subsidy rate would be or if the program would be expanded to 501(c)(3) organizations or to refundings.

I. Background on the BAB Program

Build America Bonds (BAB) were created in the American Recovery and Reinvestment Act 2009 (the Recovery Act) to make it cheaper for municipalities to issue debt that would theoretically fund capital projects that would generate jobs. In other words, a primary goal of the BABs program was to provide a fiscal stimulus. BABs differ from traditional tax-exempt and taxable municipal bonds in that interest payments are taxable and the federal government pays a subsidy to the issuer in the amount of 35% of the coupon payment. In theory this should, and in practice, this does allow issuers access to low cost debt while still providing attractive yields to investors. BABs also increase the investor base. As BABs are taxable, they attract more investors from lower tax brackets than traditional tax-exempt munis and also attract investors such as pension funds, endowments and foreign investors who as a result of their tax-exempt status were generally not a part of the traditional municipal market.

BABs can be issued by any issuer eligible to issue traditional tax-exempt debt as long as it is for governmental purposes and not private activity. The other stipulation is that *direct payment* BABs cannot be used for refunding; they must be used to fund capital projects.

The program was set up to allow BAB issuance through 2010. There is no limit to the size of the program. As of July 6, 2010, approximately \$115.7 billion worth of BABs have been issued since their inception in April 2009. The program is scheduled to terminate at the end of calendar year 2010. The House of Representatives passed a bill—one similar to one proposed in the Senate—to extend the program. The Administration has also proposed to extend the program although under slightly different terms. As of July 6, 2010, proposals for the extension of the BAB program are stalled in Congress.

There are two types of Build America Bonds: direct payment and tax credit. In a direct payment BAB the federal government sends 35% of the coupon payment to the issuer. The fact that the issuer receives the subsidy payment does not necessarily mean that the issuer benefits by the full 35% and that the investor does not benefit. Instead, relative own-price elasticities of supply and demand for BAB credit determine who benefits from the BABs subsidy: the issuer (in the form of a lower cost of debt) or the investor (in the form of higher yields). As of July 6, 2010, all 13,036 Build America Bond CUSIPs have been direct payment to the issuer. For that reason, this examination focuses on direct payment BABs.

The most obvious difference between BABs and the traditional tax-exempt munis is the nature of the subsidy. Both types of debt are subsidized. In the case of direct payment BABs, issuers receive a payment from the federal government equal to 35% of the coupon payment.

With the traditional tax-exempts, the debt is *implicitly* subsidized by the tax exemption. The size of that subsidy is equal to the average marginal tax rate of the tax-exempt bond investors (weighted by dollar of investment) and most likely falls somewhere among the top marginal tax rate and the *break-even* marginal tax rate.¹ That average was estimated to be 27% in 2004.² In this paper, on the eve of increases in the top marginal tax rates, we will assume³ the weighted-average marginal tax rate of investors in tax-exempt munis to be a slightly higher 30%.⁴

As will be discussed later, BAB issuers receive 100% of the benefits of the BAB subsidy; whereas in the tax-exempt market, issuers and investors share the subsidy.

¹ The concept of a break-even marginal tax rate is discussed in Section V, "Break-even Marginal Tax Rates: BABs vs. Tax-Exempts."

² Poterba, James and Arturo Ramirez Verdugo. 2008. "Portfolio Substitution and the Revenue Cost of Exempting State and Local Government Interest Payments from Federal Income Tax," NBER Working Paper No. 14439.

³ And by *assume*, we mean *gestimate*. Any divergence from the true (and unknown) rate would be reflected in the size of the benefit that flows to the investor (see Figure 8 in Section IV).

⁴ One could argue that the implicit subsidy is less than the average marginal income tax rate of investors in tax-exempt munis because without the tax exemption, those investors might not allocate those dollars 100% into investments taxed at the highest rates. They might stay invested in the munis or shift to corporate bonds – where they would be taxed at our assumed 30% rate. At the other extreme, they might invest in 100% in growth stocks that pay no dividend and therefore will be taxed at a 20% rate in the future. If one assumes a blended, rebalanced portfolio, with 50% in bonds, 25% in dividend-paying stocks, and 25% in growth stocks, one comes up with an investment income tax rate of 27.5% ($0.5 \times 30\% + 0.25 \times 30\% + 0.25 \times 20\%$). And that 27.5% assumes the higher amount of taxable income has not resulted in any bracket creep. Assuming a modicum of income taxed in higher brackets, the static 27.5% may bump up closer to the 30% used throughout this paper.

II. Yields and Spreads: BABs versus Tax-Exempt Munis

When comparing specific Build America Bonds with traditional tax-exempt munis, ideally the *only* difference between the two bonds would be that one is a BAB and the other is a traditional tax-exempt bond. From that standpoint, the bonds would be from a single issue that includes both a BAB series and a tax-exempt series that are similarly sized and have the same maturity date. For a perfect apples-to-apples comparison, the bonds would have the same call options as well. One example of an issuer with CUSIPs suited for comparison is the Washington, DC Metro Transit Authority (DC Metro).

A good bond issue for comparison is the DC Metro bond issue of June 9, 2009 (see Figure 1). On June 9, 2009, the DC Metro issued a tax-exempt series that matures in 2032 and a BAB series that matures in 2034. Despite this difference in maturity dates, the BAB and tax-exempt bond have identical dates of issue, credit ratings, and call options making them good candidates for a BAB to tax-exempt comparison. The credit worthiness and drivers are similar for both types of bonds. Although the maturity dates are slightly different, since our options for comparison between BABs and tax-exempt bonds are limited, the other attributes held in common provide opportunity to examine the BAB versus tax-exempt.

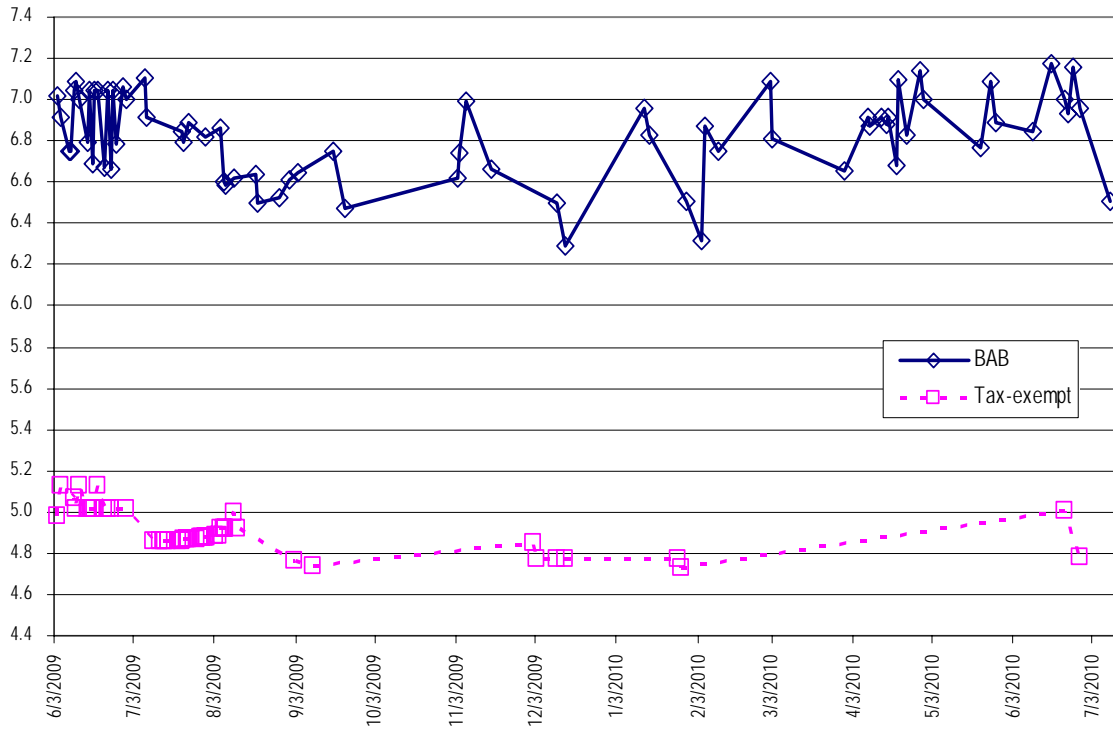
Figures 2 and 3 illustrate historical yields and spreads.

Figure 1. Recent Washington DC Metro Transit Authority Bonds: BAB vs. Tax-exempt

	Build America Bond (Series B)	Tax-Exempt Bond (Series A)
Issuing Agency:	Washington DC Metro Transit Authority	Washington DC Metro Transit Authority
CUSIP:	938782CW7	938782EB1
Bond Type:	Build America Bond; Fed taxable	Federal and State Tax-Exempt
Call Option:	Continuously callable after July 1, 2019	Continuously callable after July 1, 2019
Ratings (at time of issuance / 6-8-10):		
Moody's	A1 / Aa3	A1 / Aa3
S&P	A / A	A / A
Coupon:	7.000	5.125
Maturity:	7/1/2034	7/1/2032
Maturity Size:	\$55,000,000	\$24,960,000
Issued:	6/9/2009	6/9/2009

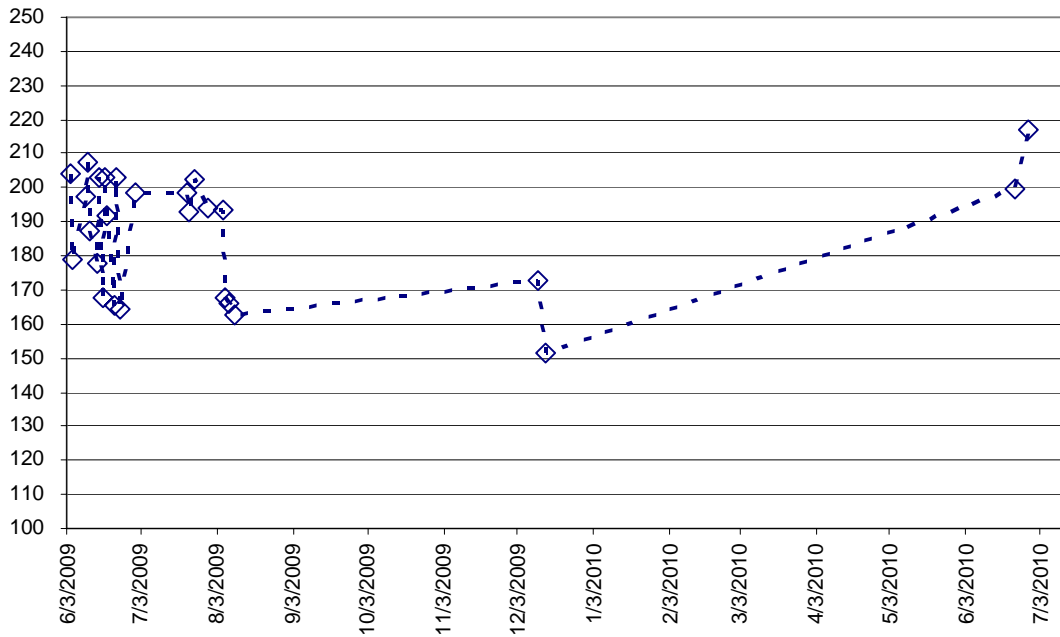
Sources: Bloomberg and MSRB.

