

Fidelity Capital Markets FCM Municipal Compendium 2021

The FCM Municipal Compendium is a compilation of statistics relevant to the municipal bond market. The data includes information on returns, relative value, credit, state tax revenues and debt, bond issuance, and demographics. The focus of the Compendium is on the fifty U.S. states, but also covers market-wide trends. Aggregate statistics are provided for municipal bond market volatility-adjusted returns and correlations versus other fixed income investments; yield comparisons to Treasury and corporate bonds; credit rating trends; fund balance trends; municipal securities holders; bond issuance trends; and state tax revenue trends. Individual state statistics are provided for state bond market returns; credit ratings; debt and pension obligations; fund balances; state tax revenues and tax burdens; tax base trends; and economic diversity. The individual state statistics are ranked and presented in tables by quintile.

By: Ilya Perlovsky, CFA
FCM Market Strategist
Thomas DeMarco, CFA
FCM Market Strategist

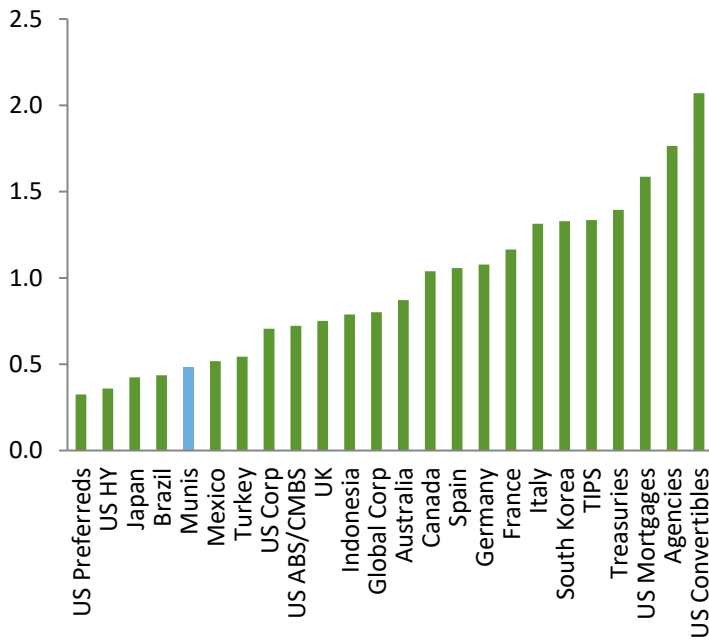
Past performance is no guarantee of future results.



Total Returns, Volatility, and Correlations

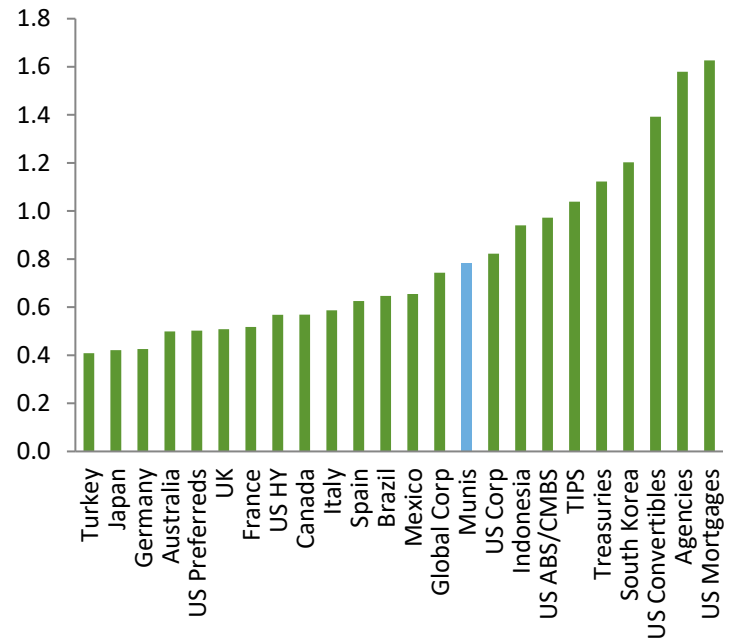
Fixed Income Return/Volatility Ratios

1 Year



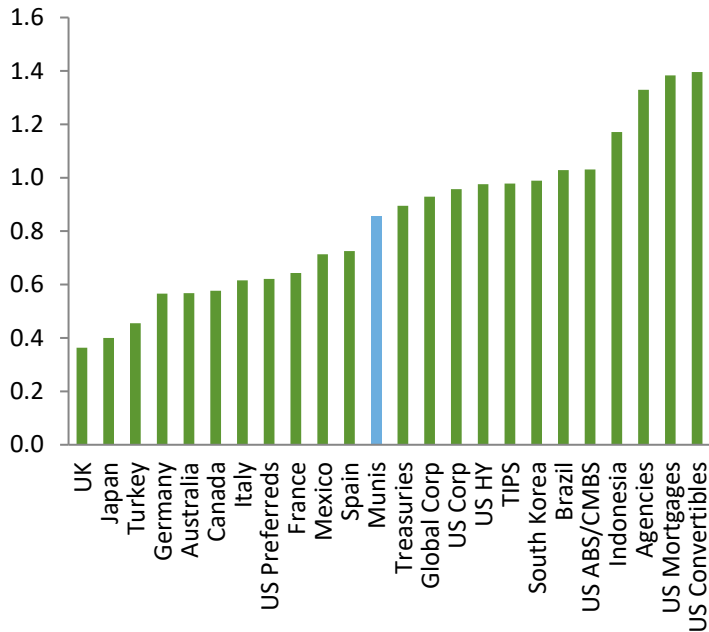
Fixed Income Return/Volatility Ratios

3 Years



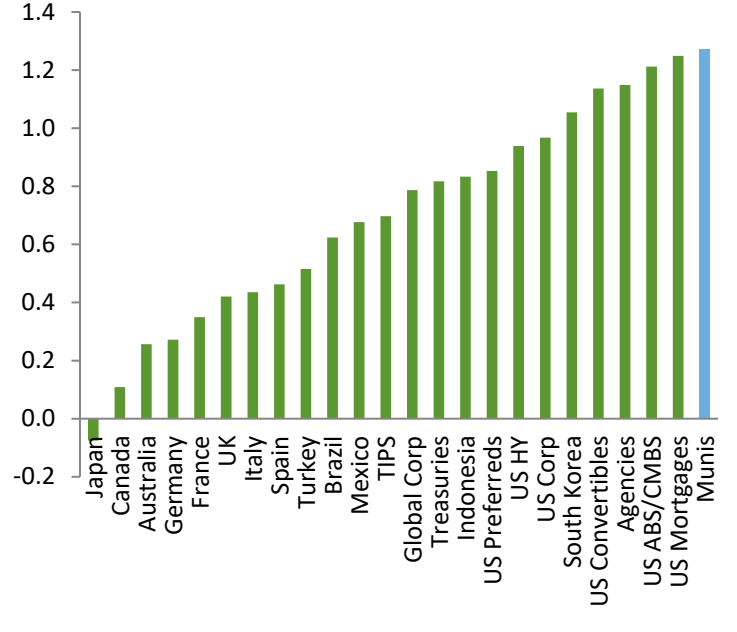
Fixed Income Return/Volatility Ratios

5 Years



Fixed Income Return/Volatility Ratios

10 Years

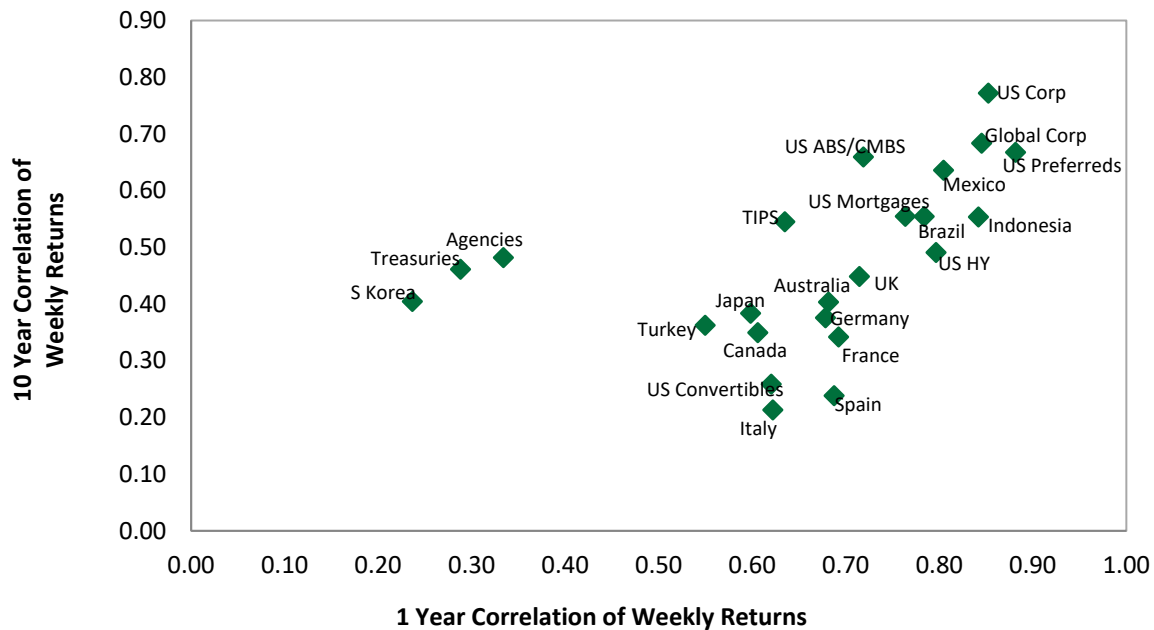


Source: ICE Data Indices, LLC, Bloomberg Finance LLP, FCM; Dec 31, 2020
Return: annual total return in USD; Volatility: annualized standard deviation of weekly total returns

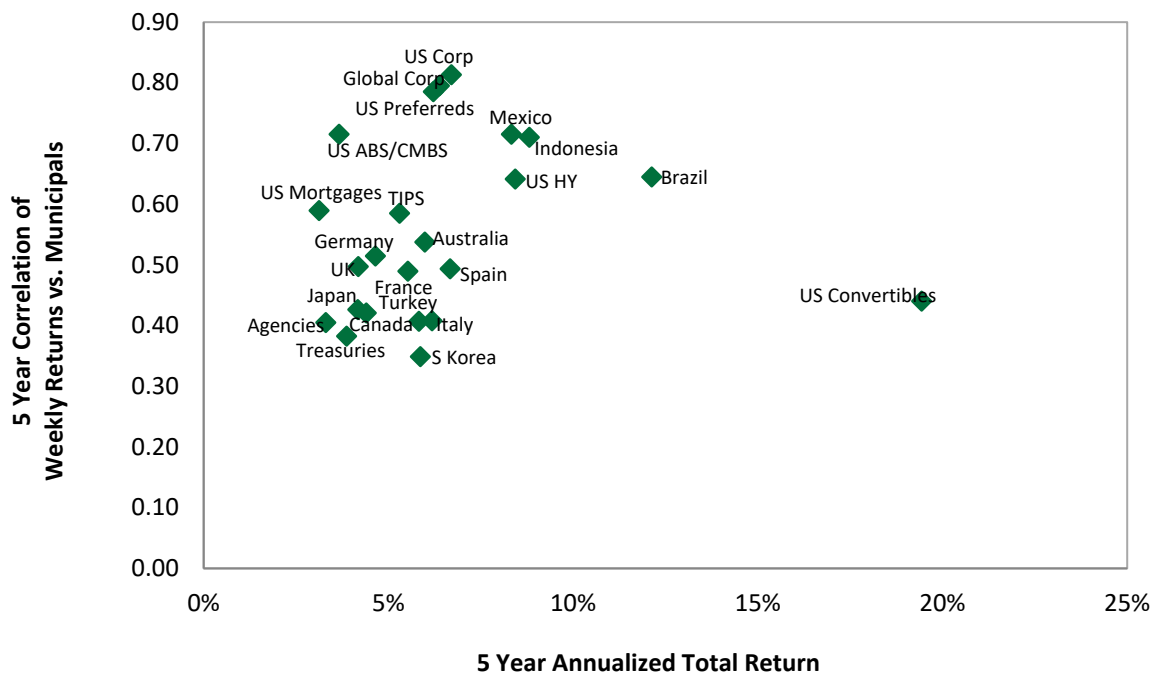
Total Returns, Volatility, and Correlations (cont.)

Municipals Correlation vs. Other Fixed Income

Long-term vs. Short-term Correlation of Total Returns in USD



5-Year Correlation vs. Total Return in USD



Source: ICE Data Indices, LLC, Bloomberg Finance LLP, FCM; Dec 31, 2020

Total Returns, Volatility, and Correlations (cont.)

