



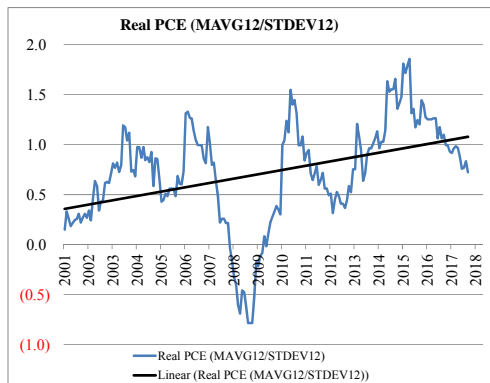
Consumer Providing Steady Growth to Economy

Several factors are lending support to consumer spending, which is expected to experience solid growth through the end of this year and into the next.

By Chris Mier, CFA / Strategist

The trajectory of economic growth is expected to slow from 2018 to 2019 with GDP growth for the year expected to come in at roughly 3.0% in 2018 and to fall to between 2.0% and 2.5% in 2019. While there are a number of causal factors implicated in the expected slowdown—higher interest rates, the diminishing impact of fiscal policy, the impact of protectionism, the longevity of the recovery—consumer spending is not likely to be one of them. The Loop economic forecast anticipates consumption of 2.4% in 2018 and an uptick to 2.6% in 2019. After a winter slowdown in the first quarter, consumer spending is expected to be on a steady glide path through this year and into the next.

Real PCE Grows While Variability of Data Falls



Source: Bureau of Economic Analysis

There are a multitude of factors lending support to consumer spending. Household balance sheets are in solid shape and are well insulated from rising short term interest rates given the low exposure to revolving credit as a percentage of total debt. The ratio of household debt to disposable income has bottomed at a favorable level and will sustain the capacity to spend longer-term. Delinquencies, absent some problems in the student loan sector and upturns in autos and credit cards, are manageable. Home equity has risen above its previous peak, yet consumers are not moving nor are relying on home equity to support additional spending through borrowing. Wealth effects are supportive, with generally high equity prices that are only about 2% from their highs (and 40% above January 2015 levels) and housing values that are still rising broadly across the country. The S&P/Case-Shiller 20-City Composite Home Price Index moved to progressively higher year-over-year increases, from 4.3% in January 2015 to 6.5% in April 2018.

The labor market is highly favorable with respect to the ongoing strength of consumption. The tightness of the labor market is drawing from people available for work and causing the Labor Force Participation Rate to rise. The LFPR rose by over 600K jobs in June alone.

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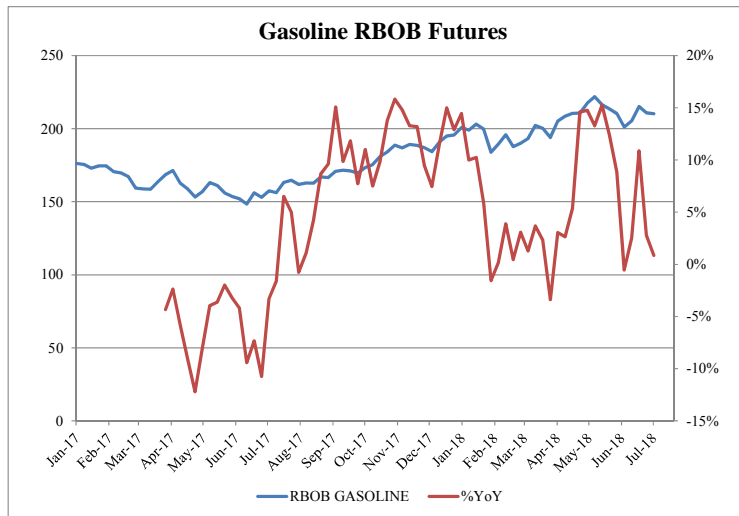
Consumer Providing Steady Growth to Economy

Job growth is accelerating from September 2017 levels on a 12-month moving average basis. There are now more jobs available than there are candidates to fill them. While wage growth is growing moderately, employers are using bonuses, health care, and vacation benefits to entice workers into taking open positions. This has suppressed traditional measures of wage growth, although the broader measure Employment Cost Index is showing the impact with a year-over-year increase of 2.7%. The JOLTS data affirms the strength of the labor market with more employees finding the confidence to leave current jobs in search of a better opportunity.

Major confidence and sentiment surveys confirm the high optimism among consumers. The University of Michigan Consumer Sentiment Index and the Conference Board Consumer Confidence Index are at 98.2 and 126.4, respectively—both near long-term highs. The surveys are consistent in implying continued strength in consumption.