Figure 2. DC Metro Pre-tax Bond Yields, 21 Apr 09 – 12 Jul 10



Sources: Bloomberg and MSRB.

Figure 3. DC Metro BAB to Tax-exempt Spread, 22 Apr 09 – 12 Jul 10 (basis points)



Sources: Bloomberg and MSRB.

III. BABs' Lower Cost to Issuers versus Tax-exempts - Anecdotal Evidence

With the 35% explicit subsidy locked in for the life of the bonds, the DC Metro will receive subsidy payments over the life of the bonds that total 15% of the principal amount (see Figure 4). Other issuers examined will benefit by 13%-22% of principal.⁵

Figure 4. Issuers' Savings by Issuing BABs Instead of Tax-exempt (dollar amounts in millions)

Issuer	Term (Years)	Savings			Principal
		Per Year	Over Bond's Term	As % of Principal	
DC Metro	25.00	\$0.32	\$8.00	15%	\$55

Sources: Bloomberg and McDonnell.

But those savings (15% for the DC Metro and 13%-22% for others) are not the best measure because it is taken in isolation, without regard to what costs would have been in the tax-exempt market. With the BABs, the DC Metro pays a gross coupon yield of 7.0% annually on the \$55 million of principal. This results in \$3,850,000 of coupon payments every year. *Net* of the BAB subsidy the state pays 4.55% annually, or \$2,502,500 of net coupon payments each year. The tax-exempt bond pays 5.125% annually. With this rate applied to the same principal as the BAB, the state would be spending \$2,818,750 on interest payments every year. So the BAB save this issuer \$316,250 annually.

Looking at it another way, DC Metro's tax-exempt GOs bore a coupon of 5.125%. BABs, 7.0%. The 35% explicit BABs subsidy reduces the State's borrowing cost to a net 4.55%, which is 11.2% below the borrowing costs of the implicitly subsidized tax-exempt debt.

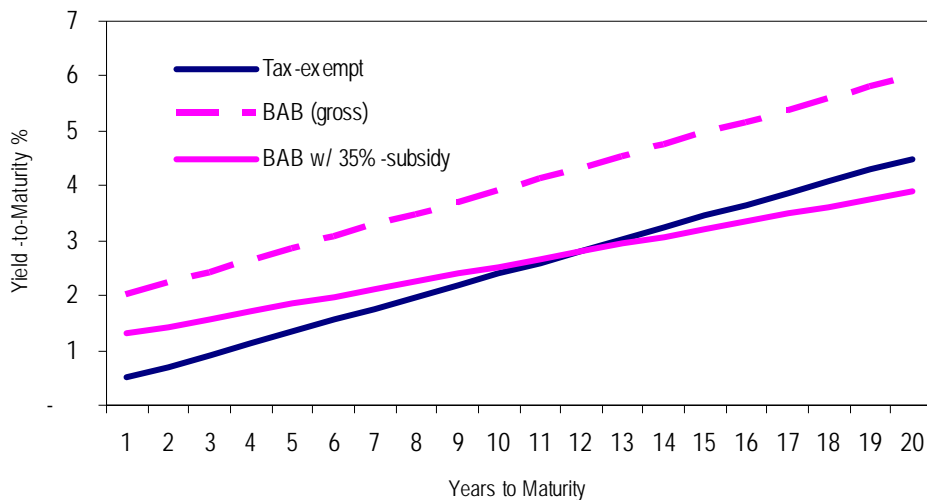
⁵ Results have been summarized.

IV. BABs' Longer Durations

To date larger issuers have tended to go with tax-exempt debt at the shorter end of the curve and BABs at the longer end. BABs have offered the issuer the greater advantage at the long end of the yield curve for several of reasons.

The first reason is simply how the math works out in the presence of an upward-sloping yield curve. An issuer will observe a “cross-over” point somewhere along the curve if the spread of the BABs over the tax-exempt is fairly constant over the entire yield curve. The cross-over point occurs because the 35%-subsidy with an upward sloping yield curve becomes 35% of an ever increasing gross yield which will at some point overtake the constant spread (see Figure 5). By that logic, debt to be issued with maturities short of the crossover point ought to be issued as tax-exempt series. Debt to be issued with maturities out past the cross-over point ought to be issued as BABs (represented in the yellow-shaded region of Figure 5).

Figure 5. Costs of Hypothetical AA-rated GO Debt: Tax-exempt versus Gross and Net BAB, 1- to 20-year maturities

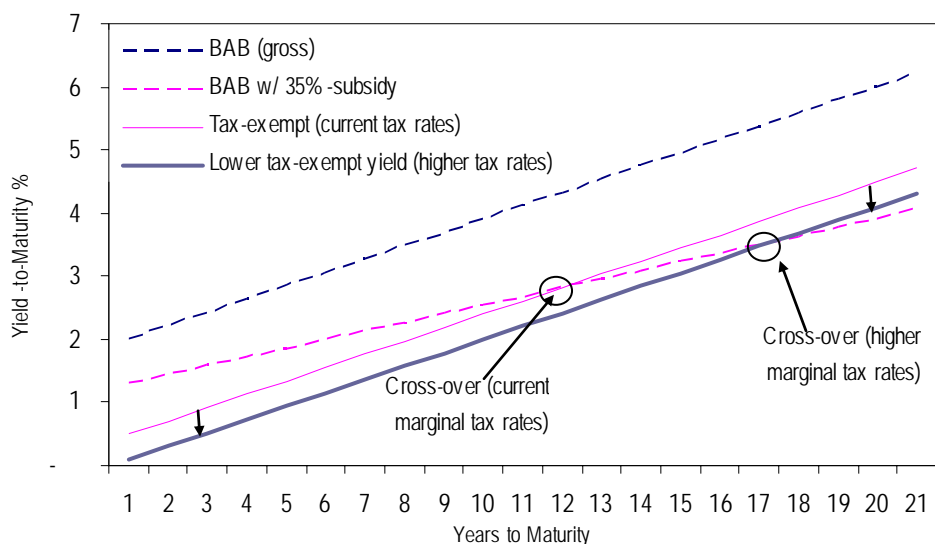


Source: McDonnell.

This construction can be applied to changes in the slope of the yield curve, changes in the top marginal tax rates, and changes in the BAB subsidy rate. A steeper yield would see the cross-over point reduced in number of years. A flatter yield curve would take more years of duration to encourage issuers to issue BABs versus tax-exempt debt.

Higher top tax rates, which are widely expected, would also boost the cross-over point to a longer duration.⁶ As discussed below, higher marginal tax rates would shift some investment into tax-exempt debt. That would have the affect of reducing tax-exempt yields. Lower tax-exempt yields require more years of duration for the BAB subsidy to generate benefits large enough to incent issuers to issue BABs rather than tax-exempts (see Figure 6).

Figure 6. Hypothetical Cross-over Points: Current Tax Rates versus Higher Tax Rates, 1- to 21-year maturities

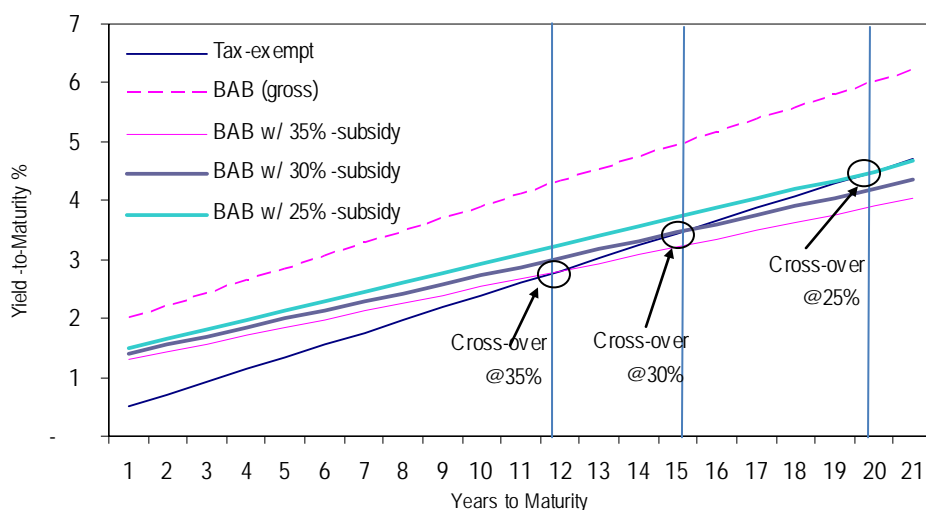


Source: McDonnell.

Any adjustment to the BABs subsidy rate has implications for where the cross-over point occurs as well. A decline in the subsidy rate will result not only in less BAB issuance at each maturity date beyond the cross-over point but also in fewer maturity dates beyond the cross-over point (see Figure 7).

⁶ Implications of higher top marginal tax rates are discussed later in this paper.

Figure 7. Hypothetical Cross-over Points of Selected BAB Subsidy Rates, 1- to 21-year maturities



Source: McDonnell.

A second, less-noticed reason as to why issuers have favored BABs at the long end and tax-exempts at the short-end of the curve has to do with how the *implicit subsidy* of the tax exemption is *shared* between the issuer and investor. Historically and recently, the *issuer's share* of the implicit subsidy associated with traditional tax-exempt debt has *decreased* as the *term increased* (see Figure 8). Indeed, from 1991 to 2007, assuming an implicit subsidy rate of 30% (a guesstimate of the average marginal tax rate of investors in tax-exempt munis), for a five-year maturity the issuer benefitted by absorbing 80% of the subsidy (reducing borrowing costs by 131 basis points or by about 24%). That stands in contrast to debt with 30-year maturities where the issuer captured just 42% of the subsidy (reducing borrowing costs by 76 basis points or about 13% of borrowing costs). As Figure 8 illustrates, this condition has also held true more recently. Microeconomic theory tells us that the reason for changes in that issuer/investor split of the subsidy as the maturity changes is that the relative elasticities of own-price supply and demand vary with duration. That condition is likely due to a more limited investor base for long-duration tax-exempt debt than for shorter duration debt.⁷

That second reason is related to fact that when compared to the tax-exempt market, the BAB investor base is larger and tends to be more interested in the longer durations. The result is that issuers face lower *net* costs of debt at the longer end of the curve for BABs than for the traditional tax-exempts.

⁷ Households and individuals are generally more interested in short- and medium-term bonds than in bonds with 20-to-30 years until maturity.

Figure 8. Yields and Subsidies on Triple-A Securities with 2-, 5-, 10- and 30-year Maturities

	US Treas Yld	Tax Exempt AAA GO	Total Implicit Subsidy	Percentage Decrease in Cost of Debt to Issuer	Investor's Benefit from Subsidy	Issuer's Share of the 30% Subsidy
3/28/91-12/31/07						
2yr	4.63%	3.37%	30%	27%	3%	91%
5yr	5.19%	3.95%	30%	24%	6%	80%
10yr	5.59%	4.53%	30%	19%	11%	63%
30yr	5.99%	5.23%	30%	13%	17%	42%
7/15/09-7/14/10						
2yr	0.90%	0.69%	30%	23%	7%	78%
5yr	2.33%	1.73%	30%	26%	4%	86%
10yr	3.51%	3.17%	30%	10%	20%	32%
30yr	4.40%	4.50%	30%	-2%	32%	-8%

Sources: Bloomberg and McDonnell.