S&P Municipal Bond Indices - 1 Year Total Return 2020

State	Total Return	State	Total Return	State	Total Return	State	Total Return	State	Total Return
Ohio	7.0%	Virginia	5.2%	South Carolina	5.0%	Kansas	4.8%	Tennessee	4.6%
West Virginia	5.8%	New Jersey	5.2%	North Carolina	4.9%	Florida	4.7%	Vermont	4.6%
Montana	5.6%	Oregon	5.1%	California	4.9%	Missouri	4.7%	Minnesota	4.6%
Colorado	5.5%	Rhode Island	5.1%	Arkansas	4.9%	Illinois	4.7%	Maine	4.5%
Michigan	5.5%	Alabama	5.1%	Georgia	4.9%	Idaho	4.7%	New Mexico	4.4%
Utah	5.4%	North Dakota	5.1%	Hawaii	4.9%	Nevada	4.7%	New York	4.3%
Nebraska	5.3%	Mississippi	5.1%	Massachusetts	4.8%	Maryland	4.7%	Alaska	4.2%
South Dakota	5.3%	Kentucky	5.1%	Louisiana	4.8%	Indiana	4.6%	Oklahoma	4.2%
Texas	5.3%	Pennsylvania	5.0%	Washington	4.8%	Delaware	4.6%	Wisconsin	3.6%
Wyoming	5.2%	Iowa	5.0%	Connecticut	4.8%	Arizona	4.6%	New Hampshire	3.6%

S&P Municipal Bond Indices - 3 Year Annualized Total Return 2017 - 2020

State	Total Return	State	Total Return	State	Total Return	State	Total Return	State	Total Return
Ohio	5.3%	Connecticut	4.6%	Oregon	4.4%	Massachusetts	4.2%	Kansas	4.1%
New Jersey	5.1%	Rhode Island	4.6%	Texas	4.4%	Arkansas	4.2%	North Carolina	4.1%
Illinois	5.0%	Alabama	4.6%	Nevada	4.4%	Vermont	4.2%	Delaware	4.1%
Colorado	4.8%	North Dakota	4.6%	Nebraska	4.4%	Arizona	4.2%	New York	4.1%
Michigan	4.8%	Wyoming	4.6%	Louisiana	4.3%	Indiana	4.2%	Maryland	4.0%
Montana	4.7%	Mississippi	4.5%	Missouri	4.3%	Minnesota	4.2%	Wisconsin	3.9%
South Dakota	4.6%	Kentucky	4.5%	Virginia	4.3%	Georgia	4.2%	New Mexico	3.8%
West Virginia	4.6%	South Carolina	4.5%	Florida	4.3%	Hawaii	4.1%	New Hampshire	3.8%
Utah	4.6%	Iowa	4.4%	Idaho	4.3%	Washington	4.1%	Alaska	3.8%
Pennsylvania	4.6%	California	4.4%	Maine	4.3%	Tennessee	4.1%	Oklahoma	3.7%

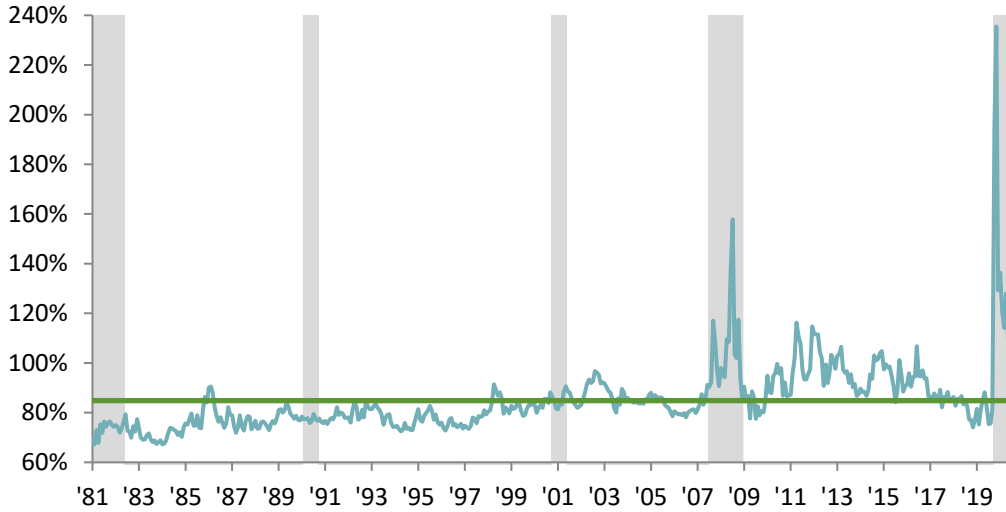
S&P Municipal Bond Indices - 5 Year Annualized Total Return 2015 - 2020

State	Total Return	State	Total Return	State	Total Return	State	Total Return	State	Total Return
Illinois	4.8%	Rhode Island	4.0%	Idaho	3.8%	Kansas	3.6%	Minnesota	3.5%
New Jersey	4.8%	West Virginia	3.9%	Nebraska	3.8%	Arizona	3.6%	Georgia	3.4%
Ohio	4.6%	Montana	3.9%	Florida	3.7%	Maine	3.6%	Washington	3.4%
Colorado	4.3%	South Carolina	3.9%	Texas	3.7%	Nevada	3.6%	Delaware	3.4%
Alabama	4.2%	Utah	3.9%	Vermont	3.7%	Alaska	3.5%	New Hampshire	3.4%
South Dakota	4.2%	Mississippi	3.9%	Virginia	3.7%	Tennessee	3.5%	Hawaii	3.4%
Michigan	4.2%	California	3.8%	Oregon	3.7%	Connecticut	3.5%	Maryland	3.3%
Wyoming	4.1%	Kentucky	3.8%	Arkansas	3.6%	Massachusetts	3.5%	Oklahoma	3.3%
Iowa	4.1%	Missouri	3.8%	Louisiana	3.6%	New York	3.5%	North Carolina	3.3%
Pennsylvania	4.0%	Indiana	3.8%	North Dakota	3.6%	Wisconsin	3.5%	New Mexico	3.1%

Source: Bloomberg Finance LLP, FCM; Dec 31, 2020

Relative Value vs. Treasuries

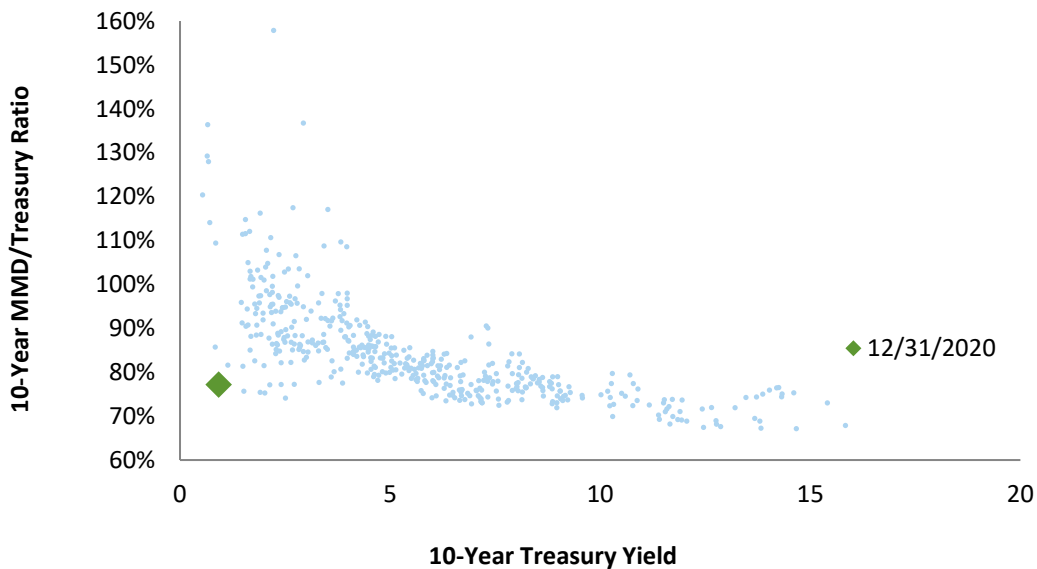
10-Year MMD / Treasury Yield Ratio



— Average

Source: Thomson Reuters, FCM; Dec 31, 2020
Note: Gray bars denote US recessions.

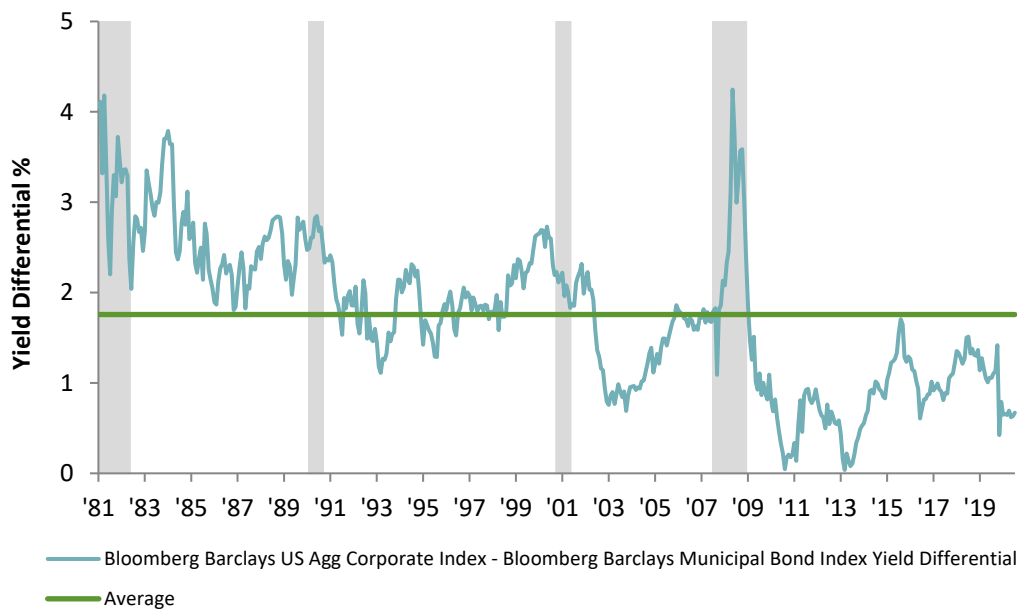
10-Year MMD / Treasury Yield Ratio Monthly 1981-2020



Source: Thomson Reuters, FCM; Dec 31, 2020

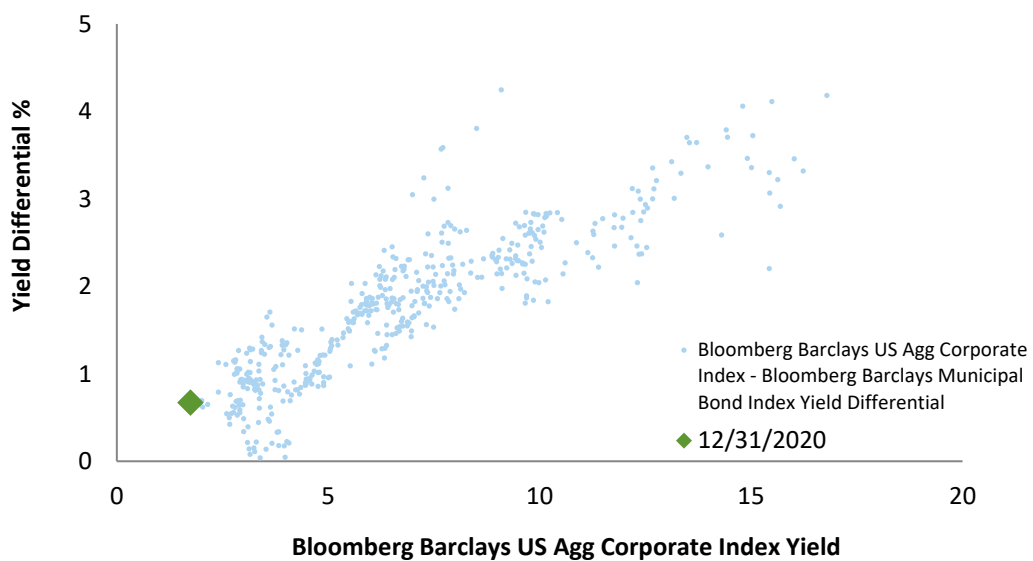
Relative Value vs. Corporates

Corporate - Municipal Yield Differential



Source: Bloomberg Finance LLP, FCM; Dec 31, 2020
Note: Gray bars denote US recessions.

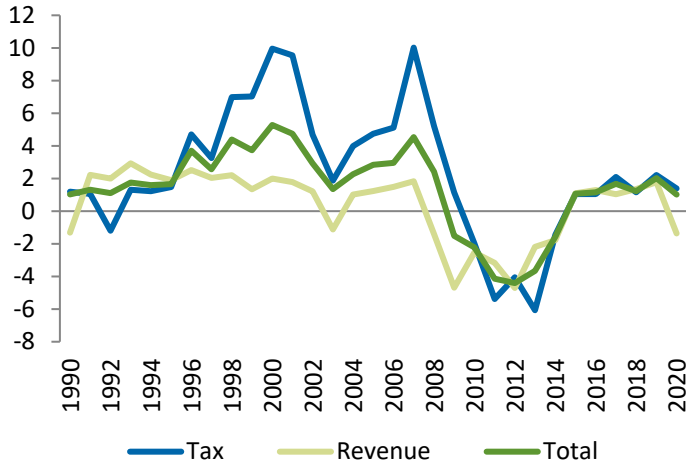
Corporate - Municipal Yield Differential Monthly 1981-2020



Source: Bloomberg Finance LLP, FCM; Dec 31, 2020

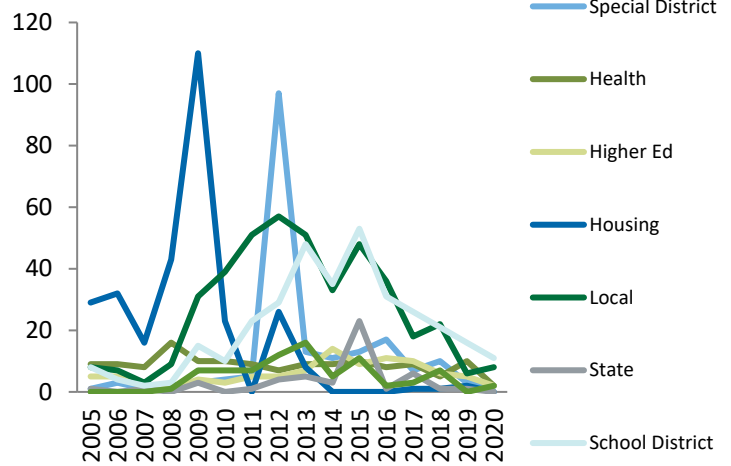
Public Finance Credit Ratings

Upgrades vs. Downgrades Ratio Number of Public Finance Ratings



Source: Moody's, FCM; as of Q3 2020
Note: A negative ratio indicates downgrades exceed upgrades.

Number of Multi-Notch Downgrades by Purpose



Source: Moody's, FCM; as of Q3 2020
Note: A multi-notch downgrade is any downward revision greater than 1 notch.

