

# GO NATIONAL AND DIVERSIFY YOUR MUNICIPAL BONDS

Municipal bonds often play a major role in taxable investment portfolios. They are appealing to private investors in high tax brackets because the interest income is not taxed at the federal level. Municipal bonds issued in the investor's state of residence offer the further benefit that interest income is untaxed at the state level.

A nationally-diversified municipal bond allocation gives up much of the state income tax benefit, but it mitigates the risks associated with geographic concentration. These risks include regional economic dislocation, local political risks, and natural disasters. These are important considerations given the role of municipal bonds as risk-control assets in a portfolio.

The municipal bond market is comprised of approximately one million unique municipal securities, but posts only about 40,000 daily trades. The vast majority of municipal securities (99%) do not trade on a given day, and nearly two-thirds trade less than ten times a year. Limiting an allocation to a specific state can further reduce liquidity, which can be an issue when using municipal bonds to fund high-priority and nearer-term financial goals.

We examine whether investors are compensated for this reduction in diversification and liquidity from holding a state-specific municipal bond allocation. We look at two major high tax states — California and New York — and compare the after-tax return and risk benefits of allocating to state-specific vs. nationally-diversified municipal bonds in portfolios that can also own equities.

## **RETURN AND RISK PARAMETERS**

Our proxy for nationally-diversified municipal bonds is the Bloomberg Barclays Municipal Bond Index, a broad-market index of investment-grade municipal bonds. California and New York bonds are represented by the Bloomberg Barclays Municipal California Exempt and the Bloomberg Barclays Municipal New York Exempt indices, which are components of the broad-market index. The MSCI All Country World Index represents global equity. Risk parameters (standard deviations and correlations) for municipal bonds and global equity are estimated from the monthly returns of the four indices since their common inception (August 1993 to March 2019).

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We use the yield-to-worst (YTW) of each municipal bond index at the end of March 2019 as the expected return for nationally-diversified, California, and New York municipal bonds. A bond's YTW is calculated on all possible call dates and is the lowest of yield-to-maturity or possible yield-to-call. It is a fair estimate of the *relative* expected returns of the bond indices, which is what is important to our tests. For global equity, we use the 6.2% return forecast of Northern Trust's Investment Policy Committee.

Exhibit 1 shows that the three municipal bond indices have similar average maturities and credit quality. The expected returns (YTW) are also similar, and the risk parameters indicate they are all low-risk and good diversifiers of equity.

#### EXHIBIT 1 – MUNICIPAL BOND CHARACTERISTICS

	MATURITY	DURATION	CREDIT QUALITY	YTW	STANDARD DEVIATION	CORREATION TO EQUITY
<b>National</b>	13.12	5.82	AA2/AA3	2.32	4.21	0.06
<b>California</b>	13.95	5.97	AA2/AA3	2.20	4.65	0.08
<b>New York</b>	13.56	5.52	AA2/AA3	2.20	4.13	0.06

Sources: Northern Trust Research, Bloomberg Barclays, Morningstar

We adjust return and risk parameters in Exhibit 1 to take into account the effect of federal and state taxes for California and New York residents in the highest marginal tax brackets.<sup>1</sup> Exhibit 2 shows the top marginal tax rates used in this analysis for each jurisdiction.<sup>2</sup> We note that the national municipal bond index holds allocations to California and New York bonds (17.0% and 15.4% respectively), which benefits residents of those states and was accounted for in our analysis.

#### EXHIBIT 2 – TOP MARGINAL TAX RATES

	FEDERAL	CALIFORNIA	NEW YORK
<b>Ordinary Income</b>	37.00%	13.30%	8.82%
<b>Qualified Dividends</b>	20.00%	13.30%	8.82%
<b>Capital Gains</b>	20.00%	13.30%	8.82%

Sources: Northern Trust Research

1 The after-tax methodology is based on Mladina, Murphy and Ruloff, "Asset Allocation with Real-World Constraints," Level 3 Reading 18, CFA Institute (2017) and enhanced with Mladina "Refining After-Tax Return and Risk Parameters," (2019). The tax modeling assumes a one-year holding period, though the holding period is irrelevant for purposes of these tests.

2 We display the federal ordinary income tax rate in Exhibit 2 for comparative purposes, but it is not a factor in this analysis.

**OPTIMIZATION TESTS**

For a resident of each state, we run two optimization tests using after-tax return and risk parameters. The first test is unconstrained, allowing the optimizer to allocate freely between the three assets (global equity, national and state-specific municipal bonds) to find the asset mix with the highest risk-adjusted, after-tax return. The second test holds the equity allocation constant at 60% to represent a standard 60% stock/40% bond portfolio, but is otherwise unconstrained. These tests present a horse race to determine which version of municipal bonds improves taxable portfolios the most.

Exhibit 3 shows the optimization results for a California resident, where expected return, risk, and efficiency ratios (return/risk) are after-tax.

**EXHIBIT 3 – AFTER-TAX OPTIMIZATION RESULTS FOR A CALIFORNIA RESIDENT**

	OPTIMAL MIX	WITH 60% EQUITY	
<b>Global Equity</b>	15%	60%	60%
<b>National Municipal</b>	85%	0%	40%
<b>California Municipal</b>	0%	40%	0%
<b>Expected Return</b>	2.54%	3.85%	3.78%
<b>Risk (Standard Deviation)</b>	2.88%	6.17%	6.12%
<b>Efficiency Ratio</b>	0.88	0.62	0.62

Sources: Northern Trust Research

The unconstrained optimization allocates 15% to equity and the remainder to nationally-diversified municipal bonds, producing an efficiency ratio of 0.88. The optimal asset mix does not include a California-specific allocation despite the state tax benefits.

When global equity is held constant at 60% of the total portfolio, the optimizer flips the allocation from national to California-specific municipal bonds, but just barely. The differences in after-tax return and risk are small and mixed when compared to holding 40% in nationally-diversified municipal bonds, and the efficiency ratios are essentially identical at 0.62.

For a New York resident, the unconstrained optimization allocates 14% to equity and the 86% balance to New York-specific municipal bonds, which is a different result than California. But Exhibit 4 shows the after-tax portfolio benefits are very small when compared to holding 86% in nationally-diversified municipal bonds, amounting to only a 5 basis point difference in after-tax return and risk.

Similarly, when global equity is held constant at 60% of the total portfolio, the optimizer continues to load to New York-specific bonds, but the differences in after-tax return and risk are only a couple of basis points when compared to holding 40% in nationally-diversified municipal bonds.

**EXHIBIT 4 – AFTER-TAX OPTIMIZATION RESULTS FOR A NEW YORK RESIDENT**

	OPTIMAL MIX	WITH NATIONAL	WITH 60% EQUITY	
Global Equity	14%	14%	60%	60%
National Municipal	0%	86%	0%	40%
New York Municipal	86%	0%	40%	0%
Expected Return	2.70%	2.65%	4.03%	4.01%
Risk (Standard Deviation)	3.02%	3.06%	6.52%	6.53%
Efficiency Ratio	0.89	0.87	0.62	0.61

Sources: Northern Trust Research

Overall, we find that the after-tax portfolio benefits of owning state-specific municipal bond allocations are close to zero. These results are consistent with highly competitive municipal bond markets that price bonds across tax jurisdictions to achieve equilibrium so that investors are indifferent. However, for no perceivable incremental cost, national diversification mitigates the risks associated with geographic concentration — tail risks not well captured by historical standard deviations. We think it makes sense to go national and diversify, particularly for investors who use municipal bonds as risk-control assets in multi-asset portfolios.

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National diversification mitigates the risks associated with geographic concentration.

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