A third reason for BABs' longer maturities is that by law BAB proceeds must be used to fund new capital projects (as opposed to refunding existing debt), and long-lasting capital projects tend to be better suited to debt of longer durations.

V. Break-even Marginal Tax Rates: BABs vs. Tax-Exempts

The most obvious difference between BABs and traditional tax-exempts is that BABs are taxable at the federal level, and tax-exempts are not. Therefore, a first consideration for investors might be how their tax-brackets compare to various “break-even” marginal tax rates.

BABs’ after-tax returns depend on investors’ tax brackets, and therefore it would be expected that most investment in BABs would come from investors who pay little or no tax on investment income. Federal Reserve Flow of Funds data indicate that in 2009 property-casualty insurance companies, foreign investors and nonfinancial corporate business invested approximately \$30 billion, \$20 billion and \$12 billion, respectively. That amounts to \$62 billion of the \$64 billion issued. Somewhat surprising was the fact that public retirement funds did not budge from their holdings of \$1.1 billion in municipal bonds. Perhaps this is more indicative of 2009’s financial strains that may have taken a toll on pension funding than the appeal of BABs to that investor group.

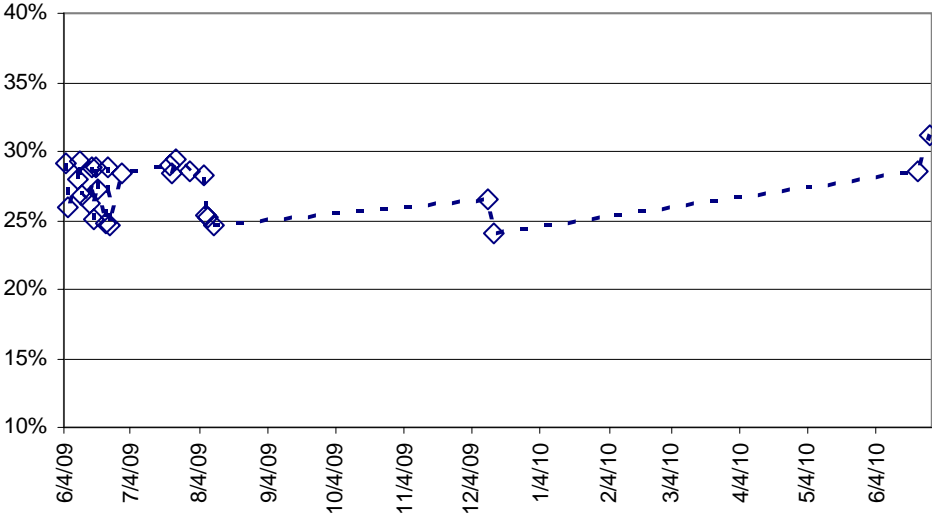
The federal government’s stated expectation is that the average marginal tax rate of investors in BABs will be around 25%, which will reduce the net cost of BABs. We think 25% seems very high because it is not much lower than the Treasury’s cited estimate of 27% for *tax-exempt* munis.

For investors who do pay taxes, marginal tax rates are likely to play a dominant role in deciding between BABs and traditional tax-exempt munis. The break-even rate describes the marginal tax rate *above which* it makes sense to invest in tax-exempt investments and *below which* the slimmer tax advantage does not compensate the investor for the lower yielding tax-exempt bonds. It is calculated as follows:

$$BreakEvenRate = 1 - \frac{TaxExemptYield}{BABYield}$$

The DC Metro’s break-even points have been relatively stable, generally hovering around 25% (see Figure 9).

Figure 9. Break-even Marginal Tax Rates for the DC Metro, 4 Jun 09 – 28 Jun 10



VI. BABs vs. Corporate Bonds: Risks, Rewards and Impacts of a Global Rating Scale

Based on limited historical data, BABs have been described as less risky and higher yielding than their corporate bond counterparts. Data support that characterization as BABs have provided higher yields than comparably rated corporates.

Risks

Although BABs have not been around for long enough to compare effectively their default risk with that of corporate bonds, there have been analyses that compare municipal bonds as a whole to corporate bonds. A Moody's reports indicates that over the forty-year period from 1970 to 2009 municipal bonds have significantly lower default rates than similarly rated corporate bonds.⁸ Furthermore, governmental municipal bonds that do default have a considerably higher recovery rate than defaulted corporate bonds.

According to that study, investment grade munis have averaged a five-year cumulative default rate of 0.03%. Over the same forty-year period, investment grade corporate bonds averaged 0.97%.

The Moody's study also finds that recovery rates are higher for municipal bonds than for senior unsecured corporate bonds. Thirty days after an event of default, defaulted municipal bonds averaged a price of \$60 per \$100 of par value. Corporates averaged \$38.

Despite what the historical data show, the past cannot be considered prologue. There are imminent risks for municipal issuers that need to be considered such as aging infrastructure; burdensome labor contracts; extensive unfunded pension liabilities; OPEB; and new, complex financial instruments. Furthermore, recent studies cover a period that does not extend back to the Great Depression when, in the early 1930s, approximately 15% of municipal debt outstanding went into default.⁹

⁸ *U.S. Municipal Bond Defaults and Recoveries, 1970-2009*. Moody's Investors Service, February 2010.

⁹ Ciccarone, Richard A. "Been There, Done That: Municipal Bond Ratings and the Move to Restructure the Rating Scale." *McDonnell Investments Fixed Income Insight* (14 Apr. 2008). Print. This is available from McDonnell Investments' website from *Municipal Default History*, posted 4-17-08.

Rewards

The lower perceived default risk versus their corporate counterparts would generally result in lower expected yields on taxable municipal bonds. However, since their inception in April 2009, BABs have consistently offered investors higher yields than similarly rated corporate bonds. On one hand, historical evidence of lower rates of muni defaults than similarly rated corporates may make BABs' yield advantage seem perplexing. On the other hand, perhaps the market is pricing into BABs' yields a liquidity premium, a newness premium, the lower frequency of financial disclosures than corporates, an "orphan" risk (as there is uncertainty over an extension of BABs), or the risks mentioned above (infrastructure, OPEB, etc).

Just as ideal comparisons of Build America Bonds to tax-exempts would have the same or similar issue date, maturity date, credit ratings, call options and issue size, one should try to hold as much constant when comparing BABs with corporates. This is easier said than done, particularly since most corporate bond issues are much larger than Build America Bonds. Despite that, there are some bond issues that do provide adequate comparisons. One BAB cusip and one corporate cusip were selected in each of three ratings categories in order to get a sense of spreads (see Figure 10).¹⁰ When comparing yields it is important to be aware that most BABs are *tax-exempt at the state level* although not at the federal level. Corporate bonds are both federally and state taxable. As a result, BABs' higher yields when considered on an after-tax basis, may be understated.

Figure 10. Spreads of Selected BABs over Similarly Rate Corporates by Rating Category, 2009 BAB issuance date – 15 Jul 10 (basis points)

	2009 (since BAB issuance)	2010 YTD
AAA	17	21
AA	105	94
A	29	56
Average	50	57

Sources: Bloomberg, MSRB and McDonnell.

¹⁰For illustrative purposes only, the CUSIPs and issuers have been intentionally withheld.

Impact of Shift to Global Ratings Scales

The finding of BABs yielding more than corporates may become more pronounced as rating agencies' move to their global ratings scales. Spreads of BABs over corporates could increase if the new rating scale does not affect BAB yields (i.e., if the market ignores the change in scale). For example, a BAB currently rated double-A yielding 6.4% could be recalibrated to become a triple-A-rated BAB yielding 6.4%.

Even if the yield on a double-A-rated BAB falls upon being rescaled to a triple-A-rated BAB, the spread widening mentioned in the previous paragraph may still occur. As with Akerlof's lemons, if investors cannot discern differences in credit quality of the "old" muni-scale triple-A BABs and the newly rescaled triple-A BABs, then one yield level would apply to all triple-A BABs (holding maturities and all else constant).¹¹ The yields on the newly rescaled triple-A bonds would decline to that average from their double-A level, but the yields of the "old" muni-scale triple-A bonds would increase due to investors not distinguishing between a "good" triple-A and a "lemon" of a triple-A. Thus, the average yield on triple-A BABs would increase, and that would result in a wider spread of BABs over like-rated corporates.

¹¹ "The Market for Lemons: Quality Uncertainty and the Market Mechanism" is a 1970 paper by the economist George Akerlof. It discusses information asymmetry, which occurs when the seller knows more about a product (cars) than the buyer. There are good used cars and defective used cars ("lemons"), but because of asymmetric information about the car (the seller knows much more about the problems of the car than the buyer), the buyer of a car does not know beforehand whether it is a good car or a lemon. So the buyer's best guess for a given car is that the car is of average quality; accordingly, he will be willing to pay for it only the price of a car of known average quality.

VII. Evolution of BABs

Build America Bonds and the Build America Bond market have evolved significantly since the first BABs were issued in mid-April. In April 2009, both issuers and investors had concerns about how the market would treat BABs and about the security of the 35% federal subsidy payments. That resulted in a “newness” premium that was reflected in higher coupon yields and spreads than are now available (see Figure 11). Since BABs’ start, CUSIP sizes, yields, and spreads have tended to decline as BABs have become more prevalent. In the relevant months of 2009, BABs accounted for 20% of issuance. Year-to-date in 2010, they have accounted for 26% of issuance.

Figure 11. Selected BAB Data by Month, Apr 09-Jun 10 (dollar amounts in thousands)

Month	BAB Issuance				BABs vs 30-yr Treas			
	# of CUSIPs	Amount Issued	Average Size of CUSIP	Total Muni Issuance	BABs % of Total Muni Issuance	BAB Wtd Avg Cpn %	30-yr Treas Yld	BAB Cpn spread over Treas (bps)
Apr-09	110	\$7,632,470	\$69,386	\$36,843,900	21%	7.39%	3.83%	356
May-09	364	\$2,699,135	\$7,415	\$30,407,500	9%	5.65%	4.23%	142
Jun-09	780	\$4,981,105	\$6,386	\$43,862,300	11%	6.24%	4.51%	172
Jul-09	684	\$3,531,996	\$5,164	\$26,126,500	14%	6.37%	4.41%	196
Aug-09	826	\$9,631,804	\$11,661	\$36,373,700	26%	6.01%	4.37%	164
Sep-09	874	\$6,795,420	\$7,775	\$29,954,400	23%	5.62%	4.19%	144
Oct-09	866	\$12,943,771	\$14,947	\$46,370,900	28%	5.96%	4.19%	177
Nov-09	1,016	\$7,538,590	\$7,420	\$38,288,900	20%	5.84%	4.32%	152
Dec-09	843	\$8,051,140	\$9,551	\$36,110,100	22%	5.88%	4.50%	138
Jan-10	969	\$7,078,075	\$7,305	\$32,585,600	22%	5.85%	4.60%	125
Feb-10	943	\$7,242,606	\$7,680	\$26,936,800	27%	5.85%	4.62%	123
Mar-10	1,372	\$12,605,980	\$9,188	\$44,094,800	29%	6.33%	4.65%	168
Apr-10	1,189	\$6,430,960	\$5,409	\$27,104,400	24%	5.90%	4.69%	121
May-10	996	\$9,226,914	\$9,264	\$38,259,900	24%	5.13%	4.28%	84
Jun-10	1,192	\$9,277,165	\$7,783	\$30,511,300	30%	5.91%	4.13%	178
2009								
April-December	6,363	\$63,805,431	\$10,028	\$324,338,200	20%	6.11%	3.85%	226
May-December	6,253	\$56,172,961	\$8,983	\$287,494,300	20%	5.93%	4.31%	163
2010 (Jan-Jun)	6,661	\$51,861,700	\$7,786	\$199,492,800	26%	5.85%	4.49%	136
April 2009 - June 2010 Total/Average	13,024	\$115,667,131	\$8,881	\$523,831,000	22%	6.00%	4.38%	161

Sources: Bloomberg, MSRB Data, Yahoo!Finance, Bond Buyer, JP Morgan and McDonnell.