Moody's Upgrades vs. Downgrades Ratio by State 2020

State	Upgrade v Downgrade	State	Upgrade v Downgrade	State	Upgrade v Downgrade	State	Upgrade v Downgrade	State	Upgrade v Downgrade
Kentucky	10.00	Colorado	1.67	Delaware	1.00	South Dakota	0.00	Ohio	-1.89
Florida	3.67	Michigan	1.57	Idaho	1.00	Utah	0.00	North Dakota	-2.00
Alabama	3.00	Massachusetts	1.50	Iowa	1.00	West Virginia	0.00	Oklahoma	-2.00
Nebraska	3.00	Missouri	1.50	Maryland	1.00	Wyoming	0.00	Oregon	-2.00
Texas	2.67	Tennessee	1.50	Virginia	1.00	Minnesota	-1.14	Vermont	-2.00
Arizona	2.00	Georgia	1.40	Alaska	0.00	Washington	-1.17	Mississippi	-3.00
Indiana	2.00	North Carolina	1.33	Arkansas	0.00	New Jersey	-1.56	New Mexico	-3.50
New Hampshire	2.00	South Carolina	1.33	Maine	0.00	Wisconsin	-1.57	Hawaii	-4.00
Rhode Island	2.00	New York	1.25	Montana	0.00	Pennsylvania	-1.58	Kansas	-4.00
Illinois	1.89	Connecticut	1.00	Nevada	0.00	California	-1.63	Louisiana	-4.00

Source: Moody's, FCM; as of Q3 2020
Note: A negative ratio indicates downgrades exceed upgrades.

State Debt and Pension Obligations

State Net Tax-Supported Debt (NTSD) as a % of State Personal Income (PI)

State	NTSD/PI	State	NTSD/PI	State	NTSD/PI	State	NTSD/PI	State	NTSD/PI
Wyoming	0.0%	South Dakota	0.9%	Utah	1.5%	Pennsylvania	2.6%	Rhode Island	4.1%
Nebraska	0.0%	South Carolina	1.0%	Maine	1.9%	Wisconsin	2.8%	Illinois	4.5%
North Dakota	0.1%	Colorado	1.0%	Alabama	1.9%	Kansas	2.8%	New York	4.6%
Montana	0.2%	New Hampshire	1.1%	Vermont	1.9%	Virginia	2.8%	Mississippi	4.8%
Iowa	0.3%	Arizona	1.1%	Georgia	2.0%	California	3.2%	Kentucky	5.2%
Indiana	0.5%	North Carolina	1.2%	Alaska	2.0%	Louisiana	3.2%	New Jersey	5.8%
Tennessee	0.6%	Idaho	1.2%	Ohio	2.3%	Maryland	3.5%	Delaware	6.1%
Texas	0.7%	Michigan	1.2%	Arkansas	2.4%	Oregon	3.8%	Massachusetts	8.3%
Oklahoma	0.7%	Nevada	1.2%	Minnesota	2.4%	West Virginia	4.0%	Connecticut	8.4%
Missouri	0.9%	Florida	1.5%	New Mexico	2.5%	Washington	4.0%	Hawaii	9.6%

State Adjusted Net Pension Liability (ANPL) as a % of State Personal Income (PI)

State	ANPL/PI	State	ANPL/PI	State	ANPL/PI	State	ANPL/PI	State	ANPL/PI
North Carolina	1.8%	Wisconsin	3.2%	Georgia	4.3%	California	8.1%	Vermont	12.9%
Tennessee	1.8%	Virginia	3.3%	Missouri	4.3%	Texas	8.6%	Montana	12.9%
Florida	2.0%	Arizona	3.4%	Nevada	4.5%	New Mexico	8.6%	Maryland	13.5%
New Hampshire	2.3%	Minnesota	3.6%	Oregon	4.8%	Delaware	10.1%	Massachusetts	14.9%
Nebraska	2.5%	South Dakota	3.6%	Arkansas	5.0%	Maine	10.5%	Hawaii	16.7%
Ohio	2.7%	Alabama	3.6%	Indiana	5.4%	Pennsylvania	10.5%	New Jersey	17.9%
Idaho	2.7%	North Dakota	3.8%	Louisiana	5.7%	Kansas	10.5%	Kentucky	21.0%
Iowa	2.7%	Wyoming	3.8%	Mississippi	6.1%	Rhode Island	10.8%	Connecticut	22.5%
Utah	2.7%	Washington	3.9%	Colorado	7.1%	South Carolina	12.0%	Alaska	24.1%
New York	2.8%	Oklahoma	4.3%	Michigan	7.9%	West Virginia	12.6%	Illinois	30.8%

Combined NTSD & ANPL as a % of State Personal Income

State	Combined	State	Combined	State	Combined	State	Combined	State	Combined
Tennessee	2.4%	South Dakota	4.5%	Virginia	6.1%	Mississippi	10.9%	Delaware	16.2%
Nebraska	2.5%	Arizona	4.5%	Georgia	6.3%	New Mexico	11.1%	West Virginia	16.6%
Iowa	3.0%	Oklahoma	5.0%	New York	7.4%	California	11.3%	Maryland	17.0%
North Carolina	3.0%	Ohio	5.0%	Arkansas	7.4%	Maine	12.4%	Massachusetts	23.2%
New Hampshire	3.4%	Missouri	5.2%	Washington	7.9%	South Carolina	13.0%	New Jersey	23.7%
Florida	3.5%	Alabama	5.5%	Colorado	8.1%	Montana	13.1%	Alaska	26.1%
Wyoming	3.8%	Nevada	5.7%	Oregon	8.6%	Pennsylvania	13.1%	Kentucky	26.2%
North Dakota	3.9%	Indiana	5.9%	Louisiana	8.9%	Kansas	13.3%	Hawaii	26.3%
Idaho	3.9%	Minnesota	6.0%	Michigan	9.1%	Vermont	14.8%	Connecticut	30.9%
Utah	4.2%	Wisconsin	6.0%	Texas	9.3%	Rhode Island	14.9%	Illinois	35.3%

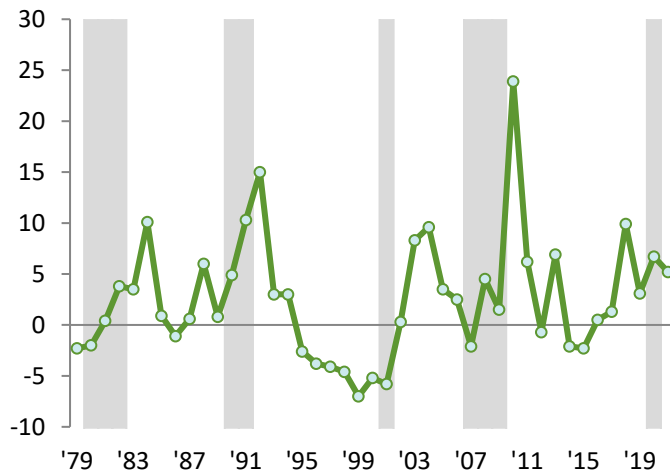
Source: Moody's, FCM; Dec 31, 2020

Net Tax Supported Debt: Debt secured by statewide taxes and other general resources, net of obligations that are self-supporting from pledged sources other than state taxes or operating resources, such as utility or local government revenues.

Adjusted Net Pension Liability: Moody's recalculation of net pension liabilities based on a market-determined discount rate and the market value of assets. Moody's allocates the net pension liabilities of multiple-employer cost-sharing plans among the plan sponsors based on the pro rata contribution of each sponsor to the plan and additional information from state officials and pension administrators.

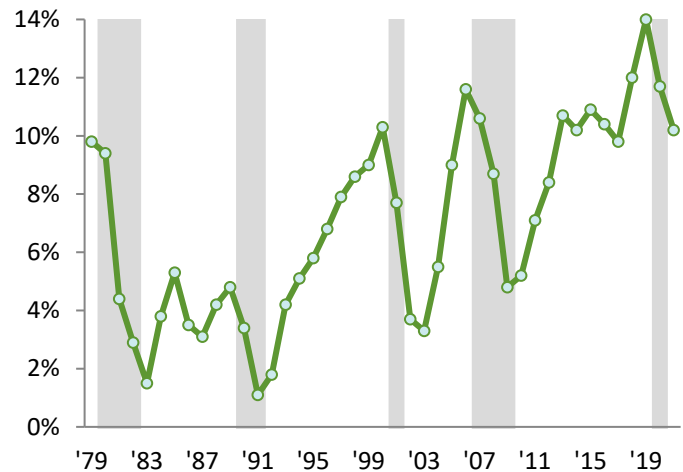
State Enacted Revenue Changes, Fund Balances, and Reserves

**Total Enacted State Revenue Changes
\$bn**



Source: National Association of State Budget Officers, FCM; Dec 31, 2020
Note: Gray bars denote years in which recession occurred.

**Total State Fiscal Year-End Balances
as a % of Expenditures**



Source: National Association of State Budget Officers, FCM; Dec 31, 2020
Note: Gray bars denote years in which recession occurred.

State Total Fiscal Year-End Balances as a % of Expenditures 2020

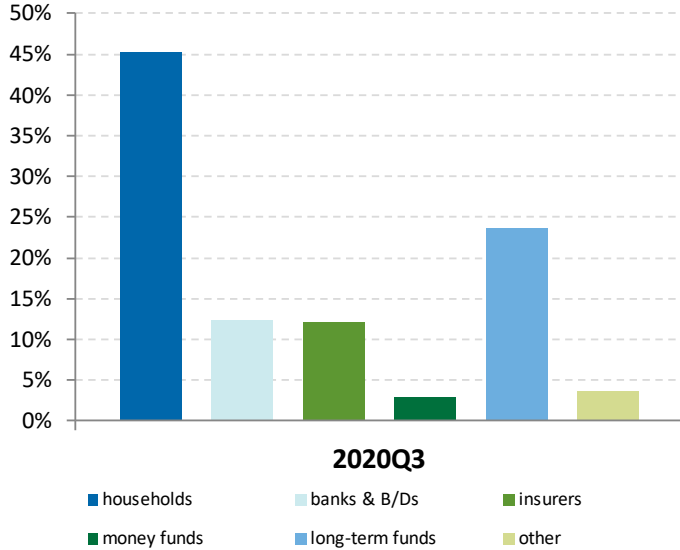
State	Balance/ Expenditures	State	Balance/ Expenditures	State	Balance/ Expenditures	State	Balance/ Expenditures	State	Balance/ Expenditures
Wyoming	96.9%	South Carolina	20.9%	Hawaii	13.1%	New York	11.5%	Kansas	7.5%
North Dakota	41.3%	Nevada	18.5%	Colorado	13.0%	South Dakota	11.4%	Oklahoma	7.3%
Alaska	30.3%	Alabama	17.2%	Utah	13.0%	North Carolina	11.0%	Rhode Island	6.9%
West Virginia	28.6%	Tennessee	16.3%	California	12.9%	Wisconsin	10.5%	Louisiana	5.9%
Michigan	26.3%	Connecticut	16.1%	Massachusetts	12.6%	Virginia	10.1%	Kentucky	5.6%
Nebraska	25.3%	Missouri	15.8%	Minnesota	12.0%	Georgia	9.8%	New Hampshire	4.7%
New Mexico	25.3%	Texas	15.3%	Maine	11.8%	Maryland	9.6%	New Jersey	4.3%
Montana	23.2%	Vermont	14.2%	Arizona	11.7%	Mississippi	8.8%	Arkansas	3.3%
Florida	21.5%	Iowa	13.8%	Ohio	11.7%	Indiana	8.6%	Illinois	0.5%
Delaware	21.3%	Oregon	13.5%	Idaho	11.5%	Washington	7.6%	Pennsylvania	-7.0%

Source: National Association of State Budget Officers, FCM; Dec 31, 2020

Note: Total balances include both the ending General Fund balance and Rainy Day Funds. Based on preliminary 2020 fiscal year end figures.

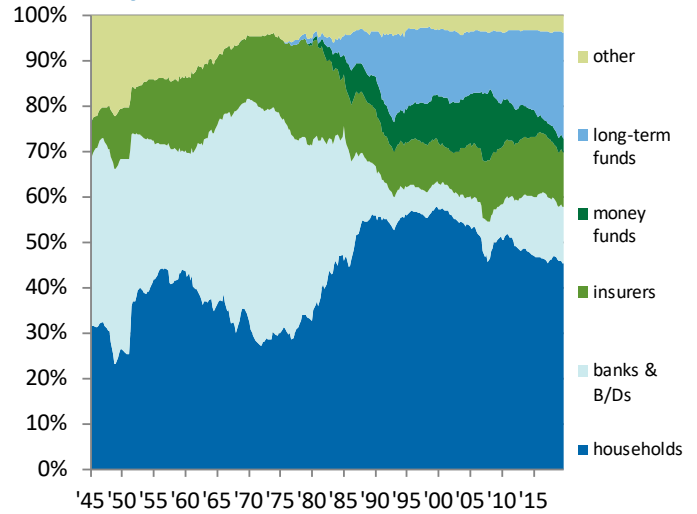
Municipal Securities Holders and Bond Issuance

Municipal Securities Holders



Source: Federal Reserve Board, FCM; Jan 11, 2021

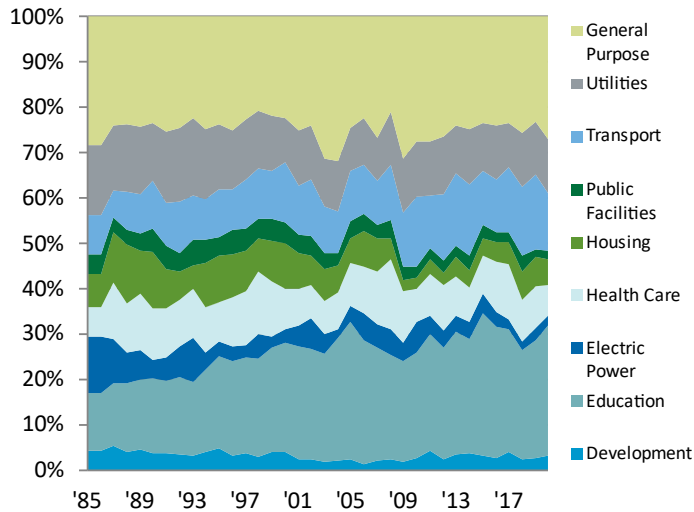
Municipal Securities Holders



Source: Federal Reserve Board, FCM; Jan 11, 2021

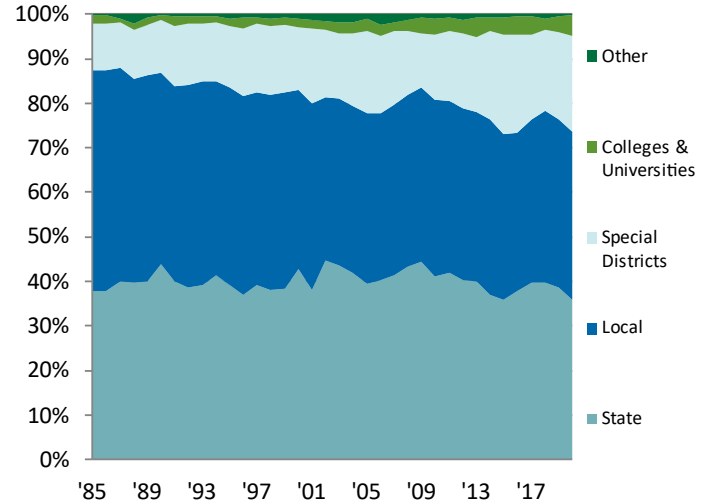
Note: Household data smoothed 1991 -2004 due to Federal Reserve 2004 methodology change

