National Economic and Municipal Market Outlook

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HilltopSecurities Strategy and Credit

- Tom Kozlik, Head of Municipal Strategy and Credit: With nearly two decades of experience in the fixed income industry, Kozlik is a nationally recognized strategist who brings unique insight and perspectives to his commentary and analysis of municipal market trends, opportunities and challenges. In 2019 and 2018, Smith’s Research and Gradings included him on the first team in the generalist category of its Municipal All-Star Team. He was voted to Institutional Investor’s All-America Fixed Income Research Team and Greenwich Associates named him one of the Most Helpful Analysts in Municipal Bonds in 2015. In addition, Kozlik has taught graduate-level public finance courses at the University of Pennsylvania’s Fels Institute of Government, where he earned a Master of Government Administration.

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National Economic and Municipal Market Outlook:

- Macroeconomic overview
- Much different place compared to a year ago
- Municipal bond market overview – Near 10 year lows, record demand
- More on the supply and demand dynamic
- Review of where we are in the municipal credit cycle
- U.S. state and local government sectors
- Barriers to fully funding public pensions – largely, a problem of asymmetric information
Enough With Uncertainty, Policy or Otherwise

U.S. Economic Policy Uncertainty Composite Index (%)

Source: Baker, Bloom, & Davis, Bloomberg, and Hilltop Securities.
The Economic Expansion Continues

Length of U.S. Expansion in Months

<table>
<thead>
<tr>
<th>Year</th>
<th>Months</th>
</tr>
</thead>
<tbody>
<tr>
<td>1949</td>
<td>45</td>
</tr>
<tr>
<td>1954</td>
<td>39</td>
</tr>
<tr>
<td>1958</td>
<td>24</td>
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<td>1970</td>
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<td>1975</td>
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<td>1980</td>
<td>12</td>
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<tr>
<td>1982</td>
<td>92</td>
</tr>
<tr>
<td>1991</td>
<td>120</td>
</tr>
<tr>
<td>2001</td>
<td>73</td>
</tr>
<tr>
<td>2009</td>
<td>126</td>
</tr>
</tbody>
</table>

Strength of U.S. Expansion – Avg GDP Growth

<table>
<thead>
<tr>
<th>Year</th>
<th>Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>1949</td>
<td>7.7%</td>
</tr>
<tr>
<td>1954</td>
<td>4.1%</td>
</tr>
<tr>
<td>1958</td>
<td>6.7%</td>
</tr>
<tr>
<td>1961</td>
<td>5.1%</td>
</tr>
<tr>
<td>1970</td>
<td>5.3%</td>
</tr>
<tr>
<td>1975</td>
<td>4.5%</td>
</tr>
<tr>
<td>1980</td>
<td>4.3%</td>
</tr>
<tr>
<td>1982</td>
<td>4.4%</td>
</tr>
<tr>
<td>1991</td>
<td>3.8%</td>
</tr>
<tr>
<td>2001</td>
<td>2.9%</td>
</tr>
<tr>
<td>2009</td>
<td>2.3%</td>
</tr>
</tbody>
</table>

Is a Recession Coming in 2020?

Bloomberg Economics Probability of a U.S. Recession in 12 Months Index

- 29% today
- 49% summer of 2019

Source: Bloomberg and Hilltop Securities.
Concern About ISM Contraction

The ISM Manufacturing Index


Released by the Institute for Supply Management, based on surveys of 300 U.S. purchasing managers throughout the 20 industries in the manufacturing area. ... If the index is above 50, it indicates that the economy is expanding.