Further changes in the BAB program have come as a result of investor concern regarding the reliability of subsidy payments.¹² Issuers have begun to take precautions to protect the subsidy payment once it is paid. At the onset of the Build America Bond program, BABs were designed so that the federal subsidy payment was transferred into the issuer’s general fund. There was no guarantee that the subsidy payment would be used for interest payments. The most common tool

¹² Temple-West, Patrick. "S&P: Some BAB Direct Payments Pose Credit Worries." *The Bond Buyer*. 1 June 2009. Web. 18 June 2009. <www.thebondbuyer.com>.

that has been used for this is to have the subsidy payments be deposited into a sinking fund account that is pledged to pay the debt service of the BAB. Less utilized, however perhaps more effective, is to have the federal subsidy sent directly to a trustee.

Recently some issuers have grown concerned over uncertainty over hold-back provisions in the law. The Federal government can “net out” payments due from the issuer from the gross subsidy payments it owes the issuer. Although the U.S. treasury has indicated its understanding of the need for continuity in subsidy payments, the recently passed health care legislation may increase the likelihood that hold-backs could be triggered. More is discussed on these offsets in the following section.

VIII. Graphical Representations of Two Muni Markets: Tax-Exempt versus Taxable

In order to understand the tax-exempt and taxable muni markets, how the subsidies affect issuers and investors, and how one market can affect the other, it can be helpful to conjure up some themes from microeconomics.

Supply Versus Demand

Talk of *demand* is usually associated with investors, whereas talk of *supply* is usually associated with issuers. In this paper, however, the terms *demand* and *quantity demanded* will be in reference to *issuers'* decisions and preferences. This may seem counterintuitive, but it actually can make sense. We are considering the market for lending and borrowing of debt capital. If one thinks of yield as the price of that credit, as the yield goes down, the consumer of credit ought to increase the quantity of credit demanded. As the yield shrinks, and all else held equal, it is the *issuers* (not the investors) who increase the quantity of credit demanded.

Similarly *supply* and *quantity supplied* will be in reference to *investors'* decisions and preferences. If one thinks of yield as the price of credit, as the yield *increases* and all else is held equal, it is the *investors* (not the issuers) who tend to want increase the quantity of credit they supply.

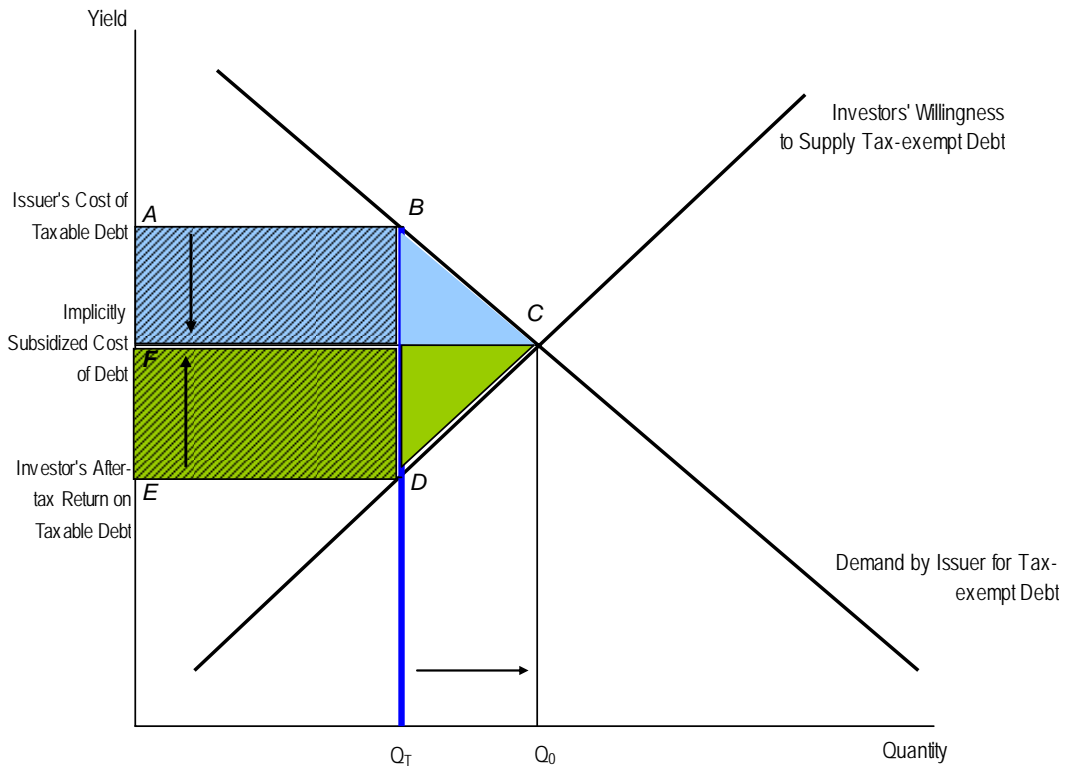
Another way to think about this is to decide which party (issuer or investor) is *paying* for the good or service. In this case the good or service is debt capital. The party paying for the use of that capital is the issuer, and so the issuer can be thought of as the consumer, or demander. By this construct, the supply side is populated by investors.

Tax-Exempt Muni Market

The basic, theoretical graph of supply and demand conditions in the *tax-exempt* muni market will exhibit a downward sloping demand curve and an upward sloping supply curve (see Figure 12).

The tax-exempt market is implicitly subsidized via the tax-exemption. In Figure 12, the subsidy reduces the *Issuer's Cost of Taxable Debt* to the *Implicitly Subsidized Cost of Debt*. The subsidy also increases *Investor's After-tax Return on Taxable Debt* to the *Implicitly Subsidized Cost of Debt*. **Thus, issuers and investors share the benefits of the tax-exempt market's implicit subsidy.** The removal of the tax removes a tax "wedge," which increases the quantity of tax-exempt debt from Q_T to Q_0 .

Figure 12. Theoretical Tax-Exempt Muni Market (Without BABs)



Source: McDonnell.

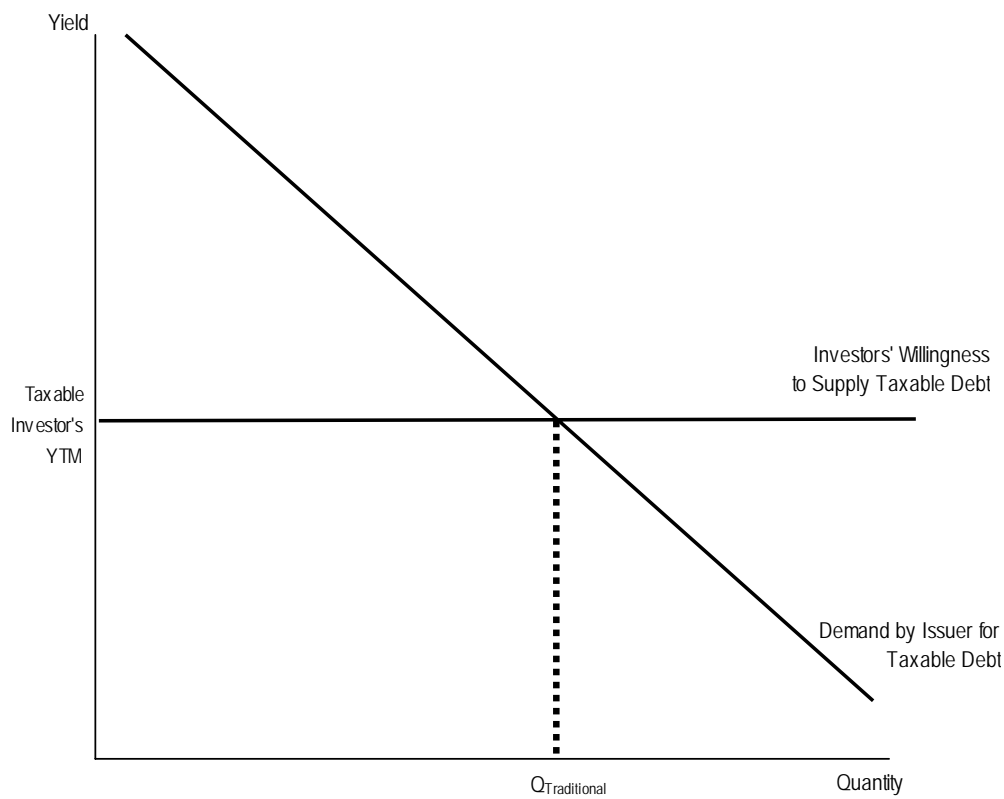
In Figure 15 the implicit subsidy's cost to the Federal government is the rectangle ABDE. That represents the taxes that *would have been* collected. The implicit subsidy's benefits extracted by the *issuer* are represented by the blue quadrilateral ABCF. The subsidy's benefits that go to the investors, who tend to be in the upper tax brackets, are represented by the green quadrilateral FCDE. The triangle BCD is the *deadweight loss* that is eliminated by the tax exemption.¹³

Taxable Muni Market

The graphical representation of the *taxable* muni market will have one subtle but important difference between it and the tax-exempt market. Like the tax-exempt market, the demand curve will be downward sloping. Unlike the tax-exempt market, however, the supply curve will be assumed to be horizontal (see Figure 13).

¹³ Deadweight loss is defined as the net loss of total (consumer plus producer) surplus. (*Microeconomics*, Pindyck and Rubinfeld, 5th edition, 2001)

Figure 13. Theoretical Taxable Muni Market



Source: McDonnell.

The *theoretical* reason for the taxable market's supply curve being horizontal is that it describes a market that has huge – virtually insatiable – investor appetite when compared to the traditional tax-exempt market. *Empirically*, MSRB data support this portrayal. When holding all else equal (in particular the issuer, the maturity date, and the issue date), yields on BABs and on traditional *taxable* munis are the same. The University of Alabama issued taxable bonds in two series in mid-October 2009. Series A were BABs. Series B were traditional, unsubsidized taxable bonds. One cusip from each series has the same maturity date (914026EX3 and 914026FL8). Ever since the bonds were sold in October 2009, Bloomberg Fair Value yields-to-maturity of those two cusips have tracked one and other identically.