Municipal Bond Issuance Purpose



Source: The Bond Buyer, FCM; Jan 11, 2021

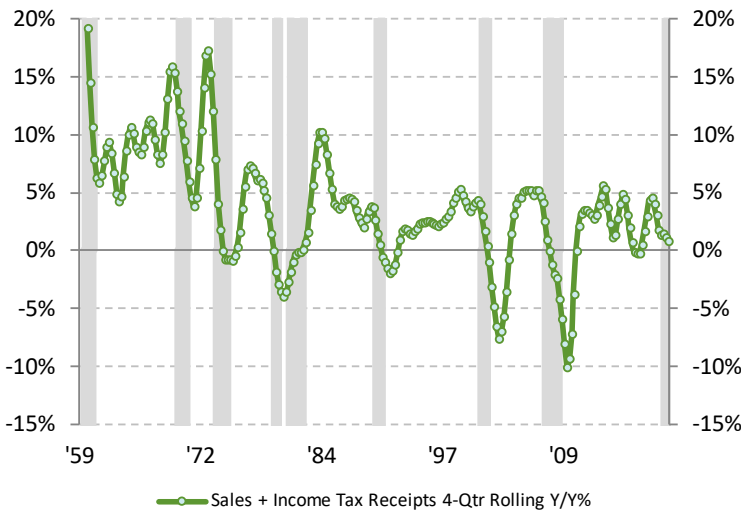
Municipal Bond Issuance Government Type



Source: The Bond Buyer, FCM; Jan 11, 2021

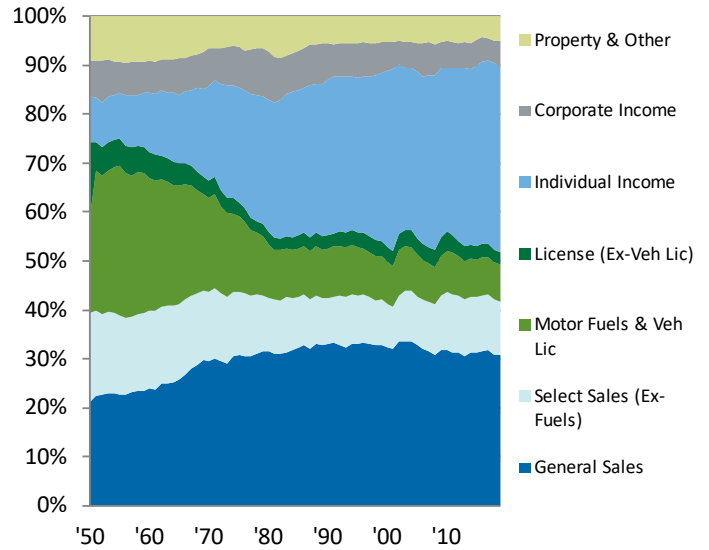
State Tax Revenues

Real Per Capita State & Local Government Sales and Income Tax Receipts



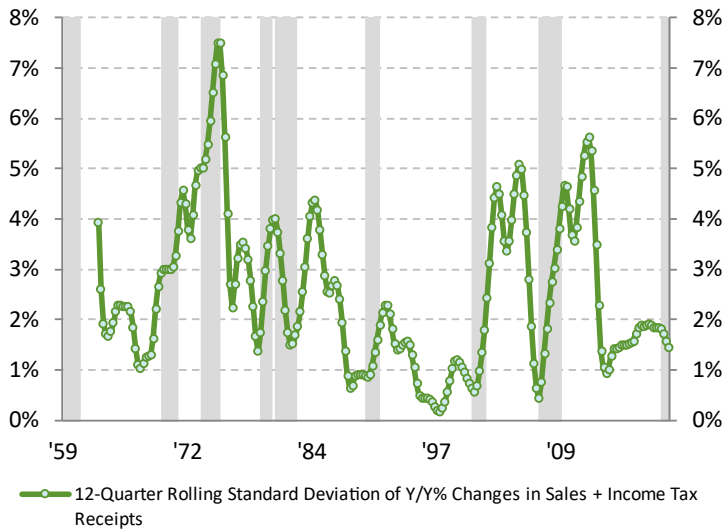
Source: Federal Reserve Board, FCM; Dec 31, 2020
Note: Gray bars denote years in which recession occurred.

Composition of State Tax Revenue



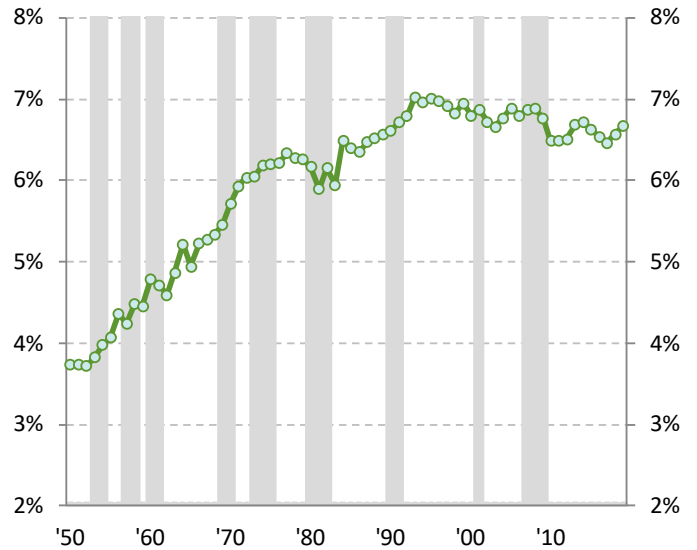
Source: US Census Bureau, FCM; Dec 31, 2020

Volatility of Real Per Capita State & Local Sales and Income Tax Receipts



Source: Federal Reserve Board, FCM; Dec 31, 2020
Note: Gray bars denote years in which recession occurred.

Median State Personal Tax Burden



Source: US Census Bureau, Bureau of Economic Analysis, FCM; Dec 31, 2020
Note: Gray bars denote years in which recession occurred.

State Tax Revenues (cont.)

Annual State Tax Revenue - Average All Negative Growth Years 1990 - 2019

State	Avg All Neg Yrs	State	Avg All Neg Yrs	State	Avg All Neg Yrs	State	Avg All Neg Yrs	State	Avg All Neg Yrs
Arkansas	-0.7%	West Virginia	-2.6%	Indiana	-3.2%	Alabama	-4.5%	New Mexico	-5.9%
South Dakota	-0.8%	Mississippi	-2.7%	Pennsylvania	-3.3%	Utah	-4.6%	Connecticut	-5.9%
Maryland	-1.3%	Virginia	-2.7%	Missouri	-3.5%	Montana	-4.8%	Colorado	-5.9%
New York	-1.7%	Wisconsin	-2.8%	Washington	-3.6%	Oklahoma	-5.2%	Louisiana	-6.2%
Iowa	-1.9%	Michigan	-2.8%	Kansas	-3.7%	Georgia	-5.4%	North Dakota	-10.2%
Vermont	-2.1%	North Carolina	-2.9%	South Carolina	-4.0%	Oregon	-5.4%	Wyoming	-10.2%
Delaware	-2.1%	Rhode Island	-3.1%	Tennessee	-4.3%	New Hampshire	-5.5%	Idaho	-10.4%
Maine	-2.5%	Ohio	-3.1%	New Jersey	-4.3%	Nevada	-5.6%	California	-10.4%
Kentucky	-2.6%	Illinois	-3.1%	Minnesota	-4.3%	Arizona	-5.7%	Massachusetts	-12.4%
Nebraska	-2.6%	Hawaii	-3.2%	Texas	-4.3%	Florida	-5.8%	Alaska	-29.8%

Annual State Tax Revenue - Y/Y% Change Sensitivity to Change in Nominal GDP 1990 - 2019

State	Beta	State	Beta	State	Beta	State	Beta	State	Beta
North Dakota	0.11	New York	1.20	Arkansas	1.52	New Jersey	1.77	Utah	2.14
Iowa	0.53	Oklahoma	1.23	Louisiana	1.56	Illinois	1.87	New Hampshire	2.18
Kentucky	0.62	Hawaii	1.26	Kansas	1.57	South Carolina	1.90	New Mexico	2.27
South Dakota	0.70	Missouri	1.29	Ohio	1.57	Montana	1.93	California	2.40
Wyoming	0.93	Mississippi	1.30	Pennsylvania	1.58	Virginia	1.93	Nevada	2.40
Wisconsin	1.04	Texas	1.35	Delaware	1.60	Oregon	1.94	Idaho	2.42
Indiana	1.06	Michigan	1.39	Tennessee	1.63	Georgia	2.01	Vermont	2.60
Maryland	1.11	Rhode Island	1.40	Alabama	1.66	North Carolina	2.01	Florida	2.74
West Virginia	1.12	Minnesota	1.50	Massachusetts	1.67	Colorado	2.04	Connecticut	2.79
Nebraska	1.18	Washington	1.52	Maine	1.73	Alaska	2.07	Arizona	2.89

Annual State Tax Revenue - Standard Deviation of Y/Y% Changes 1990 - 2019

State	Standard Deviation	State	Standard Deviation	State	Standard Deviation	State	Standard Deviation	State	Standard Deviation
South Dakota	2.7%	Indiana	4.1%	Tennessee	4.9%	New Jersey	5.6%	California	7.1%
Maryland	3.3%	Arkansas	4.3%	Virginia	4.9%	Oregon	5.8%	Arizona	7.3%
Iowa	3.3%	New York	4.3%	Pennsylvania	5.2%	Michigan	5.9%	Montana	7.6%
Wisconsin	3.4%	Washington	4.3%	Massachusetts	5.2%	Nevada	5.9%	Connecticut	7.7%
Minnesota	3.8%	Nebraska	4.5%	Texas	5.2%	Florida	6.3%	New Mexico	9.0%
Kentucky	3.9%	North Carolina	4.6%	Hawaii	5.4%	Delaware	6.4%	Vermont	9.2%
Alabama	3.9%	Mississippi	4.7%	Illinois	5.4%	Idaho	6.4%	Wyoming	11.6%
Ohio	4.0%	Maine	4.7%	Georgia	5.4%	Utah	6.5%	North Dakota	13.7%
Rhode Island	4.1%	West Virginia	4.8%	Colorado	5.6%	Oklahoma	6.6%	New Hampshire	15.5%
Missouri	4.1%	South Carolina	4.9%	Kansas	5.6%	Louisiana	6.7%	Alaska	40.4%

Source: US Census Bureau, FCM; Dec 31, 2020

State Tax Revenues (cont.)

State Personal Tax Burden 2019

State	2019	State	2019	State	2019	State	2019	State	2019
Alaska	1.5%	Virginia	5.8%	Alabama	6.5%	Oregon	7.2%	Kentucky	8.2%
New Hampshire	2.9%	South Carolina	5.9%	Arizona	6.6%	Kansas	7.2%	New Mexico	8.3%
Texas	4.4%	North Dakota	5.9%	Massachusetts	6.6%	Wisconsin	7.3%	Maine	8.3%
Florida	4.6%	Nebraska	6.0%	Washington	6.6%	Nevada	7.3%	Mississippi	9.1%
Wyoming	4.7%	Oklahoma	6.1%	Maryland	6.6%	Indiana	7.3%	Arkansas	9.3%
South Dakota	4.7%	Illinois	6.2%	Pennsylvania	6.7%	Rhode Island	7.4%	Minnesota	9.5%
Colorado	4.8%	Louisiana	6.2%	Idaho	6.8%	Iowa	7.5%	West Virginia	9.7%
Tennessee	4.9%	Ohio	6.4%	Utah	6.9%	New York	7.5%	Delaware	10.3%
Missouri	5.3%	New Jersey	6.5%	North Carolina	7.1%	Michigan	7.5%	Hawaii	11.8%
Georgia	5.5%	Montana	6.5%	Connecticut	7.1%	California	7.7%	Vermont	11.9%

State Personal Tax Burden Average 1990 - 2019

State	Average	State	Average	State	Average	State	Average	State	Average
Alaska	1.6%	Illinois	5.8%	Kansas	6.6%	Connecticut	7.0%	New Mexico	7.9%
New Hampshire	3.0%	Missouri	5.8%	Pennsylvania	6.6%	Rhode Island	7.2%	Maine	8.4%
South Dakota	4.8%	Maryland	6.0%	Arizona	6.6%	Iowa	7.2%	Kentucky	8.4%
Colorado	4.8%	New Jersey	6.1%	South Carolina	6.7%	California	7.3%	Delaware	8.5%
Texas	4.9%	Louisiana	6.2%	Ohio	6.8%	North Carolina	7.3%	Mississippi	8.7%
Wyoming	5.2%	Nebraska	6.2%	Massachusetts	6.8%	New York	7.3%	Minnesota	8.9%
Virginia	5.4%	Oregon	6.4%	Montana	6.8%	Washington	7.3%	Arkansas	9.1%
Tennessee	5.5%	North Dakota	6.5%	Nevada	6.9%	Michigan	7.5%	West Virginia	9.4%
Florida	5.5%	Alabama	6.5%	Indiana	6.9%	Idaho	7.5%	Vermont	9.9%
Georgia	5.8%	Oklahoma	6.6%	Utah	6.9%	Wisconsin	7.7%	Hawaii	10.5%

Source: US Census Bureau, Bureau of Economic Analysis, FCM; Dec 31, 2020

Tax Burden: Total state tax revenue excluding corporate income and severance taxes divided by total state personal income excluding federal transfer receipts.