Importance of the U.S. Consumer

The Consumer Confidence Index

Source: Conference Board, Bloomberg and Hilltop Securities.
Thinking About Dec 2019 Jobs Data

Change in Non-Farm Payrolls

The Mid-cycle FOMC Adjustment

The Fed Funds Target Rate

Source: The Federal Reserve Board and Hilltop Securities.
MMD as a Percent of U.S. Treasuries

MMD | UST 5-10-30 Year Historical Rates Comparison

MMD | UST 10-Year 1-Week Comparison

MMD | UST 5-10-30 Year Ratios

Source: Refinitiv Municipal Market Data and U.S. Treasury Department
Municipal Market AAA Yields

Municipal Market Data (MMD) AAA 20 Year Maturity

Source: Refinitiv Municipal Market Data and HilltopSecurities
## Tax-Exempt Market Overview

### AAA MMD Historical Yield Curve Comparison

<table>
<thead>
<tr>
<th>Yr</th>
<th>% Yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020</td>
<td>1.5%</td>
</tr>
<tr>
<td>2019</td>
<td>2.0%</td>
</tr>
<tr>
<td>2018</td>
<td>2.5%</td>
</tr>
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</table>

### Historical MMD Credit Spreads to AAA

- A to AAA 20Y MMD
- Avg A to AAA
- AA to AAA 20Y MMD
- Avg AA to AAA

### AAA MMD Historical Yield Curve Steepness

- 10Y Less 2Y
- 30Y Less 2Y

### Maximum and Minimum AAA MMD Yields

- Since January 1, 2000
- Since January 1, 2018
- January 3, 2020

Source: Refinitiv Municipal Market Data
Supply and Demand

Record Fund Flows Since Beginning of 2019

Source: Investment Company Institute through the end of December 2019 and Hilltop Securities.
Municipal Bond Market Update

Supply and Demand

Municipal Bond Issuance (Negotiated and Competitive)

$339 billion in 2018

$448 billion in 2017

$421 billion in 2019

Source: Thomson Reuters through the end of December 2019 Hilltop Securities.
Municipal Bond Market Update

The Coming Climate Change Reallocation

**Municipal Analysts See an Increased, Relatively Minor Risk from Climate Change**

- % of Municipal Analysts Who Think Climate Change is a Top Five Municipal Bond Market Issue/Trend

- 2019: 19%
- 2018: 6%
- 2017: 0%

Source: Smith’s Research, PNC Capital Markets and Hilltop Securities.
The Market Responds to Its Critics

First Responder

One of the first responders was Tom Kozlik, a municipal credit analyst ... in Philadelphia.

In the firm’s July 14, 2010, Municipal Bond Market Monthly, Kozlik wrote, “Many stories published of late in the popular press have included overblown perspectives of municipal market risk.”

His piece was entitled, “Municipal Market ‘Myths’ and ‘Truths’ and ‘Veritas Vos Liberabit’ Which Means, ‘The Truth Shall Set You Free.’ ”

He discussed headline risk, and observed, “Although recent articles in the popular press try to portray a balanced opinion about the status of the municipal market, too often writers and commentators are not relying on municipal market experts for facts about the realities stressing the municipal market.”

He continued, “The confusion, lack of knowledge and resulting fear mongering we have seen in the print and televised media has occurred because of the media’s misunderstanding of the municipal market.”

Source: The Muni-Meltdown that Wasn’t, Joe Mysak, Bloomberg, Nov. 2014 and Hilltop Securities.
Municipal Bond Market Update

Source: Rating Changes for the 50 States, Moody's, April 30, 2019 and Hilltop Securities.
Municipal Bond Market Update

Deep State Funding Cuts to K-12 Schools

Change in per Pupil Compared to 2008 ($)

Source: K-12 School Funding Up in Most 2018 Teacher Protest States, but Still Well Below a Decade Ago, Center on Budget and Policy Priorities, March 6, 2019 and Hilltop.
Your State is Probably Facing a New Dawn of Public Finance Problems

“U.S. states have entered a new era characterized by chronic budget stress. For the past 130 years, states have mostly been financially resilient through a range of economic conditions.

In fact, no state has defaulted on its debt since Arkansas in the 1930s.

This long period of relative calm may have lulled some people into complacency when it comes to state finances.

It shouldn’t have.”

Wrote Gabe Petek of S&P’s U.S. States team in “The Hill”
“Once upon a time, US municipal bonds were generally considered less risky than corporate bonds. Backed by the full faith and credit of state governments, investors had confidence they would receive their principal plus interest without fail. *Times have changed.*

For some states and local governments, decades of financial mismanagement and massive pension liabilities are threatening to upend the full faith and credit pledge.