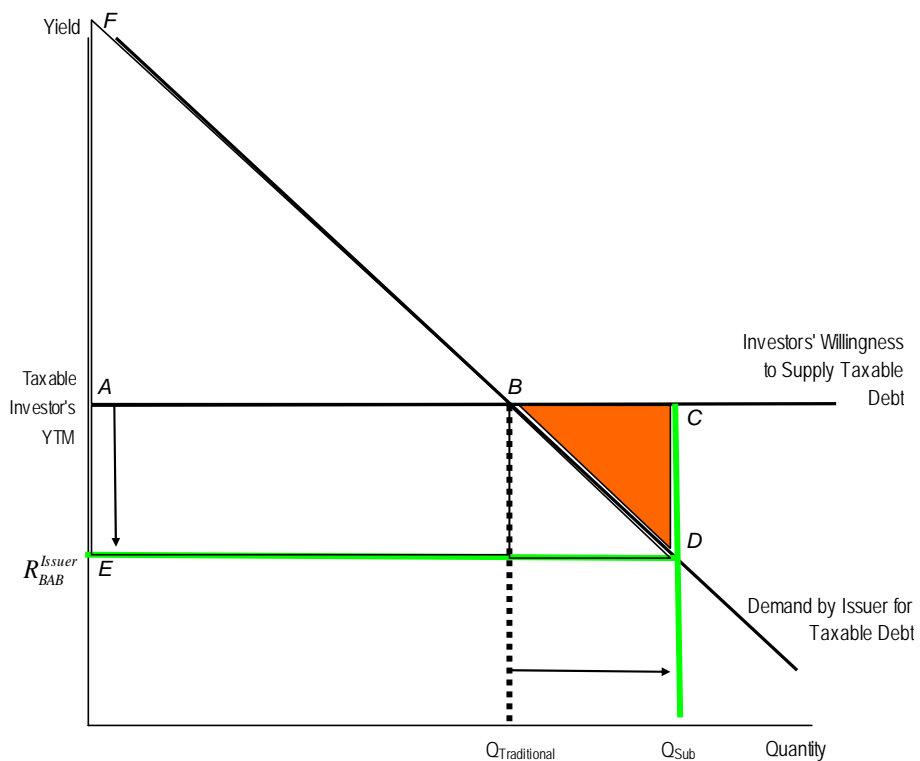
Because investors are no better off with the subsidized BAB than with the unsubsidized traditional taxable muni, McDonnell infers that any benefit from the BABs subsidy goes 100% to the issuer. A market in which the *consumer* (in this case, the issuer who is demanding/consuming capital) bears 100% of the benefits of a subsidy is a market best illustrated with a downward sloping demand curve and a *horizontal supply curve*. That representation illustrates a situation where a

subsidy lowers the consumer's price (i.e., the issuer's cost of debt) but leaves compensation to the supplier (i.e., the yield that an investor realizes) unchanged.

The BABs market is *explicitly* subsidized via the 35%-of-coupon payments to issuers. The BABs subsidy 1) reduces an issuer's costs to R_{BAB}^{Issuer} , 2) does not affect the investor's yield, and 3) pushes the quantity of taxable muni debt out to Q_{Sub} from $Q_{Traditional}$ (see Figure 14).¹⁴

In Figure 14 the cost to the Federal government of BABs' explicit subsidy is rectangle ACDE. The *benefits* of the subsidy, all of which go to the issuers, are represented by the green quadrilateral ABDE. The orange triangle BCD represents *deadweight loss*.

Figure 14. Theoretical BABs Market



Source: McDonnell.

¹⁴ Assuming the weighted average marginal tax rate is zero.

IX. BABs Versus Tax-Exempt: Issuer's Perspective

As alluded to, just as the burden of a tax can be shared between consumers and producers, so too can the benefits of a subsidy be shared. In our framework, the *consumers* in this discussion are the *issuers*. The *producers* of capital are the *investors*.

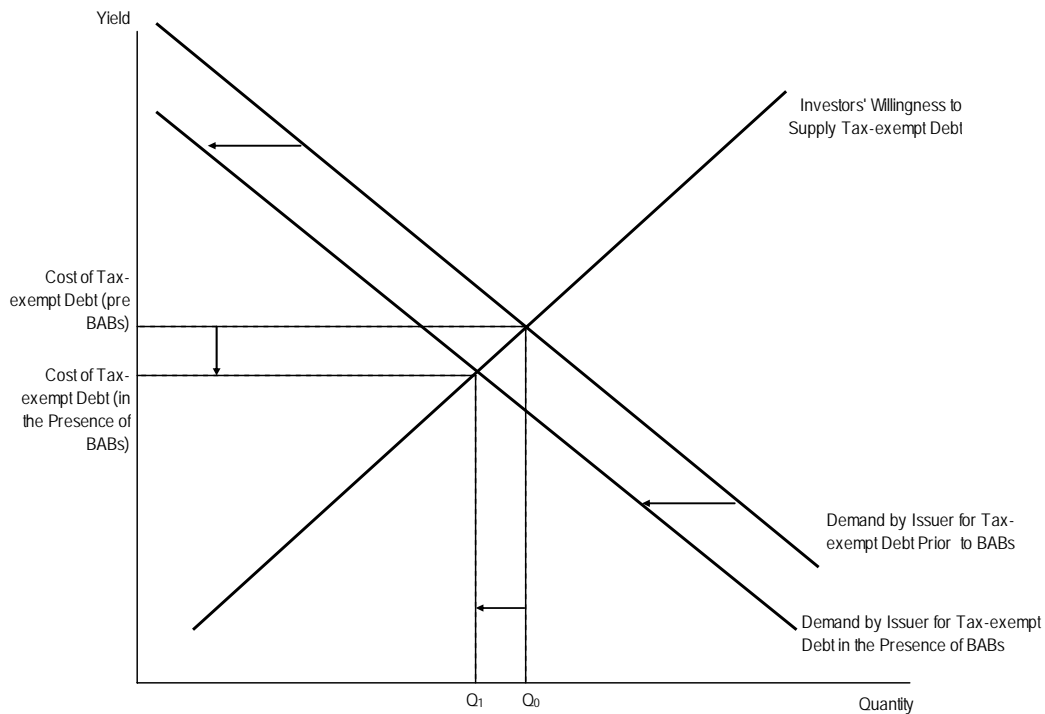
Just as the party who "writes a check" to the government to pay a tax is not necessarily the party who bears the burden of that tax, the producers' and consumers' shares of a subsidy are not determined by who receives the subsidy "check." Rather, the split is determined by producers' and consumers' relative elasticities of supply and demand.¹⁵ As discussed above, the *taxable* market's horizontal supply curve means that the subsidy's "wedge" imparts 100% of the subsidy's benefits on the issuer in the form of lower cost of debt. There is nothing "left over" for the investor, and so the return to the investor is unaffected (see Figure 14). In contrast, the *tax-exempt* market's implicit subsidy is *shared* between issuer and investor (see Figure 12).

The *traditional tax-exempt* market has been affected by BABs. BABs have given issuers access to debt at a lower, after-subsidy cost than would have been afforded with traditional tax-exempt debt. As issuers have shifted to the taxable market, their demand for tax-exempt capital has decreased. The result has been lower tax-exempt yields and less tax-exempt issuance than otherwise would have been (see Figure 15). That result has been well headlined.

If the BAB program is extended past 2010, the subsidy rate may be lower than the current 35%. All else equal, a reduced subsidy rate would reduce the affect on the traditional tax-exempt market as issuers on the margin would prefer BABs less. The result would be a increase in issuers' demand for tax-exempt debt. That would tend to increase issuance and increase ax-exempt yields.

¹⁵ It doesn't matter who receives the subsidy check. The benefit of the subsidy accrues mostly to the buyers [issuers] a market's elasticity of supply is large relative to the market's elasticity of demand. (See *Microeconomics*, Pindyck and Rubinfeld, 5th edition, p 317, 2001.) Just because it is the issuer who receives the BABs' check (or the money transfer), it does not necessarily mean the issuer is the subsidy's beneficiary. The vastness of the taxable market means that the market's elasticity of supply is very large when compared to the issuers' elasticity of demand and when compared to the tax-exempt market's elasticity of supply.

Figure 15. Theoretical Tax-exempt Market: With BABs versus Without BABs



Source: McDonnell.

Theory and data support the notion that *issuers* are the *sole* beneficiaries of the 35%-BAB subsidy. That is in contrast to the tax exemption of traditional tax-exempt muni debt, which directs *less than 100%* of the implicit 30%-subsidy to the issuer. Historically issuers have “kept” anywhere from 13 to 27 percentage points, or approximately 42%-91%, of the implicit 30%-subsidy (see Figure 8). In other words, in a simple case, the traditional tax exemption shaves 13% to 27% off of issuers’ cost of debt.

With BABs, the *issuer* is the only beneficiary of the 35% explicit subsidy. So while the issuer saves 13% to 27% on its cost of debt by means of the tax exemption, the issuer of BABs saves the full 35%, which is 8 to 22 percentage points more in subsidy than the implicit subsidy of the traditional tax-exemption.

That additional 8 to 22 percentage points of subsidy is quite close to the observed empirical evidence mentioned earlier in this report where issuers have saved 9% to 22% by issuing BABs instead of traditional tax-exempt bonds. As discussed above, the fact that the *issuer* receives the BABs subsidy payments is not the reason the issuer benefits from the BABs program. Rather, issuers of

taxable debt face more elastic supply. The broader market translates into relative elasticities of demand and supply that appear to impart all the BABs' subsidy's benefits on the issuer.

"Offset" subsidy payments have become an increasing concern for BAB issuers and potential BAB issuers.¹⁶ They have occurred at the state level (Maryland) and at the local level (Austin, TX) to "offset" payroll taxes owed to the federal government. The possibility of offsets has discouraged South Carolina and Florida from issuing BABs; instead they opted for issuance of tax-exempt debt.

Issuers have also become somewhat concerned by the prospect for an IRS audits.¹⁷ Iowa, a past issuer of BABs, expects to opt for tax-exempt issuance because of the State's view that any savings from BABs are not worth the potential hassle.

¹⁶ Temple-West, Patrick. "Maryland's BAB Subsidy Payment Cut." *The Bond Buyer*. 27 May 2010.

¹⁷ Shields, Yvette. "Iowa Skips BABs for Upcoming Sale." *The Bond Buyer*. 24 June 2010.

X. Credit Considerations

BABs have the potential to affect credit worthiness in two main ways: statically and dynamically.

Static Creditworthiness

From a *static* creditworthiness perspective, there are similarities and differences between BABs and traditional tax-exempt munis. In many ways, BABs are affected by the same credit drivers as traditional tax-exempt munis. There are BAB-specific issues, as well, however. Timing of cash flows may affect credit quality if an issuer does not levy sufficiently to cover *gross* debt service. Dependence on a timely remittance of the subsidy by the Federal government could harm the ability of the issuer to service its debt were a subsidy payment to be held back.

A related issue, discussed in the previous section, is that of offsets. Offset subsidy payments from the federal government to a BAB issuer may be a concern if the issuer does not have much cash on hand or if debt service coverage ratio calculations include the subsidy payment in the numerator or if only the “net” debt service is included in the denominator.

Another credit consideration related to the risk of a missed subsidy payment from the Federal government is the possibility of a BAB being called prematurely by means of an “Optional Extraordinary Redemption.” That call risk is muddied by the fact that if an issuer is distressed significantly by a delayed subsidy payment or by the unlikely discontinuation of subsidy payments to existing BABs, then that issuer may have trouble raising the cash necessary to fund the call.

A potential credit positive is that issuers have broader access to subsidized debt capital via *two* markets rather than just one. If conditions in one market sour, the other market might still be available. Even if a market does not sour, issuers are able to take the lower cost available in the two markets rather than accepting the cost of debt available in one market.