State-to-State Tax Base Migration

Net Outflow Breadth (number of states to which the tax base moved)

State	92-93	93-94	94-95	95-96	96-97	97-98	98-99	99-00	00-01	01-02	02-03	03-04	04-05	05-06	06-07	07-08	08-09	09-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18
AZ	16	6	6	6	6	3	4	4	3	3	7	5	3	8	13	12	21	14	14	10	12	9	11	8	4	5
FL	15	14	13	16	13	7	9	6	5	2	3	2	8	16	16	19	21	15	6	12	8	4	0	3	6	4
SC	20	20	17	13	9	9	6	9	15	6	10	8	11	7	9	5	11	6	10	8	9	4	9	7	5	7
NC	9	8	9	10	10	8	6	11	13	11	13	14	10	12	11	9	10	16	10	10	14	13	15	10	7	8
TN	4	6	3	5	13	10	10	18	21	18	8	11	5	8	7	12	12	15	12	11	14	13	11	9	11	10
OR	10	16	13	7	8	10	15	14	9	10	16	22	13	11	12	11	13	13	9	15	10	4	8	5	6	12
MT	6	10	9	14	18	21	14	13	16	17	11	10	9	5	7	8	13	12	12	13	10	9	18	6	6	9
ID	7	6	11	8	10	11	11	12	13	13	14	12	7	9	17	16	17	22	23	17	10	8	15	5	3	5
NV	14	8	9	8	5	3	6	8	3	7	7	6	13	17	18	18	22	26	23	17	19	10	11	13	13	10
CO	9	10	12	15	11	9	7	10	12	19	29	22	20	15	13	8	9	13	9	11	11	10	8	12	12	15
WA	10	23	15	14	9	9	18	23	14	15	19	19	14	11	13	13	15	23	9	12	10	10	3	4	6	12
TX	22	18	21	18	18	13	15	18	23	22	29	19	17	12	10	7	6	3	6	10	2	5	9	13	20	16
GA	9	9	9	8	8	12	9	12	16	17	17	18	21	19	18	20	18	31	23	20	17	16	20	16	15	16
AL	6	13	17	14	13	17	20	26	25	26	16	11	9	16	16	10	13	14	18	16	15	18	22	19	14	13
AR	8	9	6	9	15	19	20	17	21	19	12	8	13	10	12	10	7	15	25	25	28	26	23	22	22	28
UT	11	14	15	19	13	26	26	29	29	31	32	28	16	10	7	13	18	20	22	15	18	15	14	9	13	16
WY	18	18	20	23	20	19	24	18	20	16	19	19	20	9	11	14	12	17	20	16	25	19	17	27	30	23
NM	18	7	15	18	21	21	26	26	23	14	16	11	13	14	20	18	12	14	20	28	27	28	29	21	22	22
KY	20	13	16	16	15	27	24	19	25	25	18	19	14	24	15	20	26	20	30	20	22	27	28	25	21	24
SD	21	21	21	26	33	29	33	27	21	29	23	16	26	20	16	19	18	18	17	12	16	16	17	22	19	19
ME	35	35	32	22	23	24	14	13	16	13	12	19	24	26	22	26	26	30	18	18	21	21	28	20	10	9
MS	16	15	12	17	16	17	19	30	40	30	21	26	21	36	23	17	23	24	27	27	34	24	38	25	30	25
VA	26	29	32	31	28	21	16	16	18	17	17	18	18	25	31	30	24	13	21	33	34	36	33	36	34	28
VT	32	25	26	27	26	25	23	22	19	14	24	24	25	24	30	28	30	29	26	32	27	33	23	27	27	23
OK	29	28	25	19	19	31	31	33	31	34	33	33	35	23	17	23	8	16	21	22	20	25	19	29	41	30
NH	33	32	31	22	24	22	15	18	17	16	27	32	32	27	34	31	30	31	30	25	22	27	30	26	24	28
MO	26	22	17	19	22	27	27	34	30	32	28	29	26	21	22	23	27	36	35	37	31	29	31	31	28	29
HI	39	41	42	43	40	33	38	29	21	17	21	22	19	25	28	28	30	27	20	24	20	27	15	28	29	32
MN	17	26	26	23	24	29	27	24	25	33	31	32	38	29	32	31	35	37	35	29	31	34	30	29	24	23
LA	38	24	26	33	29	36	42	37	43	30	24	22	28	50	33	24	16	10	20	20	20	24	24	28	37	36
WV	18	24	21	23	34	28	34	32	35	30	25	26	27	34	31	23	28	21	23	30	32	35	39	37	31	38
DE	35	33	30	36	30	30	29	26	26	30	24	25	28	28	29	28	32	32	32	35	30	30	19	34	29	22
IN	20	28	28	27	25	31	28	33	36	37	34	32	33	30	34	37	38	35	38	34	30	27	31	32	26	28
MA	41	35	36	34	32	23	22	22	15	26	39	43	36	38	35	35	32	33	32	28	31	33	28	32	25	32
WI	23	25	26	28	32	33	29	26	31	30	28	33	34	32	29	37	35	42	36	35	35	36	42	30	28	27
ND	43	31	35	34	40	44	45	38	43	43	38	29	31	37	34	36	30	20	19	12	15	19	11	37	42	34
KS	30	25	37	29	25	23	30	36	44	34	41	36	35	34	27	32	23	26	32	30	33	33	36	35	37	38
RI	37	38	37	35	37	31	24	23	21	17	21	38	38	42	38	43	39	34	34	34	32	32	31	29	28	33
CA	45	48	44	42	33	26	28	25	19	37	38	37	38	35	34	34	32	34	32	23	29	28	27	26	28	36
NE	31	34	23	26	37	39	37	39	42	39	35	35	37	37	34	31	35	28	33	28	31	28	29	38	39	39
IA	27	33	31	36	38	35	38	43	43	44	38	32	35	29	36	24	29	30	33	33	33	30	35	37	36	31
MD	38	40	42	40	40	34	33	31	23	21	26	33	30	35	36	38	33	27	27	38	38	41	38	39	39	38
AK	31	37	45	37	39	38	40	46	35	24	30	24	31	24	27	33	25	22	28	37	42	39	33	40	49	43
OH	30	37	29	36	36	39	33	39	36	39	38	38	39	39	40	44	42	41	44	35	35	31	39	30	29	28
MI	39	36	31	30	30	36	38	32	35	40	37	40	46	44	49	50	50	48	46	33	29	29	33	27	24	22
PA	36	39	42	40	44	38	40	33	34	35	30	36	34	36	36	41	39	32	30	35	40	41	35	42	33	36
CT	45	43	43	47	42	41	38	34	33	31	34	39	41	38	38	40	44	42	40	41	41	43	42	45	46	41
IL	35	38	35	39	38	40	42	36	38	41	47	46	44	40	36	38	38	46	43	40	41	42	43	41	42	45
NY	47	48	47	49	46	44	41	41	38	45	43	43	42	41	44	42	44	43	45	47	42	45	47	42	46	44
NJ	47	48	48	49	48	46	43	38	35	42	48	46	46	44	47	40	47	45	42	47	43	47	45	44	42	42

Source: IRS, FCM; Dec 31, 2019

<<< # of states to which net outflows moved >>>

45 35 25 15 5

State-to-State Tax Base Migration (cont.)

State-to-State Adjusted Gross Income Migration Flows 2017-2018

Net Outflow Breadth (number of states to which the tax base moved)

State	Breadth	State	Breadth	State	Breadth	State	Breadth	State	Breadth
Florida	4	Washington	12	Minnesota	23	Virginia	28	Pennsylvania	36
Arizona	5	Alabama	13	Vermont	23	Missouri	29	Kansas	38
Idaho	5	Colorado	15	Wyoming	23	Oklahoma	30	Maryland	38
South Carolina	7	Georgia	16	Kentucky	24	Iowa	31	West Virginia	38
North Carolina	8	Texas	16	Mississippi	25	Hawaii	32	Nebraska	39
Maine	9	Utah	16	Wisconsin	27	Massachusetts	32	Connecticut	41
Montana	9	South Dakota	19	Arkansas	28	Rhode Island	33	New Jersey	42
Nevada	10	Delaware	22	Indiana	28	North Dakota	34	Alaska	43
Tennessee	10	Michigan	22	New Hampshire	28	California	36	New York	44
Oregon	12	New Mexico	22	Ohio	28	Louisiana	36	Illinois	45

Net Dollar Flow (\$ millions)

State	Net Flow	State	Net Flow	State	Net Flow	State	Net Flow	State	Net Flow
Florida	15,996	Georgia	803	Vermont	19	Kentucky	(305)	Connecticut	(1,134)
Arizona	3,517	Oregon	770	New Mexico	(12)	Missouri	(319)	Ohio	(1,249)
Texas	3,380	Utah	640	Arkansas	(19)	Alaska	(319)	Virginia	(1,283)
North Carolina	2,964	Delaware	332	Hawaii	(44)	Wisconsin	(343)	Pennsylvania	(1,414)
South Carolina	2,469	Maine	321	Oklahoma	(103)	Indiana	(376)	Massachusetts	(1,503)
Nevada	2,295	Montana	309	Mississippi	(117)	Iowa	(456)	Maryland	(1,725)
Colorado	2,111	Alabama	275	Rhode Island	(160)	Kansas	(538)	New Jersey	(3,172)
Washington	1,709	New Hampshire	127	West Virginia	(195)	Louisiana	(544)	Illinois	(5,573)
Tennessee	1,544	South Dakota	93	North Dakota	(202)	Michigan	(562)	California	(7,984)
Idaho	1,109	Wyoming	65	Nebraska	(288)	Minnesota	(703)	New York	(9,616)

Source: IRS, FCM; Dec 31, 2019

Migration of Adjusted Gross Income (AGI): The migration of AGI between and among the states provides a more accurate measure than population shifts of the trend in a state's tax base. The Statistics of Income Division of the IRS maintains records of all individual income tax forms filed in each year, including the state of residence of the filers. The data used to produce the migration statistics come from individual income tax returns and represent between 95% and 98% of total annual filings. One gauge of the degree of movement in a state's tax base is the extent to which it is on the sending or receiving end of AGI migration. Breadth measures the number of other states to which the state lost part of its tax base in any given year.

State Economic Diversity

Hachman Index 2019

State	2019	State	2019	State	2019	State	2019	State	2019
North Carolina	0.97	California	0.94	Kentucky	0.90	Louisiana	0.86	New Mexico	0.76
Missouri	0.97	Oregon	0.93	Vermont	0.89	New York	0.85	Texas	0.75
Utah	0.97	New Hampshire	0.93	Massachusetts	0.88	Washington	0.84	South Dakota	0.75
Arizona	0.96	Ohio	0.92	Maryland	0.88	Montana	0.84	Hawaii	0.73
Illinois	0.96	Tennessee	0.92	Wisconsin	0.88	Colorado	0.83	Nevada	0.69
Georgia	0.96	Minnesota	0.92	Connecticut	0.88	Mississippi	0.83	Iowa	0.69
New Jersey	0.96	South Carolina	0.92	Virginia	0.87	Nebraska	0.83	Oklahoma	0.67
Kansas	0.95	Alabama	0.91	Delaware	0.87	Indiana	0.82	North Dakota	0.62
Pennsylvania	0.95	Rhode Island	0.91	Maine	0.86	Idaho	0.80	Alaska	0.58
Florida	0.94	Michigan	0.91	Arkansas	0.86	West Virginia	0.79	Wyoming	0.45

Hachman Index Average All Years 1991 - 2019

State	Average All Years	State	Average All Years	State	Average All Years	State	Average All Years	State	Average All Years
Illinois	0.97	Oregon	0.94	Michigan	0.91	Mississippi	0.88	Iowa	0.77
Missouri	0.97	Ohio	0.93	Colorado	0.91	Delaware	0.86	Nebraska	0.73
Utah	0.96	Alabama	0.93	Kentucky	0.90	Indiana	0.84	Hawaii	0.71
Arizona	0.96	Florida	0.93	Massachusetts	0.90	Arkansas	0.84	West Virginia	0.70
California	0.96	Washington	0.93	Vermont	0.90	New York	0.84	Oklahoma	0.69
New Jersey	0.95	Tennessee	0.92	Virginia	0.90	Texas	0.80	South Dakota	0.60
Pennsylvania	0.95	Kansas	0.92	Maryland	0.90	Louisiana	0.80	Alaska	0.58
Georgia	0.95	South Carolina	0.92	Wisconsin	0.90	Montana	0.80	North Dakota	0.58
North Carolina	0.94	New Hampshire	0.91	Maine	0.89	New Mexico	0.80	Nevada	0.49
Minnesota	0.94	Rhode Island	0.91	Connecticut	0.88	Idaho	0.80	Wyoming	0.35