When we add up the projected revenues, the math still doesn’t work. It’s for this reason that we have not and will not own uninsured general obligations of the State of Illinois, or bonds from the City of Chicago and Chicago Public Schools,” wrote Franklin Templeton.
U.S. State Government

New Jersey Treasurer Resets Public Pension Rate of Return

New Jersey’s treasurer said on Thursday she will increase the expected rate of return for the state’s struggling public pension system from 7% to 7.5%, then lower it again over time.

The switch to a higher assumed rate means that the state, and participating local governments in New Jersey, will for now escape the higher costs that arise when investment return assumptions are lowered.

The higher rate will save about $238 million for the state and more than $400 million for local governments in the near term, according to the office of Acting State Treasurer Elizabeth Maher Muoio.

While Muoio is moving New Jersey’s rate up beginning in fiscal 2019, her plan will then step down the rate over the following five years, falling back to 7 percent in fiscal 2023.

Former Treasurer Ford Scudder had cut the pension funds' rate of return to 7 percent from 7.65 percent in November, but Muoio said that move was too drastic and would saddle local governments with heavy additional costs,” Wrote Hilary Russ in Bloomberg March 1, 2018

Source: New Jersey Treasurer Resets Public Pension Rate of Return, Hilary Russ, Bloomberg, March 1, 2018 and Hilltop Securities.
Municipal Bond Market Update

U.S. State Government

**Several State Pension Plans Only have Four to Nine Years of Assets Remaining**

Source: Most States have the financial flexibility and reserves to manage a recession, Moody’s, May 20, 2019 and Hilltop Securities.
States With 4-6 Years of Pension Benefit Payments Remaining, After Shock

Connecticut
Illinois
New Jersey
South Carolina

States With 6-9 Years of Pension Benefit Payments Remaining, After Shock

Arkansas
Colorado
Kentucky
Massachusetts
New Jersey
South Carolina

Source: Most States have the financial flexibility and reserves to manage a recession, Moody's, May 20, 2019 and Hilltop Securities.
Municipal Bond Market Update

U.S. Local Government

Distribution of U.S. Local Govt. General Obligation and Issuer Ratings (Moody’s)

Median Rating(s):
City- Aa3
County- Aa2
School district- Aa3

Source: Medians – Tax Base Growth Underpins Sector Strength, while Pension Challenges Remain, May 6, 2019 and Hilltop Securities.
Municipal Bond Market Update

U.S. Local Government

*Property Values Continue to Grow, (Moody’s Says) Underscores Sector Stability ($000)*

Source: Medians – Tax Base Growth Underpins Sector Strength, while Pension Challenges Remain, May 6, 2019 and Hilltop Securities.
Municipal Bond Market Update

Public Finance Sector

**Public Finance Upgrades and Downgrades, Moody’s Annually**

Municipal Bond Market Update

U.S. Local Government

**City Pension Liabilities Rising While Contributions Stay the Same ($000)**

Source: Medians – Tax Base Growth Underpins Sector Strength, while Pension Challenges Remain, May 6, 2019 and Hilltop Securities.
Largely, a Problem of Asymmetric Information

Comparison of State and Local Government Public Pension Levels

Source: Federal Reserve, Center for Retirement Research at Boston College and Hilltop Securities.
Largely, a Problem of Asymmetric Information

Reasons for Change in the Unfunded Actuarial Accrued Liabilities (UAAL), 2001-2013

- Investment return lower / (higher) than assumed: 60%
- Contribution lower / (higher) than normal cost + interest: 24%
- Actual experience worse / (better) than assumed: 2%
- Benefit changes: -1%
- Changes to assumptions and methods: 7%
- Other: 7%

Source: Center for Retirement Research at Boston College and Hilltop Securities.
Largely, a Problem of Asymmetric Information

Comparison of Average Annualized Returns to Assumed Return, 2001-2017

Source: Center for Retirement Research at Boston College and Hilltop Securities.
Largely, a Problem of Asymmetric Information

Effect of Different Discount Rates on Measuring the Liability for a Future Payment

Source: U.S. GAO report and Hilltop Securities.