Dynamic Creditworthiness

A more *dynamic* concern for creditworthiness, however, is that the lower cost of debt will encourage issuers to become more leveraged. Assuming issuers have a downward sloping demand curve for credit; as the price of taxable debt drops (due to the BABs subsidy), issuers are likely to issue more taxable debt than they otherwise would have (see Figure 14). Because issuers opt for BABs, *reduced demand by issuers* for tax-exempt capital will *reduce* tax-exempt debt’s quantity *and* cost (see Figure 15). The result will be lower debt costs in both markets, less tax-exempt debt issued, and

more taxable muni debt issued (see Figure 16). Theory can only tell us the *direction* of change in the quantity of issuance of the two types of debt. Issuance of taxable debt goes up, and issuance of the other kind of debt (tax-exempt) goes down. The *overall* amount of debt issued (both tax-exempt and taxable) will increase because a *shift away from* traditional tax-exempts would be *swamped by* an increase in taxable munis.

BABs' ultimate affect on the sector's credit worthiness will be determined by how much more debt issuers issue in light of that debt's lower costs. In economics, this would be described by an issuer's own-price elasticity of demand. If issuers dramatically change their behavior and drastically increase their leverage, then BABs could be a credit negative. On the other hand, if issuers don't adjust their behavior very much, it is *conceivable* that BABs could actually reduce debt servicing costs and thus be a credit positive.

Figure 16. BABs' Likely Influence on Cost and Quantity of Debt

	Tax-exempt	Taxable	Overall
Issuer's Cost of Debt	↓	↓	↓
Quantity of Debt	↓	↑	↑

Source: McDonnell.

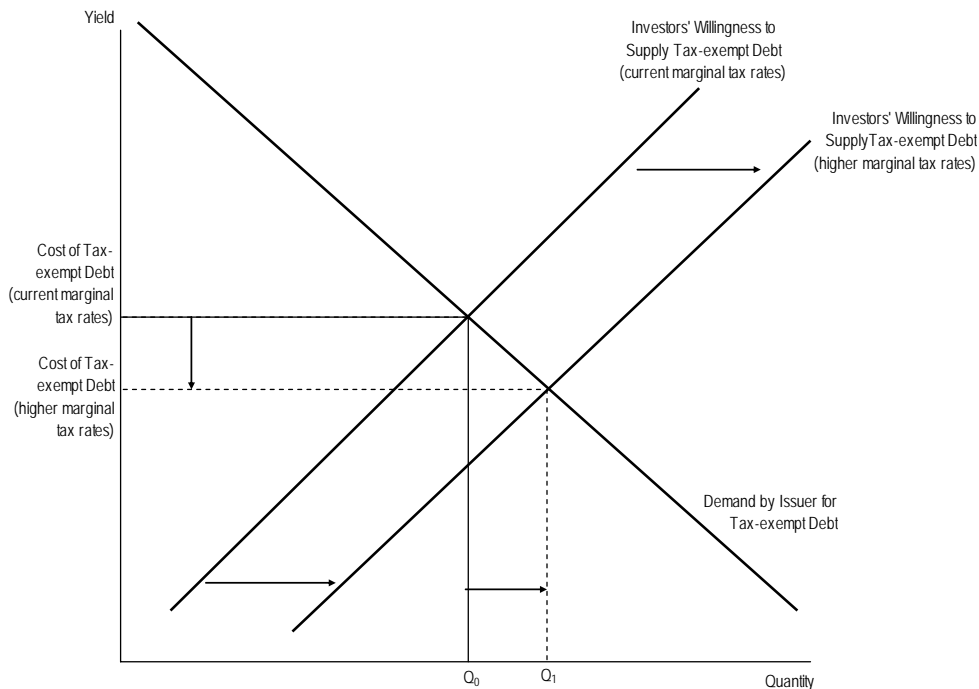
XI. Impact of Top Marginal Tax-Rate Reverting to 39.6%: Tax-exempt Market Versus Taxable Market

Figure 15 illustrates the affect of the BABs market on the tax-exempt market. Another influence on both the *tax-exempt* muni market and the *taxable* muni market is the likely increase of the top marginal tax rate to 39.6% from 35%.

Impact on the Tax-Exempt Muni Market

To the extent an increase in the top marginal tax rate increases the weighted-average marginal tax rate, the implicit subsidy becomes larger. That would raise the tax-equivalent yield (TEY) of tax-exempts. A higher TEY increases investors' willingness to supply capital in the tax-exempt market and can be represented as an outward shift tax-exempt investors' supply curve (see Figure 17). Absent BABs, higher marginal tax rates would result in more tax-exempt issuance and lower tax-exempt yields than otherwise would be observed.

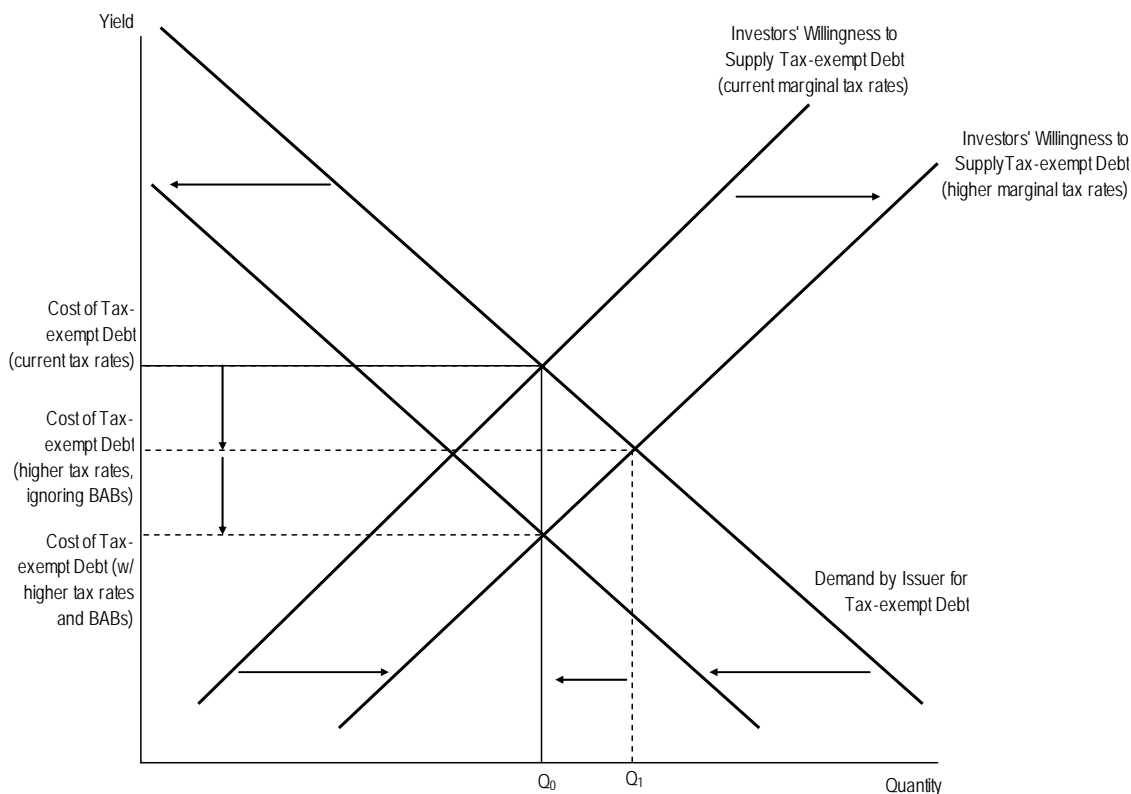
Figure 17. Theoretical Impact of Higher Marginal Tax Rates on the Tax-exempt Market Independent of Influence of BABs



Source: McDonnell.

In the presence of BABs, however, issuers' demand for tax-exempt capital has decreased (see Figure 15). The combined effect of BABs and a tax increase is lower yields in the tax-exempt market (see Figure 18). It would be an empirical question as to how the quantity of tax-exempt debt would be affected. Theory alone cannot tell us whether the reduced demand by issuers for tax-exempts (due to the availability of BABs) would affect issuance more or less than investors' increased willingness to supply tax-exempt capital (due to higher tax equivalent yields).

Figure 18. Theoretical Impact of Higher Marginal Tax Rates on the Tax-exempt Market Taking into Consideration the Influence of BABs

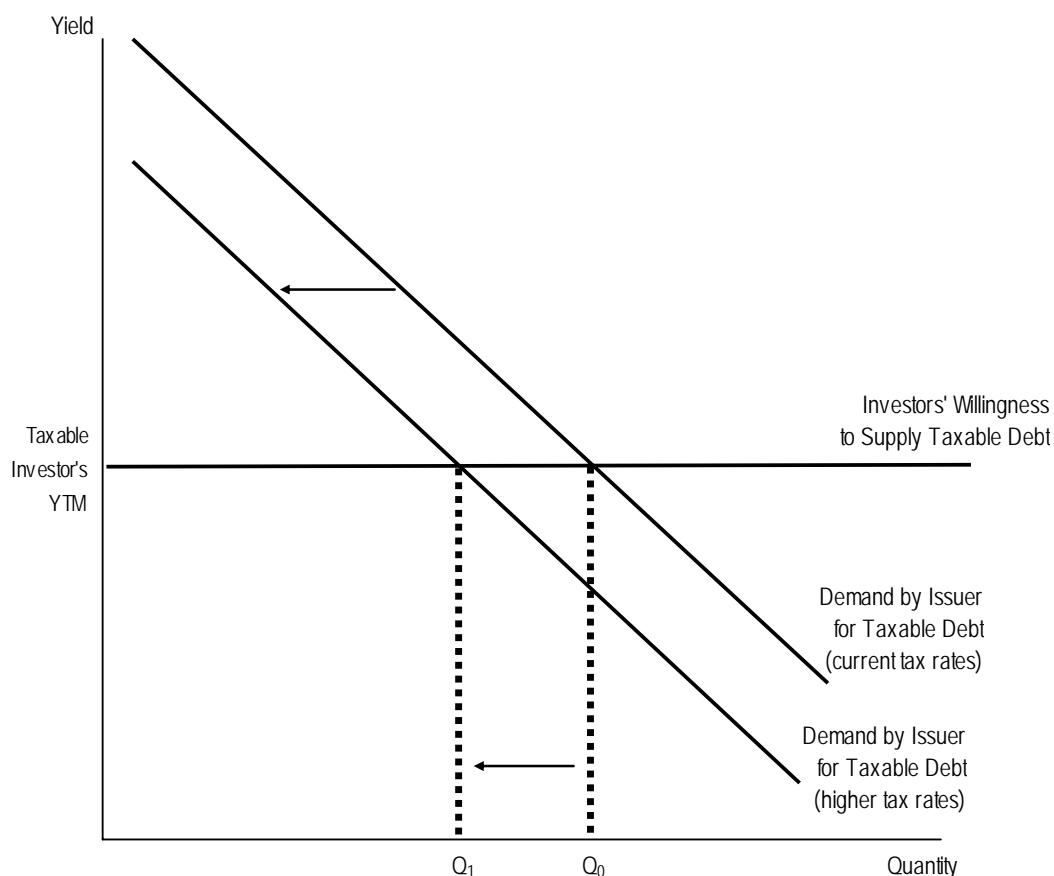


Source: McDonnell.

Impact on the Taxable Muni Market

The supply effect in the tax-exempt market (whereby investors' increased willingness to supply tax-exempt capital reduces the cost of tax-exempt debt and increases the quantity of it issued) would tend to reduce issuers' demand for BAB capital (see Figure 19). BAB yields would not be affected, but the quantity of BABs issued would decline from where it would have been.