Hachman Index Lowest Year 1991 - 2019

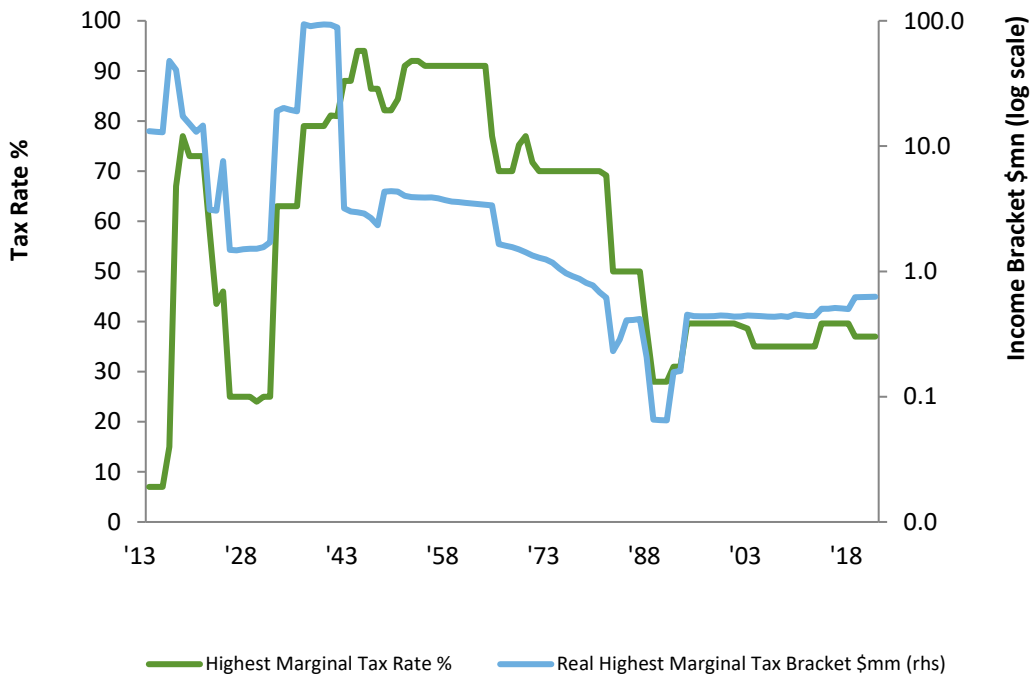
State	Lowest Year	State	Lowest Year	State	Lowest Year	State	Lowest Year	State	Lowest Year
Illinois	0.95	Florida	0.91	Virginia	0.87	Indiana	0.81	Iowa	0.62
Missouri	0.95	South Carolina	0.90	Michigan	0.86	New York	0.80	Louisiana	0.60
New Jersey	0.95	Tennessee	0.89	Washington	0.84	Connecticut	0.78	Alaska	0.51
Arizona	0.94	Alabama	0.89	Kentucky	0.84	Arkansas	0.77	Nebraska	0.50
California	0.94	Minnesota	0.89	Rhode Island	0.83	New Mexico	0.76	West Virginia	0.47
Utah	0.93	Maryland	0.88	Maine	0.83	Delaware	0.73	Oklahoma	0.42
Oregon	0.92	New Hampshire	0.88	Vermont	0.83	Idaho	0.73	North Dakota	0.38
Pennsylvania	0.92	Massachusetts	0.88	Kansas	0.83	Texas	0.69	South Dakota	0.35
Ohio	0.92	Wisconsin	0.88	Colorado	0.83	Montana	0.67	Wyoming	0.25
Georgia	0.91	North Carolina	0.88	Mississippi	0.82	Hawaii	0.64	Nevada	0.19

Source: US Bureau of Economic Analysis, FCM; Dec 31, 2020

Hachman Index: The measure of a state's overall economic diversity may be derived using the Hachman Index. This is an index of similarity that measures how closely industry earnings of the subject region (the state) resemble that of the reference region (the nation). The value of the index is between zero and one. As the value of the index approaches one, this means that the subject region's employment distribution among industries is more similar to that of the reference region. If the reference region is the nation, and, given the assumption that the nation's economy is diversified, a larger value of the Hachman Index relative to the nation means that a subject region is more diversified (and therefore less specialized).

U.S. Individual Income Tax Highest Tax Bracket

U.S. Individual Income Tax Highest Tax Bracket for Married Filing Jointly



Source: IRS, Robert J. Shiller, FCM; Jan 12, 2021

Note: The real highest marginal tax bracket was adjusted based on the annual average level of the Consumer Price Index.

Index Definitions

ICE Data Indices

ICE BofA US Municipal Securities Index: ICE BofA US Municipal Securities Index tracks the performance of US dollar denominated investment grade tax exempt debt publicly issued by US states and territories, and their political subdivisions, in the US domestic market. Qualifying securities must have at least one year remaining term to final maturity, at least 18 months to final maturity at the time of issuance, a fixed coupon schedule and an investment grade rating (based on an average of Moody's, S&P and Fitch). Minimum size requirements vary based on the initial term to final maturity at time of issuance. Securities with an initial term to final maturity greater than or equal to one year and less than five years must have a current amount outstanding of at least \$10 million. Securities with an initial term to final maturity greater than or equal to five years and less than ten years must have a current amount outstanding of at least \$15 million. Securities with an initial term to final maturity of ten years or more must have a current amount outstanding of at least \$25 million. The call date on which a pre-refunded bond will be redeemed is used for purposes of determining qualification with respect to final maturity requirements. Original issue zero coupon bonds are included in the Index. Taxable municipal securities, 144a securities and securities in legal default are excluded from the Index. Index constituents are market capitalization weighted. Accrued interest is calculated assuming next-day settlement. Cash flows from bond payments that are received during the month are retained in the index until the end of the month and then are removed as part of the rebalancing. Cash does not earn any reinvestment income while it is held in the index. Information concerning constituent bond prices, timing and conventions is provided in the ICE BofA Bond Index Guide, which can be accessed on our public website (www.mlindex.ml.com), or by sending a request to iceindices@theice.com. The index is rebalanced on the last calendar day of the month, based on information available up to and including the third business day before the last business day of the month. New issues must settle on or before the calendar month end rebalancing date in order to qualify for the coming month. No changes are made to constituent holdings other than on month end rebalancing dates. Inception date: December 31, 1988.

ICE BofA US Corporate Index: The ICE BofA US Corporate Index tracks the performance of US dollar denominated investment grade corporate debt publicly issued in the US domestic market. Qualifying securities must have an investment grade rating (based on an average of Moody's, S&P and Fitch), at least 18 months to final maturity at the time of issuance, at least one year remaining term to final maturity as of the rebalancing date, a fixed coupon schedule and a minimum amount outstanding of \$250 million. Original issue zero coupon bonds, 144a securities (with and without registration rights), and pay-in-kind securities (including toggle notes) are included in the index. Callable perpetual securities are included provided they are at least one year from the first call date. Fixed-to-floating rate securities are included provided they are callable within the fixed rate period and are at least one year from the last call prior to the date the bond transitions from a fixed to a floating rate security. Contingent capital securities ("cocos") are excluded, but capital securities where conversion can be mandated by a regulatory authority, but which have no specified trigger, are included. Other hybrid capital securities, such as those issues that potentially convert into preference shares, those with both cumulative and non-cumulative coupon deferral provisions, and those with alternative coupon satisfaction mechanisms, are also included in the index. Equity-linked securities, securities in legal default, hybrid securitized corporates, eurodollar bonds (USD securities not issued in the US domestic market), taxable and tax-exempt US municipal securities and DRD-eligible securities are excluded from the index. Index constituents are market capitalization weighted. Accrued interest is calculated assuming next-day settlement. Cash flows from bond payments that are received during the month are retained in the index until the end of the month and then are removed as part of the rebalancing. Cash does not earn any reinvestment income while it is held in the index. Information concerning constituent bond prices, timing and conventions is provided in the ICE BofA Bond Index Guide, which can be accessed on our public website (www.mlindex.ml.com), or by sending a request to iceindices@theice.com. The index is rebalanced on the last calendar day of the month, based on information available up to and including the third business day before the last business day of the month. New issues must settle on or before the calendar month end rebalancing date in order to qualify for the coming month. No changes are made to constituent holdings other than on month end rebalancing dates. Inception date: December 31, 1972.

ICE BofA Global Corporate Index: ICE BofA Global Corporate Index tracks the performance of investment grade corporate debt publicly issued in the major domestic and eurobond markets. Qualifying securities must have an investment grade rating (based on an average of Moody's, S&P and Fitch), at least 18 months to final maturity at the time of issuance, at least one year remaining term to final maturity as of the rebalancing date and a fixed coupon schedule. Qualifying currencies and their respective minimum size requirements (in local currency terms) are: AUD 100 million; CAD 100 million; EUR 250 million; JPY 20 billion; GBP 100 million; and USD 250 million. Original issue zero coupon bonds and pay-in-kind securities, including toggle notes, also qualify for inclusion. Callable perpetual securities qualify provided they are at least one year from the first call date. Fixed-to-floating rate securities also qualify provided they are callable within the fixed rate period and are at least one year from the last call prior to the date the bond transitions from a fixed to a floating rate security. Contingent capital securities ("cocos") are excluded, but capital securities where conversion can be mandated by a regulatory authority, but which have no specified trigger, are included. Other hybrid capital securities, such as those issues that potentially convert into preference shares, those with both cumulative and non-cumulative coupon deferral provisions, and those with alternative coupon satisfaction mechanisms, are also included in the index. Equity-linked securities, securities in legal default, hybrid securitized corporates, taxable and tax-exempt US municipal securities and DRD-eligible securities are excluded from the index. Index constituents are market capitalization weighted. Accrued interest is calculated assuming next-day settlement. Cash flows from bond payments that are received during the month are retained in the index until

the end of the month and then are removed as part of the rebalancing. Cash does not earn any reinvestment income while it is held in the index. Information concerning constituent bond prices, timing and conventions is provided in the ICE BofA Bond Index Guide, which can be accessed on our public website (www.mlindex.ml.com), or by sending a request to iceindices@theice.com. The index is rebalanced on the last calendar day of the month, based on information available up to and including the third business day before the last business day of the month. New issues must settle on or before the calendar month end rebalancing date in order to qualify for the coming month. No changes are made to constituent holdings other than on month end rebalancing dates. Inception date: December 31, 1996.

ICE BofA US High Yield Index: ICE BofA US High Yield Index tracks the performance of US dollar denominated below investment grade corporate debt publicly issued in the US domestic market. Qualifying securities must have a below investment grade rating (based on an average of Moody's, S&P and Fitch), at least 18 months to final maturity at the time of issuance, at least one year remaining term to final maturity as of the rebalancing date, a fixed coupon schedule and a minimum amount outstanding of \$250 million. In addition, qualifying securities must have risk exposure to countries that are members of the FX-G10, Western Europe or territories of the US and Western Europe. The FX-G10 includes all Euro members, the US, Japan, the UK, Canada, Australia, New Zealand, Switzerland, Norway and Sweden. Original issue zero coupon bonds, 144a securities (both with and without registration rights), and pay-in-kind securities (including toggle notes) are included in the index. Callable perpetual securities are included provided they are at least one year from the first call date. Fixed-to-floating rate securities are included provided they are callable within the fixed rate period and are at least one year from the last call prior to the date the bond transitions from a fixed to a floating rate security. Contingent capital securities ("cocos") are excluded, but capital securities where conversion can be mandated by a regulatory authority, but which have no specified trigger, are included. Other hybrid capital securities, such as those issues that potentially convert into preference shares, those with both cumulative and non-cumulative coupon deferral provisions, and those with alternative coupon satisfaction mechanisms, are also included in the index. Securities issued or marketed primarily to retail investors, equity-linked securities, securities in legal default, hybrid securitized corporates, eurodollar bonds (USD securities not issued in the US domestic market), taxable and tax-exempt US municipal securities and DRD-eligible securities are excluded from the index. Index constituents are market capitalization weighted. Accrued interest is calculated assuming next-day settlement. Cash flows from bond payments that are received during the month are retained in the index until the end of the month and then are removed as part of the rebalancing. Cash does not earn any reinvestment income while it is held in the index. Information concerning constituent bond prices, timing and conventions is provided in the ICE BofA Bond Index Guide, which can be accessed on our public website (www.mlindex.ml.com), or by sending a request to iceindices@theice.com. The index is rebalanced on the last calendar day of the month, based on information available up to and including the third business day before the last business day of the month. New issues must settle on or before the calendar month end rebalancing date in order to qualify for the coming month. No changes are made to constituent holdings other than on month end rebalancing dates. Inception date: August 31, 1986.

ICE BofA Fixed Rate Preferred Securities Index: The ICE BofA Fixed Rate Preferred Securities Index tracks the performance of fixed rate US dollar denominated preferred securities issued in the US domestic market. Qualifying securities must have an investment grade rating (based on an average of Moody's, S&P and Fitch) and must have an investment grade rated country of risk (based on an average of Moody's, S&P and Fitch foreign currency long term sovereign debt ratings). In addition, qualifying securities must be issued as public securities or through a 144a filing, must be issued in \$25, \$50, or \$100 par/liquidation preference increments, must have a fixed coupon or dividend schedule and must have a minimum amount outstanding of \$100 million. \$1,000 par securities that are DRD eligible qualify for inclusion in the Index, provided their amount outstanding is at least \$250 million. Fixed-to-floating rate securities also qualify provided they are callable within the fixed rate period and are at least one year from the last call prior to the date the bond transitions from a fixed to a floating rate security. The Index includes preference shares (perpetual preferred securities), American Depository Shares/Receipts (ADS/R), domestic and Yankee trust preferred securities having a minimum remaining term of at least one year, both DRD-eligible and non-DRD eligible preferred stock and senior debt. Auction market securities, convertibles, floaters, purchase units, purchase contracts, corporate pay-in-kind securities, securities issued by closed-end funds and derivative instruments such as repackaged securities and credit default swaps are excluded from the Index. Index constituents are market capitalization weighted. Accrued interest is calculated assuming next-day settlement. Cash flows from bond payments that are received during the month are retained in the index until the end of the month and then are removed as part of the rebalancing. Cash does not earn any reinvestment income while it is held in the index. Information concerning constituent bond prices, timing and conventions is provided in the ICE BofA Bond Index Guide, which can be accessed on our public website (<https://indices.theice.com>), or by sending a request to iceindices@theice.com. The index is rebalanced on the last calendar day of the month, based on information available up to and including the third business day before the last business day of the month. New issues must settle on or before the calendar month end rebalancing date in order to qualify for the coming month. No changes are made to constituent holdings other than on month end rebalancing dates. Inception date: February 28, 1989.

ICE BofA US Convertible Excluding Mandatory Index: The ICE BofA US Convertible Excluding Mandatory Index tracks the performance of publicly issued US dollar denominated non-mandatory convertible securities of US companies. Qualifying securities must have at least \$50 million face amount outstanding and at least one month remaining to the final conversion date. In order to qualify for

inclusion in the index securities must pay at a fixed rate, which includes those with zero, step-up and rating-sensitive coupons. The underlying equity of qualifying securities must be publicly listed and actively trading, and have a US country of issue and a US country of risk. Convertible securities where the underlying is a basket of equities qualify for inclusion in the index, as do convertible preferred securities. Securities with mandatory conversion features and those in legal default are excluded from the index, as are synthetic and reverse convertibles, floating rate securities and securities with suspended or inactive underlying equities. Index constituents are market capitalization-weighted. Accrued interest is calculated assuming next-day settlement. Cash flows from bond payments that are received during the month are retained in the index until the end of the month and then are removed as part of the rebalancing. Cash does not earn any reinvestment income while it is held in the index. Information concerning constituent bond prices, timing and conventions is provided in the ICE BofA Bond Index Guide, which can be accessed on our public website (<https://indices.theice.com>), or by sending a request to iceindices@theice.com. The index is rebalanced on the last calendar day of the month, based on information available up to and including the third business day before the last business day of the month. New issues must settle on or before the calendar month end rebalancing date in order to qualify for the coming month. No changes are made to constituent holdings other than on month end rebalancing dates. Inception date: December 31, 1987.

