



NORTHERN FUNDS AFTER-TAX RETURN RANKINGS

June 30, 2018

As the old adage goes ... “It’s not what you make, but what you keep.” Nothing sums up the potential benefit of municipal investing better than this! Investors are always seeking ways to help minimize their tax exposure. At Northern Trust, we believe that municipal bond and tax-advantaged funds should aim to maximize after-tax income for clients.

Most well-known mutual fund rankings and ratings (stars, etc.) use **pre-tax returns and yields** in their analysis. So these ratings and rankings can, and often do, include returns of taxable municipal bonds and AMT-eligible bonds, which can provide an unclear picture for investors.

At Northern Trust, we of course keep track of the mutual fund ratings and rankings, but landing high within those ‘pre-tax’ categories isn’t what drives our security selection and portfolio management.

We seek to provide clients with competitive pre-tax returns, but more importantly, **favorable after-tax net returns**. In pursuit of this, we employ thoughtful analysis and active trading to ensure our portfolios are positioned to help generate a strong after-tax total return. This sometimes results in a turnover rate higher than our peers, but we believe our net after-tax returns and peer rankings illustrate the benefits of this active approach.

We hope you find the information in this report helpful. It includes our pre- and post-tax returns along with after-tax rankings provided by Morningstar. For more information, financial professionals should contact their Northern Trust Business Development Associate or the Financial Intermediary Consulting Group at **877-867-1259**; individual investors should contact the Northern Funds Center at **800-595-9111**.

A Conservative Investment Approach

Northern Trust has built a tradition of strength and stability in investment management. Markets fluctuate over time, but we have remained steadfast in our disciplined, risk-managed investment philosophy.

MORNINGSTAR AFTER-TAX RETURN % RANKING AS OF 06/30/18

Fund Name (Ticker) Category	Total Return % Rank in Category	After-Tax Return Pre-Liquidation % Rank in Category	After-Tax Return Post-Liquidation % Rank in Category	Total Return Absolute Rank in Category	# of Funds/Category	After-Tax Returns Pre-Liquidation in Category	After-Tax Returns Post-Liquidation in Category
Tax-Exempt (NOTEX) Municipal National Long							
1-Year	68	50	51	112	155	1.44%	2.14%
3-Year	55	42	46	79	146	2.88%	2.96%
5-Year	53	48	48	64	127	3.65%	3.65%
10-Year	44	52	47	43	105	4.27%	4.22%
Intermediate Tax-Exempt (NOITX) Municipal National Intermediate							
1-Year	68	50	54	216	304	0.61%	1.19%
3-Year	55	52	51	135	261	1.93%	2.06%
5-Year	54	60	60	120	233	2.51%	2.50%
10-Year	62	70	69	93	154	3.29%	3.23%
Short-Intermediate Tax-Exempt (NSITX) Municipal National Short							
1-Year	89	70	65	164	188	-0.11%	0.49%
3-Year	68	59	54	116	174	0.67%	0.82%
5-Year	54	49	44	81	152	0.87%	0.98%
10-Year	58	50	51	52	96	1.69%	1.67%
Arizona Tax-Exempt (NOAZX) Municipal Single State Intermediate							
1-Year	37	25	23	45	156	0.76%	1.66%
3-Year	7	12	9	8	143	2.25%	2.49%
5-Year	9	11	8	11	140	3.17%	3.24%
10-Year	3	7	6	3	117	4.13%	4.06%
California Intermediate Tax-Exempt (NCITX) Municipal California Intermediate							
1-Year	72	54	45	48	66	0.64%	1.45%
3-Year	45	43	43	29	58	2.04%	2.23%
5-Year	32	32	33	21	54	3.05%	3.01%
10-Year	33	30	34	17	43	3.70%	3.61%
California Tax-Exempt (NCATX) Municipal California Long							
1-Year	67	46	42	66	98	1.63%	2.39%
3-Year	63	59	59	54	87	2.66%	2.86%
5-Year	38	40	37	31	83	4.18%	4.10%
10-Year	19	17	19	13	67	4.94%	4.80%
High Yield Municipal (NHVMX) High Yield Municipal							
1-Year	85	61	51	157	179	2.68%	3.26%
3-Year	78	67	66	122	154	3.46%	3.56%
5-Year	76	71	69	92	122	4.35%	4.32%
10-Year	88	85	85	69	79	4.13%	4.16%
Tax-Advantaged Ultra-Short Fixed Income (NTAUX) Ultrashort Bond							
1-Year	90	81	84	166	179	0.32%	0.45%
3-Year	78	65	65	106	139	0.47%	0.49%
5-Year	67	56	58	74	109	0.46%	0.46%
10-Year	-	-	-	-	-	-	-

Source: Morningstar

After-tax returns are calculated using the historical highest individual federal marginal income tax rates and do not reflect the impact of state and local taxes. Actual after-tax returns depend on an investor's tax situation and may differ from those shown.