Figure 19. Theoretical Impact of Higher Marginal Tax Rates on the Taxable Muni Market



Source: McDonnell.

BAB yields would not be affected by the tax increase due to the horizontal supply curve (the markets' elasticity of supply). But *tax-exempt* yields theoretically would be lowered by the combination of *BABs* and a higher tax rate. **The result would be that spreads of *BABs* over tax-exempts would increase.**

A more interesting implication of a boost to the top tax rate would be that **the break-even marginal tax rate for investing in the tax-exempt market would increase.** The break-even rate is calculated as $BreakEvenRate = 1 - \frac{TaxExemptYield}{BABYield}$. We just discussed that the *TaxExemptYield* would be lower and that the *BABYield* would not change. Thus one minus a smaller number results in a higher break-even rate.

A final implication of a boost in the top tax rate would be to push the cross-over point (described above) to a longer duration (see Figure 6).

XII. Cost of the 2009-2010 BABs

Initial projections made by the Obama administration and by the Joint Tax Committee of BAB subsidy costs in FY2009 and 2010 came in at around \$50 million in 2009 and \$200-\$300 million in 2010. But there has been far greater use of the program than they originally expected. BABs will likely be extended and may be expanded, but even if the BABs program is allowed to end in 2010, the annual subsidy payments would be large and as long lived as the bonds issued remain outstanding. JP Morgan projects \$110 billion of BAB issuance in 2010 on top of about \$64 billion that was issued in 2009 (see Figure 20).¹⁸ McDonnell projected a range of *taxable* issuance in 2010 between \$100 billion and \$155 billion.¹⁹ Assuming BABs' 2010 year-to-date weighted-average coupon of 5.9% continues in the second half of 2010, the result would be roughly \$3.6 billion in subsidy payments per year, roughly 12 times the Administration's early projection. Over the life of those generally long-lived bonds, with no BAB issuance beyond 2010, the government's subsidy payments may amount to around \$100 billion.²⁰

Figure 20. Projected Annual BAB Subsidy Costs to the federal Government (dollar amounts in millions)

Calendar Year	Principal Issued	Coupon Yield	Annual Interest	35%-Subsidy
2009 Issuance	\$64,000	6.1%	\$3,904	\$1,366
2010 Issuance	\$110,000	5.9%	\$6,490	\$2,272
In each year for life of BABs	\$174,000	6.0%	\$10,394	\$3,638

Sources: Bloomberg, JP Morgan, SIFMA and McDonnell.

But that analysis is incomplete because it fails to consider the counterfactual. The true cost of the BABs subsidy comes from two sources: 1) the *more generous subsidy* on the debt that *would have otherwise been issued in the traditional tax-exempt form* and 2) any *additional* subsidized debt that stems from that generosity.

The relevant cost that should be considered is the incremental cost of the explicit BABs subsidy over the implicit tax-exemption subsidy of *what would have occurred* in the absence of BABs. If

¹⁸ *Daily Taxable Municipal Analytics*. JPMorgan, 7 June 2010.

¹⁹ Taxable issuance has averaged about \$20 billion per year from 2000 to 2008. Assuming that same *traditional* taxable component continues in 2010, the range of BABs would be \$80 billion to \$135 billion, a range with a similar mid-point as JP Morgan's projected \$110 billion.

²⁰ If BABs get extended, a steady-state level of BABs outstanding might reach \$6 trillion (assuming \$200 billion of 30-yr bonds issued each year. The current coupon yields of around 6% would result in a budget line item of approximately \$100 billion per year in subsidy payments.

issuers of the projected \$174 billion in BABs had not had access to the BABs program, they likely would issue *some* of that \$174 billion in the form of traditional tax-exempt debt. **Of the \$174 billion in BABs issuance projected for 2009-2010, it is anything but certain how much of that *would have been* issued as tax-exempt debt had there been no BABs program.**

At one extreme, had there been no BAB program available, perhaps all \$174 billion would have been issued in tax-exempt form. In that case, the relevant annual subsidy cost of that \$174 billion in BABs would be equal to the gross subsidy cost of BABs (calculated above in Figure 23) *less* the implicit subsidy costs of tax-exempt debt that would have been issued had BABs not been available. Barclays estimates the average coupon on all outstanding tax-exempt munis to be 4.99%. But those coupon yields on bonds outstanding may not reflect the market conditions in which BABs have been issued. Since BABs' inception, double-A-rated, 20-year, GO tax-exempt munis have averaged a yield of approximately 4.45% (see BBWK20GO on Bloomberg). But only about 60% of BABs are double-A-rated, and only about 45% of BABs are general obligations. Another Bond Buyer Index (BBWK25RV) summarizes yields on single-A revenue bonds with a 30-year maturity. Those yields have averaged 5.27%. Taking a rough mid-point between those two indices provides an estimate of what the cost (to issuers) of tax-exempt debt would have been if BABs had not been available. Rounding that coupon yield to 4.8%, in this example, the incremental annual cost of BABs could be expressed as $\$3.64B - \$174B * 30% * 4.8% = \$1.13B$. BABs would cost taxpayers an incremental \$1.13 billion annually (see Figure 21).

Figure 21. Estimated Net Cost of BABs under Various Counterfactual Scenarios (dollar amounts in billions)

	Principal Amount	Subsidy Rate	Coupon Yield	Annual Subsidy
Gross Cost of BABs	\$174	35%	6.0%	\$3.64
Counterfactual Scenario 1: All \$170 billion is issued as tax-exempts				
Counterfactual tax-exempt issuance	\$174	30%	4.8%	\$2.51
Net Cost of BABs (Scenario 1)				\$1.13
Counterfactual Scenario 2: None of the \$170 billion is issued as tax-exempts				
Counterfactual tax-exempt issuance	-	30%	4.8%	-
Net Cost of BABs (Scenario 2)				\$3.64
Counterfactual Scenario 3: 75% of the \$170 billion is issued as tax-exempts				
Counterfactual tax-exempt issuance	\$131	30%	4.8%	\$1.88
Net Cost of BABs (Scenario 3)				\$1.76

Sources: Barclays Capital, JP Morgan, Bloomberg and McDonnell.

At the other extreme, perhaps BABs issuers would not have issued *any* of the \$174 billion of debt in the form of tax-exempt bonds had there been no BABs program. Perhaps the tax-exempt markets wouldn't have opened up, or perhaps issuers would view the implicit (and partially shared with investors) 30%-subsidy as not enticing enough. Whatever the reason, if issuers would not have issued any tax-exempt debt in lieu of BABs, the annual cost to taxpayers would be the full annual subsidy paid on the projected \$174 billion in BABs: \$3.64 billion.

In all likelihood, absent the BABs opportunity, issuers would have issued somewhere *between* 0% and 100% of the \$174 billion in the form of tax-exempt debt. Therefore, the annual cost of that BABs issuance would be calculated as gross subsidy cost of BABs minus the subsidy that would otherwise be paid on the "BAB-less" world's hypothetical tax-exempt amount issued. As an example, let's say that in the absence of BABs, tax-exempt issuance would have amounted to 75% of actual BAB issuance. So instead of the \$170 billion of BABs, we saw \$131 billion of tax-exempt debt issued. Under that scenario, the net cost of BABs would be calculated as

$$\$3.64B - \$131B * 30% * 4.8% = \$1.76B .$$

Finally, the most obvious difference between BABs and traditional tax-exempt munis is that BABs offer an *explicit* subsidy paid out of the federal budget. Traditional tax-exempt munis, on the other hand, offer an *implicit* subsidy in the form of the tax exemption. Therefore, BAB subsidies might be *felt* more than tax-exempts' subsidies when it comes to budgeting. Prospect theory tells us that *losses* (in this case associated with funding a BABs subsidy) are likely to "hurt" more than similarly sized *foregone gains* (in this case the foregone revenues associated with the implicit subsidy of tax-exempt debt). Put another way, perhaps the lack of a budget expense line makes tax-exempts budgetarily less painful and, therefore politically more palatable. But then again, perhaps a BABs budget line would make the costs of subsidizing municipal debt more transparent than the less observed implicit subsidy.

XIII. Winners and Losers

There are a number of potential winners and losers under BABs: issuers of BABs, issuers of tax-exempt debt, taxable investors, investors in traditional tax-exempt munis and taxpayers.

Winners

- **BAB issuers** are afforded a lower cost on their longer maturity debt.
- **New issuers of tax-exempt debt** benefit from a lower cost of debt due to a smaller pool of new issues being chased by the same pool of investors in traditional tax-exempt debt.
- **Ex ante investors in traditional tax-exempt debt** see an appreciation in the value of their existing holdings as tax-exempts' yields are driven lower.

Losers

- **Ex post investors in traditional tax-exempt munis** see a decline in yields from where they would have been but for BABs as that investor base's money chases fewer new offerings.

Unchanged

Although it might seem counterintuitive, the well-being of **investors in taxable munis** is unchanged under BABs— even with the subsidy. Just as the appropriate measure of well-being of a market's *consumers* is *consumer surplus*, *producer surplus* is the appropriate measure for *suppliers* of a good. In this case, producer surplus describes the well-being of *taxable investors* who are *supplying* capital.

Producer surplus is best described as the area under the priceline and above the supply curve. In many markets, the supply curve is upward sloping and thus generates producer surplus. In the case of *taxable* munis (traditional and BABs), as discussed above, the market is best illustrated with a horizontal supply curve (see Figure 13).

Figure 14 shows an initial equilibrium with $Q_{\text{Traditional}}$ taxable debt. Prior to the BABs subsidy, consumers of capital (the issuers) benefit from a consumer surplus represented by the light blue triangle FBA. In the absence of a BAB subsidy, investors' required rate of return and issuers cost of debt are equal (represented in the graph by "Taxable Investor's YTM"). Because the investors' supply curve (a schedule of willingness to supply) is horizontal, the yield is exactly equal to each investor's required rates of return, not just the marginal investor. Because BAB yields are equal to

required rates of return for all investors, taxable investors do not expect to earn *economic* profit on their BAB holdings.

A subsidy creates a wedge that increases the amount of capital demanded. The subsidized cost of debt falls to R_{BAB}^{Issuer} (see Figure 15). Capital is a *good*, and so as the price to the issuer falls, the quantity of capital demanded by the issuer increases from $Q_{Traditional}$ to Q_{Sub} . With the subsidy, the issuers' *consumers'* surplus increases by the green-shaded quadrilateral ABDE (the added area below the demand curve and above the subsidized price). But the subsidy leaves the rate of return to investors unchanged.

Uncertain

The question as to whether **taxpayers** are winners or losers is trickier. BABs offer a bigger subsidy (35%) compared to implicit subsidy of the tax-exempt muni market, a rate guestimated to be approximately 30% (a blend of investors in the top tax brackets). So in one sense, the tax bill to subsidize \$100 million of BABs would be greater than the foregone revenues of \$100 million of traditional tax-exempt issuance.

In addition to BABs having a greater subsidy cost than tax-exempts *for a given amount of issuance*, the greater elasticity of supply in the taxable market would tend to result in *more issuance for any given subsidy level*. So with BABs, there is the potential for a double-whammy: greater cost to the taxpayer *per dollar of BAB issued* **and** more debt issued. But any increase in burden to taxpayers in the form of a higher tax bill to pay for the BAB subsidies should be analyzed on two fronts: *efficiency* and *cost-effectiveness*. Although typically a matter for normative analysis outside the ken of economics, the question of *equity* (i.e., fairness) can also be discussed from a couple angles.