ICE BofA US ABS & CMBS Index: The ICE BofA US ABS & CMBS Index tracks the performance of US dollar denominated investment grade fixed and floating rate asset backed securities and fixed rate commercial mortgage backed securities publicly issued in the US domestic market. Qualifying securities must have an investment grade rating (based on an average of Moody's, S&P and Fitch), at least one year remaining term to final stated maturity and at least one month to the last expected cash flow. 144a securities qualify for inclusion in the Index. Callable perpetual securities qualify provided they are at least one year from the first call date. Inverse floating rate, interest only and principal only tranches of qualifying deals are excluded from the Index as are all tranches of re-securitized deals. Qualifying asset backed securities must have a fixed or floating rate coupon, an original deal size for the collateral group of at least \$250 million, a current outstanding deal size for the collateral group greater than or equal to 10% of the original deal size and a minimum outstanding tranche size of \$50 million for senior tranches and \$10 million for mezzanine and subordinated tranches. Qualifying commercial mortgage backed securities must have a fixed coupon schedule, an original deal size for the collateral group of at least \$250 million, a current outstanding deal size for the collateral group that is greater than or equal to 10% of the original deal size and at least \$50 million current amount outstanding for senior tranches and \$10 million current amount outstanding for mezzanine and subordinated tranches. U.S. agency securities qualify for inclusion. Fixed-to-floating rate securities qualify provided they are callable within the fixed rate period and are at least one year from the last call prior to the date the bond transitions from a fixed to a floating rate security. Floating rate securities are excluded. Index constituents are market capitalization weighted. Accrued interest is calculated assuming same-day settlement. Cash flows from bond payments that are received during the month are retained in the index until the end of the month and then are removed as part of the rebalancing. Cash does not earn any reinvestment income while it is held in the index. Information concerning constituent bond prices, timing and conventions is provided in the ICE BofA Bond Index Guide, which can be accessed on our public website (<https://indices.theice.com>), or by sending a request to iceindices@theice.com. The index is rebalanced on the last calendar day of the month, based on information available up to and including the third business day before the last business day of the month. New issues must settle on or before the calendar month end rebalancing date in order to qualify for the coming month. No changes are made to constituent holdings other than on month end rebalancing dates. Inception date: December 31, 1997.

ICE BofA US Mortgage Backed Securities Index: ICE BofA US Mortgage Backed Securities Index tracks the performance of US dollar denominated fixed rate and hybrid residential mortgage pass-through securities publicly issued by US agencies in the US domestic market. 30-year, 20-year and 15-year fixed rate mortgage pools are included in the Index provided they have at least one year remaining term to final maturity and a minimum amount outstanding of at least \$5 billion per generic coupon and \$250 million per production year within each generic coupon. Hybrid, interest-only, balloon, mobile home, graduated payment and quarter coupon fixed rate mortgages are excluded from the index, as are all collateralized mortgage obligations. Index constituents are market capitalization weighted. Accrued interest is calculated assuming same-day settlement. Cash flows from bond payments that are received during the month are retained in the index until the end of the month and then are removed as part of the rebalancing. Cash does not earn any reinvestment income while it is held in the index. Information concerning constituent bond prices, timing and conventions is provided in the ICE BofA Bond Index Guide, which can be accessed on our public website (www.mlindex.ml.com), or by sending a request to iceindices@theice.com. The index is rebalanced on the last calendar day of the month, based on information available up to and including the third business day before the last business day of the month. New issues must settle on or before the calendar month end rebalancing date in order to qualify for the coming month. No changes are made to constituent holdings other than on month end rebalancing dates. Inception date: December 31, 1975.

ICE BofA US Treasury Index: ICE BofA US Treasury Index tracks the performance of US dollar denominated sovereign debt publicly issued by the US government in its domestic market. Qualifying securities must have at least one year remaining term to final maturity, a fixed coupon schedule and a minimum amount outstanding of \$1 billion. Qualifying securities must have at least 18 months to final maturity at the time of issuance. Callable perpetual securities qualify provided they are at least one year from the first call date. Fixed-to-floating rate securities also qualify provided they are callable within the fixed rate period and are at least one

year from the last call prior to the date the bond transitions from a fixed to a floating rate security. Bills, inflation-linked debt and strips are excluded from the Index; however, original issue zero coupon bonds are included in the index and the amounts outstanding of qualifying coupon securities are not reduced by any portions that have been stripped. Securities issued or marketed primarily to retail investors do not qualify for inclusion in the index. Index constituents are market capitalization weighted. Accrued interest is calculated assuming next-day settlement. Cash flows from bond payments that are received during the month are retained in the index until the end of the month and then are removed as part of the rebalancing. Cash does not earn any reinvestment income while it is held in the index. Information concerning constituent bond prices, timing and conventions is provided in the ICE BofA Bond Index Guide, which can be accessed on our public website (www.mlindex.ml.com), or by sending a request to iceindices@theice.com. The index is rebalanced on the last calendar day of the month, based on information available up to and including the third business day before the last business day of the month. New issues must settle on or before the calendar month end rebalancing date in order to qualify for the coming month. No changes are made to constituent holdings other than on month end rebalancing dates. Inception date: December 31, 1977.

ICE BofA US Inflation-Linked Treasury Index: ICE BofA US Inflation-Linked Treasury Index tracks the performance of US dollar denominated inflation-linked sovereign debt publicly issued by the US government in its domestic market. Qualifying securities must have at least 18 months to maturity at point of issuance, at least one year remaining term to final maturity, interest and principal payments tied to inflation and a minimum amount outstanding of \$1 billion. Strips are excluded from the Index; however, original issue zero coupon bonds are included in the Index and the amounts outstanding of qualifying coupon securities are not reduced by any portions that have been stripped. Securities issued or marketed primarily to retail investors do not qualify for inclusion in the index. Index constituents are market capitalization weighted. Accrued interest is calculated assuming next-day settlement. Cash flows from bond payments that are received during the month are retained in the index until the end of the month and then are removed as part of the rebalancing. Cash does not earn any reinvestment income while it is held in the index. Information concerning constituent bond prices, timing and conventions is provided in the ICE BofA Bond Index Guide, which can be accessed on our public website (www.mlindex.ml.com), or by sending a request to iceindices@theice.com. The index is rebalanced on the last calendar day of the month, based on information available up to and including the third business day before the last business day of the month. New issues must settle on or before the calendar month end rebalancing date in order to qualify for the coming month. No changes are made to constituent holdings other than on month end rebalancing dates. Inception date: February 28, 1997.

ICE BofA US Agency Index: ICE BofA US Agency Index tracks the performance of US dollar denominated US agency senior debt issued in the US domestic market. Qualifying securities must have an investment grade rating (based on an average of Moody's, S&P and Fitch). In addition, qualifying securities must be unsubordinated, must have at least one year remaining term to final maturity, at least 18 months to final maturity at point of issuance, a fixed coupon schedule and a minimum amount outstanding of \$250 million. "Global" securities (debt issued simultaneously in the eurobond and US domestic markets) qualify for inclusion in the Index. Callable perpetual securities qualify provided they are at least one year from the first call date. Fixed-to-floating rate securities also qualify provided they are callable within the fixed rate period and are at least one year from the last call prior to the date the bond transitions from a fixed to a floating rate security. Securities in legal default are excluded from the Index. Index constituents are market capitalization weighted. Accrued interest is calculated assuming next-day settlement. Cash flows from bond payments that are received during the month are retained in the index until the end of the month and then are removed as part of the rebalancing. Cash does not earn any reinvestment income while it is held in the index. Information concerning constituent bond prices, timing and conventions is provided in the ICE BofA Bond Index Guide, which can be accessed on our public website (www.mlindex.ml.com), or by sending a request to iceindices@theice.com. The index is rebalanced on the last calendar day of the month, based on information available up to and including the third business day before the last business day of the month. New issues must settle on or before the calendar month end rebalancing date in order to qualify for the coming month. No changes are made to constituent holdings other than on month end rebalancing dates. Inception date: December 31, 1977.

ICE BofA Japan Government Index: ICE BofA Japan Government Index tracks the performance of JPY denominated sovereign debt publicly issued by the Japanese government in its domestic market. Qualifying securities must have at least 18 months to maturity at point of issuance, at least one year remaining term to final maturity, a fixed coupon schedule and a minimum amount outstanding of JPY 200 billion. Callable perpetual securities qualify provided they are at least one year from the first call date. Fixed-to-floating rate securities also qualify provided they are callable within the fixed rate period and are at least one year from the last call prior to the date the bond transitions from a fixed to a floating rate security. Bills, inflation-linked debt and strips are excluded from the Index; however, original issue zero coupon bonds are included in the index and the amounts outstanding of qualifying coupon securities are not reduced by any portions that have been stripped. Securities issued or marketed primarily to retail investors do not qualify for inclusion in the index. Index constituents are market capitalization weighted. Accrued interest is calculated assuming next-day settlement. Cash flows from bond payments that are received during the month are retained in the index until the end of the month and then are removed as part of the rebalancing. Cash does not earn any reinvestment income while it is held in the index. Information concerning constituent bond prices, timing and conventions is provided in the ICE BofA Bond Index Guide, which can be accessed on our public website (www.mlindex.ml.com), or by sending a request to iceindices@theice.com. The index is rebalanced

on the last calendar day of the month, based on information available up to and including the third business day before the last business day of the month. New issues must settle on or before the calendar month end rebalancing date in order to qualify for the coming month. No changes are made to constituent holdings other than on month end rebalancing dates. Inception date: December 31, 1985.

ICE BofA Australia Government Index: ICE BofA Australia Government Index tracks the performance of AUD denominated sovereign debt publicly issued by the Australian government in its domestic market. Qualifying securities must have at least 18 months to maturity at point of issuance, at least one year remaining term to final maturity, a fixed coupon schedule and a minimum amount outstanding of AUD 1 billion. Callable perpetual securities qualify provided they are at least one year from the first call date. Fixed-to-floating rate securities also qualify provided they are callable within the fixed rate period and are at least one year from the last call prior to the date the bond transitions from a fixed to a floating rate security. Bills, inflation-linked debt and strips are excluded from the Index; however, original issue zero coupon bonds are included in the index and the amounts outstanding of qualifying coupon securities are not reduced by any portions that have been stripped. Securities issued or marketed primarily to retail investors do not qualify for inclusion in the index. Index constituents are market capitalization weighted. Accrued interest is calculated assuming next-day settlement. Cash flows from bond payments that are received during the month are retained in the index until the end of the month and then are removed as part of the rebalancing. Cash does not earn any reinvestment income while it is held in the index. Information concerning constituent bond prices, timing and conventions is provided in the ICE BofA Bond Index Guide, which can be accessed on our public website (www.mlindex.ml.com), or by sending a request to iceindices@theice.com. The index is rebalanced on the last calendar day of the month, based on information available up to and including the third business day before the last business day of the month. New issues must settle on or before the calendar month end rebalancing date in order to qualify for the coming month. No changes are made to constituent holdings other than on month end rebalancing dates. Inception date: December 31, 1985.

ICE BofA French Government Index: ICE BofA French Government Index tracks the performance of EUR denominated sovereign debt publicly issued by the French government in the French domestic or eurobond market. Qualifying securities must have at least 18 months to maturity at point of issuance, at least one year remaining term to final maturity, a fixed coupon schedule and a minimum amount outstanding of EUR 1 billion. Callable perpetual securities qualify provided they are at least one year from the first call date. Fixed-to-floating rate securities also qualify provided they are callable within the fixed rate period and are at least one year from the last call prior to the date the bond transitions from a fixed to a floating rate security. Bills, inflation-linked debt and strips are excluded from the Index; however, original issue zero coupon bonds are included in the index and the amounts outstanding of qualifying coupon securities are not reduced by any portions that have been stripped. Securities issued or marketed primarily to retail investors do not qualify for inclusion in the index. Index constituents are market capitalization weighted. Accrued interest is calculated assuming next-day settlement. Cash flows from bond payments that are received during the month are retained in the index until the end of the month and then are removed as part of the rebalancing. Cash does not earn any reinvestment income while it is held in the index. Information concerning constituent bond prices, timing and conventions is provided in the ICE BofA Bond Index Guide, which can be accessed on our public website (www.mlindex.ml.com), or by sending a request to iceindices@theice.com. The index is rebalanced on the last calendar day of the month, based on information available up to and including the third business day before the last business day of the month. New issues must settle on or before the calendar month end rebalancing date in order to qualify for the coming month. No changes are made to constituent holdings other than on month end rebalancing dates. Inception date: December 31, 1985.

ICE BofA German Government Index: ICE BofA German Government Index tracks the performance of EUR denominated sovereign debt publicly issued by the German government in the German domestic or eurobond market. Qualifying securities must have at least 18 months to maturity at point of issuance, at least one year remaining term to final maturity, a fixed coupon schedule and a minimum amount outstanding of EUR 1 billion. Callable perpetual securities qualify provided they are at least one year from the first call date. Fixed-to-floating rate securities also qualify provided they are callable within the fixed rate period and are at least one year from the last call prior to the date the bond transitions from a fixed to a floating rate security. Bills, inflation-linked debt and strips are excluded from the Index; however, original issue zero coupon bonds are included in the index and the amounts outstanding of qualifying coupon securities are not reduced by any portions that have been stripped. Securities issued or marketed primarily to retail investors do not qualify for inclusion in the index. Index constituents are market capitalization weighted. Accrued interest is calculated assuming next-day settlement. Cash flows from bond payments that are received during the month are retained in the index until the end of the month and then are removed as part of the rebalancing. Cash does not earn any reinvestment income while it is held in the index. Information concerning constituent bond prices, timing and conventions is provided in the ICE BofA Bond Index Guide, which can be accessed on our public website (www.mlindex.ml.com), or by sending a request to iceindices@theice.com. The index is rebalanced on the last calendar day of the month, based on information available up to and including the third business day before the last business day of the month. New issues must settle on or before the calendar month end rebalancing date in order to qualify for the coming month. No changes are made to constituent holdings other than on month end rebalancing dates. Inception date: December 31, 1985.