FUND PERFORMANCE AS OF 06/30/18

Fund Name	Quarter	YTD	1-Year	3-Year	5-Year	10-Year	Since Inception	Gross Expense Ratio	Net Expense Ratio	Inception Date
Tax-Exempt^{1,5}	0.73%	-0.48%	1.45%	2.89%	3.70%	4.46%	4.91%	0.48%	0.46%	4/1/94
Bloomberg Barclays U.S. Municipal Index	0.87%	-0.25%	1.56%	2.85%	3.53%	4.43%	5.22%	—	—	
Intermediate Tax-Exempt^{1,5}	0.56%	-0.55%	0.61%	2.18%	2.70%	3.53%	4.09%	0.49%	0.46%	4/1/94
Bloomberg Barclays Intermediate Municipal Bond Index	0.94%	-0.36%	0.38%	2.25%	2.88%	4.23%	4.94%	—	—	
Short-Intermediate Tax-Exempt^{1,5}	0.44%	0.17%	-0.07%	0.70%	0.89%	1.70%	1.87%	0.48%	0.46%	8/22/07
Bloomberg Barclays 1-5 Year Blend Municipal Bond Index	0.71%	0.66%	0.54%	1.20%	1.42%	2.47%	2.72%	—	—	
Arizona Tax-Exempt^{1,3,4,5}	0.79%	-0.56%	0.77%	2.49%	3.37%	4.26%	4.49%	0.61%	0.48%	10/1/99
Bloomberg Barclays Arizona Municipal Bond Index	0.84%	-0.29%	1.16%	2.69%	3.55%	4.52%	4.80%	—	—	
California Intermediate Tax-Exempt^{1,3,4,5}	0.76%	-0.20%	0.64%	2.18%	3.14%	3.79%	3.99%	0.51%	0.46%	10/1/99
Bloomberg Barclays California Intermediate Municipal Bond Index	1.05%	-0.03%	0.59%	2.13%	2.99%	4.38%	4.64%	—	—	
California Tax-Exempt^{1,3,4,5}	1.00%	-0.13%	1.65%	2.82%	4.43%	5.24%	5.26%	0.58%	0.47%	4/8/97
Bloomberg Barclays California Municipal Bond Index	0.97%	-0.11%	1.80%	2.86%	3.94%	4.74%	5.14%	—	—	
High Yield Municipal^{1,2,5}	0.85%	-0.10%	2.70%	3.46%	4.35%	4.13%	3.81%	0.83%	0.61%*	12/31/98
Bloomberg Barclays Muni Bond 65-35 Investment Grade/High Yield Index	1.63%	1.11%	3.49%	4.20%	4.26%	5.04%	4.93%	—	—	
Tax-Advantaged Ultra-Short Fixed Income¹	0.51%	0.70%	0.78%	0.84%	0.77%	—	0.98%	0.26%	0.25%	6/18/09
**75% ICE BofA ML 6-12 Month Municipal Securities Index and 25% ICE BofA ML 1-3 Year US General Obligation Municipal Securities Index	0.53%	0.82%	0.92%	0.77%	0.64%	—	0.76%	—	—	

Performance quoted represents past performance and does not guarantee future results. Investment return and principal value will fluctuate so that shares, when redeemed, may be worth more or less than their original cost. Current performance may be lower or higher than that shown here. Performance data current to the most recent month end is available by calling 800-595-9111.

Northern Funds include contractual expense reimbursements that if not extended, will end on July 31, 2018.

*Effective April, 1, 2018 the High Yield Municipal Fund had a net expense reduction from 0.81% to 0.61%.

DATA DEFINITIONS

% Rank in Category

This is the fund's total-return percentile rank relative to all funds that have the same category for the same time period. The highest (or most favorable) percentile rank is 1, and the lowest (or least favorable) percentile rank is 100. The top-performing fund in a category will always receive a rank of 1.

Pre-Tax Return

The pre-tax return is simply the average annual compound (annualized) rate of return the fund has earned before accounting for any taxes. It assumes re-investment of any dividend or interest income, but does not reflect the taxes owed on those distributions. It can be calculated for virtually any period, but is typically reported for the one-, three-, five- and 10-year periods. Morningstar shows the pre-tax return in its tax analysis simply for convenient comparison to tax-adjusted returns.