Efficiency

A major objective of the BABs program was to subsidize borrowing in order to get more of it. The idea is that the additional funding for new capital projects will translate into more jobs. Whether or not that larger tax bill is *efficient* depends on one's assessment of the stimulative effect of the increased issuance and whether or not the additional spending's benefits outweigh the costs.

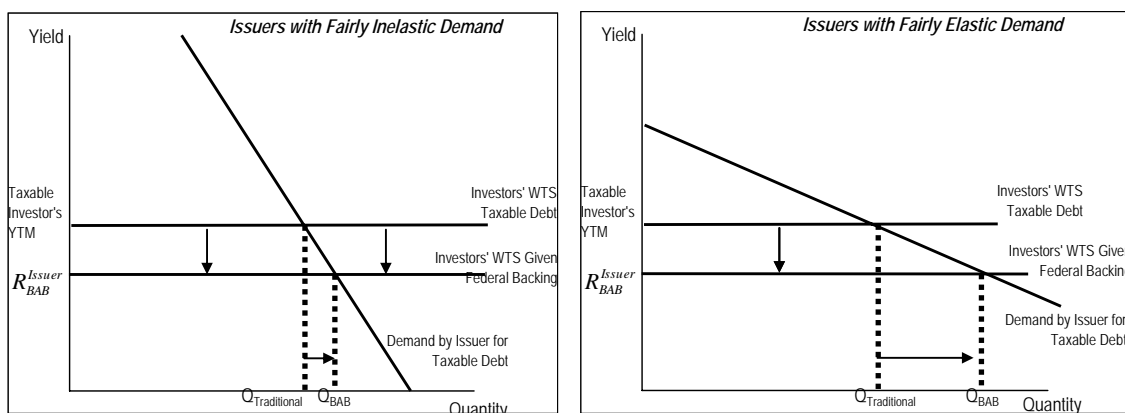
Although an adherent to the Keynesian school may object, it is *possible* that the *costs* of the BABs program will *outweigh* the *benefits*.²¹ The benefits to the issuers may be outweighed by the costs

²¹ All the benefits of the program accrue to the issuers (see the green-shaded area ABDE of Figure 14). None of the benefits accrue to the investors (as discussed above).

because the *total cost* of the BABs subsidy (in Figure 14 represented by the green-shaded area ABDE plus the orange-shaded area BCD). The orange triangle BCD represents *deadweight loss*. The deadweight loss of a subsidy is the amount by which the cost of a subsidy exceeds the gains in consumers' and producers' surpluses. **If there are negligible external benefits or costs, then BABs create deadweight loss whereas the traditional tax-exempt market actually reduces DWL by removing the tax “wedge” BCD** (see Figure 12).

A related efficiency issue has to do with a “slippery slope” and whether the 35% subsidy is the first step toward an implied Federal backing of municipal debt. The BAB subsidy reduces borrowing costs of the borrower, but those costs do not simply disappear. Instead they are spread across taxpayers nationally. A Federal backing would play a similar role by reducing costs to the municipal borrowers and shifting those costs to taxpayers at a national level. The result could resemble the market for earmarks or pork-barrel legislation. Assuming issuers’ demand curve for taxable debt is downward sloping, lower borrowing costs (stemming from an implied backing or the explicit BABs subsidy) would increase the amount of issuance. The amount of increase would depend on issuers’ own-price elasticity of demand for debt capital (see Figure 22).

Figure 22. The Affect of Issuers’ Elasticity of Demand for Debt Given a Federal Backing of Municipal Debt



WTS Willingness to supply.

Source: McDonnell.

It is conceivable that lower municipal borrowing costs realized by localities might benefit taxpayers of that locality. But a taxpayer’s well being might be adversely affected by bearing costs associated with subsidizing other localities’ similar actions. Along those lines, extra debt incurred

now may well increase the probably of stress down the road, possibly pushing higher risks onto taxpayers' hands of another time or place.

Cost-Effectiveness

Both BABs and traditional tax-exempt debt are subsidized by the federal government. Although the two subsidies are of similar magnitude (currently BABs' 35% is slightly larger than our guesstimated 30% for tax-exempts), the BABs market may provide a more *cost-effective* way to funnel a subsidy to the issuer than by the traditional implicit subsidy of tax-exemption. The reason for that is the taxable market's supply curve is flatter (i.e., more elastic) than that of the tax-exempt market. Traditional tax-exempts "leak" some of the implicit subsidy to investors; only some of that subsidy gets to the issuers (see Figure 8). In the BABs market none of the subsidy "leaks" to *investors*; thus 100% of the subsidy's *benefits* are garnered by BAB issuers. The downside to BABs, however, is the "leakage" attributable to the deadweight loss mentioned above; whereas, the implicit subsidy of the tax-exempt market *eliminates* deadweight loss.

Based on the calculations shown in Figure 8, suppose the issuer "holds on to" 60% of implicit subsidy from the tax exemption (roughly the mid-point of the historical 42%-80% range), in order to achieve the equivalent 35%-stimulative effect of the BABs, the implicit subsidy in the tax-exempt market would have to be 58% (a 60%-share of a 58% subsidy would result in a 35%-savings to issuers of tax-exempt munis). For that reason, **when compared to a 58% subsidy in tax-exempt market, the BABs program's 35% could be justified to a taxpayer as being the cost effective way of providing a targeted level of benefit to issuers.**

The concept here is that in the case of the traditional implicit subsidy, issuers and investors *share* the implicit subsidy; whereas the full benefit of the explicit BABs subsidy goes to the issuer.

Equity

Although typically a matter for normative analysis outside the ken of economics, the question of equity can be addressed on two fronts: *equity* and *cost-effectiveness*.

Taxpayers of high-issuance states/localities/districts/authorities see their BABs subsidized at the *Federal* level. Tax receipts to pay those subsidies come from all taxpayers, even ones that live in areas of little or no BAB issuance. One can definitely argue that that is not a fair system. Taken in isolation, this question is worthy of consideration and likely to garner a range of opinions. And not to dismiss the important behavioral and moral issues the question raises, if it should be addressed in the case of BABs, it should be addressed in other instances, too, because this is not a point of contention specific only to BABs. Inter-state subsidies exist for all sorts of goods and

services, such as corn crops and “interstate” highways which serve mostly local commuters. Those cross-subsidies are not new to municipal finance either. The implicit subsidy of tax-exempt debt results in a lower cost of capital and higher after-tax returns for local issuers and investors, respectively (see discussion of Figure 12 in Section VIII). Those foregone tax revenues at the Federal level mean a shortfall has to be plugged (either through higher taxes or less spending) by spreading a burden across all taxpayers, even ones in low-issuance areas.

The apparent cost-effectiveness of BABs, as discussed above, may ameliorate some of the cross-subsidy hardship, but it does not eliminate it.

XIV. Outlook for BABs Past the Current Sunset Provision of 12/31/2010

The future of the BABs program beyond 2010 remains uncertain. There appear to be a wide range of possible outcomes that range from the termination of the BABs subsidy to the subsidy remaining at the current 35%. On May 28, 2010, the House of Representatives passed a bill that is expected to be taken up in the Senate after June 7, 2010.²² At issue will be the program's relative cost effectiveness, its potential for stimulus, its usefulness as a fiscal policy tool and the fairness of the subsidy. Opinions of the BABs program range from its being too generous and promulgating moral hazards, to views that BABs are "efficient," successful and stimulative.²³

In late January 2010, the Obama administration confirmed that it will recommend making the BAB program permanent. The details are not finalized but the Administration's preferences are for a permanent program with the subsidy rate lowered to a more "revenue neutral" 28%, an expansion so as to cover 501(c)(3) entities, the allowance of BAB proceeds to be used for refunding, and the allowance of BAB proceeds to be used for working capital needs. As discussed above, a **lower subsidy rate would result in shifts at the margin in the BAB market toward longer durations and toward lower credit quality of issuers because the subsidy benefits higher coupon yields more than lower coupon yields.** The precise meaning of "revenue neutrality" is less than clear. It may mean that having the BAB subsidy set to equal the average marginal tax rate of investors in BABs. That may be a little far-fetched because McDonnell believes that the average marginal tax rate of BAB investors would be far lower than the current subsidy rate and anything being proposed. More likely, it means the BAB subsidy rate that would be close to the implied subsidy rate of the tax exempt market. **Thus any public policy decision on the BAB program as the December 31, 2010 deadline approaches will likely affect the quantity and quality of municipal bond issuance and the tax burden to support that subsidy.**

The recently passed House bill would provide an extension to December 31, 2012— short of the earlier House-proposed April 1, 2013. The direct-pay subsidy rate would shrink from the current 35% of interest costs to 32% in 2011 and to 30% in 2012. The House bill would expand the use of BABs to allow them to be used for current refundings of existing BABs. The House bill's sunset dates and subsidy rates are similar to those proposed in a Senate bill.

²² Hume, Lynn and Dutton, Audrey. "House Approves BAB Extension, Subsidy Shrinkage." *The Bond Buyer*, 1 June 2010.

²³ Quotes are used around *efficient* to indicate the word's wide use to mean cost effective.

An additional consideration for policy makers, issuers and investors is that any change in the BABs subsidy rate from the current 35% will be magnified because, as mentioned earlier, the subsidy rate affects the “cross-over” maturity point, beyond which it makes sense to issue BABs and short of which it makes sense to issue tax-exempt debt. So there would be less BAB issuance at each maturity date, and there would be fewer maturity dates.

Another reason why the current Administration and Congress may like to see BABs extended and expanded is the perceived unfairness of the implicit subsidy of tax exempt debt. As discussed above, *some* of the tax-exemption’s implicit subsidy goes to the investors rather than to issuers. Politicians have been known to express concern that those investors who benefit from the implicit subsidy are typically in the upper income tax brackets while all of the benefit of the BAB subsidy falls on the issuer, the intended target of the subsidy. But BABs have a leakage of their own. Deadweight loss that may be associated with the BABs subsidy does not get much attention in the headlines. The deadweight loss occurs if borrowing and lending goes beyond the amount of issuance where the marginal benefits of borrowing equal the marginal costs of that borrowing.

Concluding Remarks

BABs appear to make borrowing cheaper for issuers and offer higher yields to investors than comparably rated corporate bonds. Borrowing is cheaper because the size of the subsidy is larger than in the tax-exempt market and because, unlike in the tax-exempt market, 100% of the benefits of the BABs subsidy go to issuers. Ramifications for credit quality will be determined by how the *increased amount of debt* compares with a *lower cost for each dollar of debt*.

Conditions in the tax-exempt market will continue to affect conditions in the BAB market and vice versa. *Both* markets are also affected by changes in *either* market’s subsidy rate.

The “gross” cost of the BABs subsidy comes from two sources: 1) the more generous subsidy; and 2) any additional subsidized debt that stems from that generosity. The relevant cost that should be considered, however, is the incremental cost of the explicit BABs subsidy over the cost of the implicit subsidy of what would have occurred in the absence of BABs. That is a challenge to estimate because of the unknown counterfactual.

The program is currently scheduled to end December 31, 2010. It will likely be extended and thus continue to effect benefits to some parties and costs to others.

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