ICE BofA Italian Government Index: ICE BofA Italian Government Index tracks the performance of EUR denominated sovereign debt publicly issued by the Italian government in the Italian domestic or eurobond market. Qualifying securities must have at least 18 months to maturity at point of issuance, at least one year remaining term to final maturity, a fixed coupon schedule and a minimum amount outstanding of EUR 1 billion. Callable perpetual securities qualify provided they are at least one year from the first call date. Fixed-to-floating rate securities also qualify provided they are callable within the fixed rate period and are at least one year from the last call prior to the date the bond transitions from a fixed to a floating rate security. Bills, inflation-linked debt and strips are excluded from the Index; however, original issue zero coupon bonds are included in the index and the amounts outstanding of qualifying coupon securities are not reduced by any portions that have been stripped. Securities issued or marketed primarily to retail investors do not qualify for inclusion in the index. Index constituents are market capitalization weighted. Accrued interest is calculated assuming next-day settlement. Cash flows from bond payments that are received during the month are retained in the index until the end of the month and then are removed as part of the rebalancing. Cash does not earn any reinvestment income while it is held in the index. Information concerning constituent bond prices, timing and conventions is provided in the ICE BofA Bond Index Guide, which can be accessed on our public website (www.mlindex.ml.com), or by sending a request to iceindices@theice.com. The index is rebalanced on the last calendar day of the month, based on information available up to and including the third business day before the last business day of the month. New issues must settle on or before the calendar month end rebalancing date in order to qualify for the coming month. No changes are made to constituent holdings other than on month end rebalancing dates. Inception date: November 30, 1987.

ICE BofA Spanish Government Index: ICE BofA Spanish Government Index tracks the performance of EUR denominated sovereign debt publicly issued by the Spanish government in the Spanish domestic or eurobond market. Qualifying securities must have at least 18 months to maturity at point of issuance, at least one year remaining term to final maturity, a fixed coupon schedule and a minimum amount outstanding of EUR 1 billion. Callable perpetual securities qualify provided they are at least one year from the first call date. Fixed-to-floating rate securities also qualify provided they are callable within the fixed rate period and are at least one year from the last call prior to the date the bond transitions from a fixed to a floating rate security. Bills, inflation-linked debt and strips are excluded from the Index; however, original issue zero coupon bonds are included in the index and the amounts outstanding of qualifying coupon securities are not reduced by any portions that have been stripped. Securities issued or marketed primarily to retail investors do not qualify for inclusion in the index. Index constituents are market capitalization weighted. Accrued interest is calculated assuming next-day settlement. Cash flows from bond payments that are received during the month are retained in the index until the end of the month and then are removed as part of the rebalancing. Cash does not earn any reinvestment income while it is held in the index. Information concerning constituent bond prices, timing and conventions is provided in the ICE BofA Bond Index Guide, which can be accessed on our public website (www.mlindex.ml.com), or by sending a request to iceindices@theice.com. The index is rebalanced on the last calendar day of the month, based on information available up to and including the third business day before the last business day of the month. New issues must settle on or before the calendar month end rebalancing date in order to qualify for the coming month. No changes are made to constituent holdings other than on month end rebalancing dates. Inception date: May 31, 1992.

ICE BofA UK Gilt Index: ICE BofA UK Gilt Index tracks the performance of GBP denominated sovereign debt publicly issued by the UK government in its domestic market. Qualifying securities must have at least 18 months to maturity at point of issuance, at least one year remaining term to final maturity, a fixed coupon schedule and a minimum amount outstanding of GBP 500 million. Callable perpetual securities qualify provided they are at least one year from the first call date. Fixed-to-floating rate securities also qualify provided they are callable within the fixed rate period and are at least one year from the last call prior to the date the bond transitions from a fixed to a floating rate security. Bills, inflation-linked debt and strips are excluded from the Index; however, original issue zero coupon bonds are included in the index and the amounts outstanding of qualifying coupon securities are not reduced by any portions that have been stripped. Securities issued or marketed primarily to retail investors do not qualify for inclusion in the index. Index constituents are market capitalization weighted. Accrued interest is calculated assuming next-day settlement. Cash flows from bond payments that are received during the month are retained in the index until the end of the month and then are removed as part of the rebalancing. Cash does not earn any reinvestment income while it is held in the index. Information concerning constituent bond prices, timing and conventions is provided in the ICE BofA Bond Index Guide, which can be accessed on our public website (www.mlindex.ml.com), or by sending a request to iceindices@theice.com. The index is rebalanced on the last calendar day of the month, based on information available up to and including the third business day before the last business day of the month. New issues must settle on or before the calendar month end rebalancing date in order to qualify for the coming month. No changes are made to constituent holdings other than on month end rebalancing dates. Inception date: December 31, 1985.

ICE BofA Canada Government Index: ICE BofA Canada Government Index tracks the performance of CAD denominated sovereign debt publicly issued by the Canadian government in its domestic market. Qualifying securities must have at least 18 months to maturity at point of issuance, at least one year remaining term to final maturity, a fixed coupon schedule and a minimum amount outstanding of CAD 1 billion. Callable perpetual securities qualify provided they are at least one year from the first call date. Fixed-

to-floating rate securities also qualify provided they are callable within the fixed rate period and are at least one year from the last call prior to the date the bond transitions from a fixed to a floating rate security. Bills, inflation-linked debt and strips are excluded from the Index; however, original issue zero coupon bonds are included in the index and the amounts outstanding of qualifying coupon securities are not reduced by any portions that have been stripped. Securities issued or marketed primarily to retail investors do not qualify for inclusion in the index. Index constituents are market capitalization weighted. Accrued interest is calculated assuming next-day settlement. Cash flows from bond payments that are received during the month are retained in the index until the end of the month and then are removed as part of the rebalancing. Cash does not earn any reinvestment income while it is held in the index. Information concerning constituent bond prices, timing and conventions is provided in the ICE BofA Bond Index Guide, which can be accessed on our public website (www.mlindex.ml.com), or by sending a request to iceindices@theice.com. The index is rebalanced on the last calendar day of the month, based on information available up to and including the third business day before the last business day of the month. New issues must settle on or before the calendar month end rebalancing date in order to qualify for the coming month. No changes are made to constituent holdings other than on month end rebalancing dates. Inception date: December 31, 1985.

ICE BofA US Dollar South Korea Sovereign Index: ICE BofA US Dollar South Korea Sovereign Index is a subset of ICE BofA US Emerging Markets External Sovereign Index including all securities with South Korea as the country of risk. Inception date: April 30, 1998.

ICE BofA US Dollar Indonesia Sovereign Index: ICE BofA US Dollar Indonesia Sovereign Index is a subset of ICE BofA US Emerging Markets External Sovereign Index including all securities with an Indonesia country of risk. Inception date: December 31, 1996.

ICE BofA US Dollar Mexico Sovereign Index: ICE BofA US Dollar Mexico Sovereign Index is a subset of ICE BofA US Emerging Markets External Sovereign Index including all securities with a Mexico country of risk. Inception date: December 31, 1991.

ICE BofA US Dollar Brazil Sovereign Index: ICE BofA US Dollar Brazil Sovereign Index is a subset of ICE BofA US Emerging Markets External Sovereign Index including all securities with a Brazil country of risk. Inception date: December 31, 1991.

ICE BofA US Dollar Turkey Sovereign Index: ICE BofA US Dollar Turkey Sovereign Index is a subset of ICE BofA US Emerging Markets External Sovereign Index including all securities with a Turkey country of risk. Inception date: August 31, 1997.

ICE BofA US Emerging Markets External Sovereign Index: ICE BofA US Emerging Markets External Sovereign Index tracks the performance of US dollar emerging markets sovereign debt publicly issued in the US and eurobond markets. In order to qualify for inclusion in the Index an issuer must have risk exposure to countries other than members of the FX-G10, all Western European countries, and territories of the US and Western European countries. The FX-G10 includes all Euro members, the US, Japan, the UK, Canada, Australia, New Zealand, Switzerland, Norway and Sweden. Qualifying securities must have at least 18 months to final maturity at the time of issuance, at least one year remaining term to final maturity as of the rebalancing date, a fixed coupon schedule and a minimum amount outstanding of \$250 million. Original issue zero coupon bonds, 144a securities (both with and without registration rights), and eurobonds are included in the index. Securities issued or marketed primarily to retail investors, or those in legal default are excluded from the index. Index constituents are market capitalization weighted. Accrued interest is calculated assuming next-day settlement. Cash flows from bond payments that are received during the month are retained in the index until the end of the month and then are removed as part of the rebalancing. Cash does not earn any reinvestment income while it is held in the index. Information concerning constituent bond prices, timing and conventions is provided in the ICE BofA Bond Index Guide, which can be accessed on our public website (www.mlindex.ml.com), or by sending a request to iceindices@theice.com. The index is rebalanced on the last calendar day of the month, based on information available up to and including the third business day before the last business day of the month. New issues must settle on or before the calendar month end rebalancing date in order to qualify for the coming month. No changes are made to constituent holdings other than on month end rebalancing dates. Inception date: December 31, 1991.

S&P Municipal Bond Indices

The S&P Municipal Bond Index is a broad, comprehensive, market value-weighted index. All bonds in the index are exempt from U.S. federal income taxes, but may be subject to alternative minimum tax (AMT). The bond issuer is a U.S. state (including the Commonwealth of Puerto Rico and U.S. territories) or local government or agency such that interest on the bond is exempt from U.S. federal income taxes, but may be subject to alternative minimum tax (AMT). The bond must have a dated date within three months of the rebalancing date to be considered eligible for a new addition to the index. The bond must be held by a mutual fund and Securities Evaluations | ICE Data Services must provide daily pricing on the bond. The bond must be denominated in U.S. dollars. The amount outstanding, or par amount, is used to determine the weight of the bond in the index. The bond must have a minimum par amount of US\$ 2 million to be eligible for inclusion. As of the rebalancing date, the bond must have a minimum term to maturity greater than one calendar month. For any bond with an announced full call, the call date must be greater than one calendar month. Bonds are deleted from the index at the rebalancing for the following reasons: (1) bonds that are completely called or tendered during the course of the month, (2) defaulted bonds that have made a final distribution, (3), bonds that are scheduled to be completely called or redeemed during the course of the calendar month following the rebalancing date, (4) bonds where partial calls and redemptions have reduced the known outstanding amount to less than US\$ 2 million during the course of the month, (5) bonds that have gone through a partial pre-refunding and have, consequently, had new CUSIPs assigned (if the "new" bonds are

considered eligible for inclusion, the bonds are added to the index on a monthly rebalancing date accordingly), (6) bonds that are no longer priced by Securities Evaluations | ICE Data Services for more than five consecutive days. The state level municipal bond sub-indices consists of bonds in the S&P Municipal Bond Index that have been issued by municipalities or municipal authorities within the 50 states, the District of Columbia, Puerto Rico, Guam and the U.S. Virgin Islands.

Municipal Market Data (MMD)

Municipal Market Data produces daily generic yield curves which reflect the offer-side of the municipal market determined from trading activity and primary markets. The MMD "AAA" curve represents non-AMT, tax-exempt yields on triple-A rated state general obligation bonds. The MMD curve evaluates trades and primary market maturities of at least \$2 million and assumes a 10-year par call for maturities longer than 10 years. Yields are reflective of coupon structures that are the general preference of institutional buyers and tend to be standard structures for primary issues. Currently, the coupon of preference is 5.00%, and maturities beyond 10 years are yield to call (callable in year 10), not yield to maturity.

Bloomberg Barclays Indices

Bloomberg Barclays Municipal Bond Index Total Return Index

The Bloomberg Barclays U.S. Municipal Index covers the USD-denominated long-term tax exempt bond market. The index has four main sectors: state and local general obligation bonds, revenue bonds, insured bonds and prerefunded bonds.

Bloomberg Barclays US Corporate Total Return Index

The Bloomberg Barclays US Corporate Bond Index measures the investment grade, fixed-rate, taxable corporate bond market. It includes USD denominated securities publicly issued by US and non-US industrial, utility and financial issuers.

Past performance is no guarantee of future results.

All indexes are unmanaged, and performance of the indexes includes reinvestment of dividends and interest income, unless otherwise noted. Indexes are not illustrative of any particular investment, and it is not possible to invest directly in an index.

This guide is for informational purposes only and should not be construed as a solicitation or an offer to buy or sell any security. The information presented in this guide has been obtained from sources believed to be reliable, but Fidelity Capital Markets (FCM) does not make any representation about the accuracy, completeness, or timeliness of this information. This guide is current only as of the date that it was published, and opinions, estimates, and other information may change without notice or publication. Prior to making an investment or other financial decision, please consult the financial, legal, and/or tax adviser of your choice. FCM shall not be liable for any person's use of this guide. FCM does not give tax or legal advice.

In general the bond market is volatile, and fixed income securities carry interest rate risk. (As interest rates rise, bond prices usually fall, and vice versa. This effect is usually more pronounced for longer-term securities.) Fixed income securities also carry inflation risk, liquidity risk, call risk, and credit and default risks for both issuers and counterparties.

Any fixed income security sold or redeemed prior to maturity may be subject to a substantial gain or loss.

Diversification does not ensure a profit or guarantee against a loss. Interest income earned from tax-exempt municipal securities generally is exempt from federal income tax, and may also be exempt from state and local income taxes if you are a resident in the state of issuance. A portion of the income you receive may be subject to federal and state income taxes, including the federal alternative minimum tax. In addition, you may be subject to tax on amounts recognized in connection with the sale of municipal bonds, including capital gains and "market discount" taxed at ordinary income rates. "Market discount" arises when a bond is purchased on the secondary market for a price that is less than its stated redemption price by more than a statutory amount. Before making any investment, you should review the official statement for the relevant offering for additional tax and other considerations.

The municipal market can be adversely affected by tax, legislative or political changes and the financial condition of the issuers of municipal securities. Investing in municipal bonds for the purpose of generating tax-exempt income may not be appropriate for investors in all tax brackets or for all account types. Tax laws are subject to change and the preferential tax treatment of municipal bond interest income may be revoked or phased out for investors at certain income levels. You should consult your tax adviser regarding your specific situation.

Fidelity Brokerage Services LLC, Member NYSE, SIPC, 900 Salem Street, Smithfield, RI 02917

802200.1.4

© 2021 FMR LLC. All rights reserved.