Tax-Adjusted Return

Taxes are a significant consideration for many investors who own mutual funds in taxable accounts. When a fund receives a stock dividend or interest from a bond, it will divide that dividend among its shareholders, and when a fund sells a security at a gain, it will divide that capital gain among its shareholders. Investors pay taxes on these dividends and capital gains, and they may also pay taxes on capital gains when they sell the fund. Investors can compare the total return, load-adjusted return, and after-tax returns for a

fund to understand how loads and taxes affect the performance of the fund. Investors can also use after-tax returns to compare one fund to another. Tax-adjusted returns are adjusted for taxes and sales charges and follow the SEC guidelines for calculating returns before sale of shares. The tax-adjusted return shows a fund's annualized after-tax total return for the five- and 10-year periods, excluding any capital-gains effects that would result from selling the fund at the end of the period. To determine this figure, all income and short-term capital gains distributions are taxed at the maximum federal rate at the time of distribution. Long-term capital gains are taxed at a 15% rate. The after-tax portion is then reinvested in the fund. State and local taxes are ignored, and only the capital gains are adjusted for tax-exempt funds, as the income from these funds is nontaxable.

Risk considerations pertain to all Funds. Each risk consideration may vary according to each Fund and are described in more detail in the Fund prospectus.

There are risks involved in investing including possible loss of principal. There is no guarantee that the investment objectives of any fund or strategy will be met. Risk controls and models do not promise any level of performance or guarantee against loss of principal.

** Effective October 2017, ICE data services acquired BofA Indices.

INDEX DEFINITIONS

Bloomberg Barclays Arizona Municipal Bond Index is an unmanaged index of investment grade (Baa3 or better) tax-exempt Arizona bonds with a remaining maturity of at least one year.

Bloomberg Barclays California Intermediate Municipal Bond Index is an unmanaged index of investment grade (Baa3 or better) tax-exempt California bonds with maturities of five to 10 years.

Bloomberg Barclays California Municipal Bond Index is an unmanaged index of investment grade (Baa3 or better) tax-exempt California bonds with a remaining maturity of at least one year.

Bloomberg Barclays Intermediate Municipal Bond Index is an unmanaged index of investment grade (Baa3 or better) tax-exempt bonds with maturities of five to 10 years.

Bloomberg Barclays Municipal Bond 65-35 Investment Grade/High Yield Index is an unmanaged index of investment and non-investment-grade bonds, with a 65% weighting in the Barclays U.S. Municipal Index and a 35% weighting to the Barclays Municipal High Yield Index.

Bloomberg Barclays 1-5 Year Blend Municipal Bond Index is an unmanaged index of investment grade (Baa3 or better) tax-exempt bonds with maturities of at least one year and less than six years.

Bloomberg Barclays U.S. Municipal Bond Index is an unmanaged index of investment grade (Baa3 or better) tax-exempt bonds with a remaining maturity of at least one year.

ICE BofA ML 6-12 Month Municipal Securities Index tracks the performance of U.S. dollar-denominated, investment grade, tax-exempt debt, publicly issued by U.S. states and territories, and their political subdivisions, in the U.S. domestic market. Qualifying securities must have at least six months and less than 12 months remaining term to final maturity, a fixed coupon schedule, and an investment grade rating (based on an average of Moody's, S&P and Fitch).

ICE BofA ML 1-3 Year US General Obligation Municipal Securities Index tracks the performance of U.S. dollar denominated, investment grade, tax-exempt, general obligations publicly issued by U.S. states and territories, and their political subdivisions, in the U.S. domestic market. Qualifying securities must have one to three years remaining term to maturity, a fixed coupon schedule and an investment grade rating (based on an average of Moody's S&P and Fitch).

It is not possible to invest directly in an index. Portfolio holdings are subject to change.

RISK DEFINITIONS

¹**Bond Risk:** Bond funds will tend to experience smaller fluctuations in value than stock funds. However, investors in any bond fund should anticipate fluctuations in price, especially for longer-term issues and in environments of rising interest rates.

²**High-Yield Risk:** Although a high yield fund's yield may be higher than that of fixed income funds that purchase higher-rated securities, the potentially higher yield is a function of the greater risk that a high yield fund's share price will decline.

³**Non-Diversified Risk:** The Fund invests in a smaller number of stocks than the average mutual fund. The change in value of a single holding may have a more pronounced effect on the Fund's net asset value and performance than for other funds.

⁴**Regional Investment Risk:** The geographical concentration of portfolio holdings in this Fund may involve increased risk.

⁵**Tax-Free/AMT Risk:** Tax-exempt funds' income may be subject to certain state and local taxes and, depending on your tax status, the federal alternative minimum tax.

Please carefully read the prospectus and consider the investment objectives, risks, charges and expenses of Northern Funds before investing. Call 800-595-9111 to obtain a prospectus and summary prospectus, which contains this and other information about the funds.

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