The favorable fundamentals are not without potential pitfalls. Gas prices, which have risen by about one-third over the past year, are high and subtract from consumption. Protectionism raises the specter of higher product costs and inflation. China has been focusing on consumer electronics in terms of their retaliatory responses to our tariffs. The headline CPI release for June was a heady 2.9% on a year-over-year basis. The prospect of inflation growing faster than wage inflation is a potential concern as it would detract from growth in spending. As the Fed makes progress on their inflation target, consumers will be facing constraints to spending and higher interest rates as normalization continues. At present, though, these are potential concerns that may not fully materialize. The favorable environment for spending is at present a reality. We are all familiar with the phrase “Don’t fight the Fed”, investors may be well served to apply that logic to the consumer as well.

Gasoline Prices Pose a Threat to Consumption



Source: Thomson Reuters Eikon

Economic and Interest Rate Forecast — July 2018

Factors Supportive of Lower Rates

Real GDP growth was revised to 2.0% rate in Q1 vs. 2.2% consensus estimate amid the weakest performance in consumer spending in nearly five years.

Durable goods orders fell 0.6% last month as demand for transportation equipment softened.

Housing starts slumped 12.3% in June to a 9-month low, suggesting homebuilding may have plateaued amid more expensive lumber and land and labor shortages.

Retaliatory protectionist measures implemented by the U.S. and its major trading partners represent a headwind for the global economy.

Factors Supportive of Higher Rates

Nonfarm payrolls jumped 213K in June, while May reading was revised up by 21K. JOLTS report shows that the number of employees who quit their job for a better opportunity reached a 17-year high.

Retail sales grew 0.5% in June, after increasing 1.3% in May, cementing expectations for robust Q2 economic growth.

PPI rose 0.3% in June, or 3.1% YoY, the biggest annual increase in 6.5 years. CPI increased 2.9% YoY, the highest rate since February 2012.

U.S. vehicle sales rose 3.1% in June to 17.4 million annualized on strong sales of light trucks.

U.S. construction spending increased 0.4% in May to record \$1.31 trillion annual rate.

Figure 1 Economic and Interest Rate Forecast — July 2018

	1Q'17	2Q'17	3Q'17	4Q'17	1Q'18	2Q'18	3Q'18	4Q'18	1Q'19	2Q'19	3Q'19	4Q'19	Avg'17	Avg'18	Avg'19
Economic Forecasts															
Real GDP	1.2	3.1	3.2	2.9	2.0	3.8	3.1	2.9	1.9	2.7	2.7	2.6	2.3	3.0	2.5
Core PCE Deflator	1.8	1.5	1.4	1.5	1.6	1.9	2.3	2.2	2.3	2.2	2.2	2.1	1.6	2.0	2.2
Unemployment Rate*	4.7	4.3	4.3	4.1	4.1	3.9	3.8	3.8	3.7	3.6	3.7	3.8	4.4	3.9	3.7
Nonfarm Payrolls (chg in 1000s)	532	569	425	662	655	632	525	495	460	450	440	440	2,188	2,307	1,790
S&P 500	2,327	2,398	2,467	2,603	2,733	2,703	2,800	2,844	2,890	2,935	2,982	3,029	2,449	2,770	2,959
Short-Term Interest Rates*															
Fed Funds Target (%)	0.70	0.95	1.16	1.20	1.44	1.74	1.89	2.16	2.41	2.68	2.88	2.88	1.00	1.81	2.71
3-Month LIBOR (%)	1.07	1.21	1.31	1.46	1.93	2.34	2.46	2.70	2.92	3.16	3.25	3.30	1.26	2.36	3.16
7-Day SIFMA (%)	0.69	0.84	0.82	1.05	1.21	1.46	1.35	1.55	1.65	1.80	1.90	2.00	0.85	1.39	1.84
Treasury Interest Rates*															
2-Year Treasury (%)	1.24	1.29	1.36	1.69	2.15	2.47	2.63	2.84	3.03	3.24	3.30	3.32	1.39	2.52	3.22
3-Year Treasury (%)	1.51	1.47	1.51	1.81	2.30	2.61	2.74	2.90	3.07	3.26	3.31	3.33	1.57	2.64	3.24
5-Year Treasury (%)	1.94	1.81	1.81	2.06	2.53	2.77	2.85	2.95	3.10	3.27	3.35	3.37	1.91	2.77	3.27
7-Year Treasury (%)	2.25	2.07	2.06	2.25	2.68	2.88	2.96	3.01	3.14	3.29	3.37	3.39	2.16	2.88	3.30
10-Year Treasury (%)	2.44	2.26	2.24	2.37	2.76	2.92	3.07	3.09	3.20	3.33	3.40	3.42	2.33	2.96	3.34
30-Year Treasury (%)	3.05	2.90	2.82	2.82	3.03	3.09	3.21	3.31	3.41	3.52	3.58	3.60	2.89	3.16	3.53
Municipal Interest Rates*															
30-Year MMD (%)	3.08	2.86	2.75	2.71	2.91	2.99	3.08	3.15	3.24	3.31	3.33	3.35	2.85	3.03	3.31
Muni Yield Curve Slope (%)	2.21	2.02	1.93	1.58	1.51	1.36	1.40	1.27	1.26	1.18	1.10	1.02	1.93	1.38	1.14

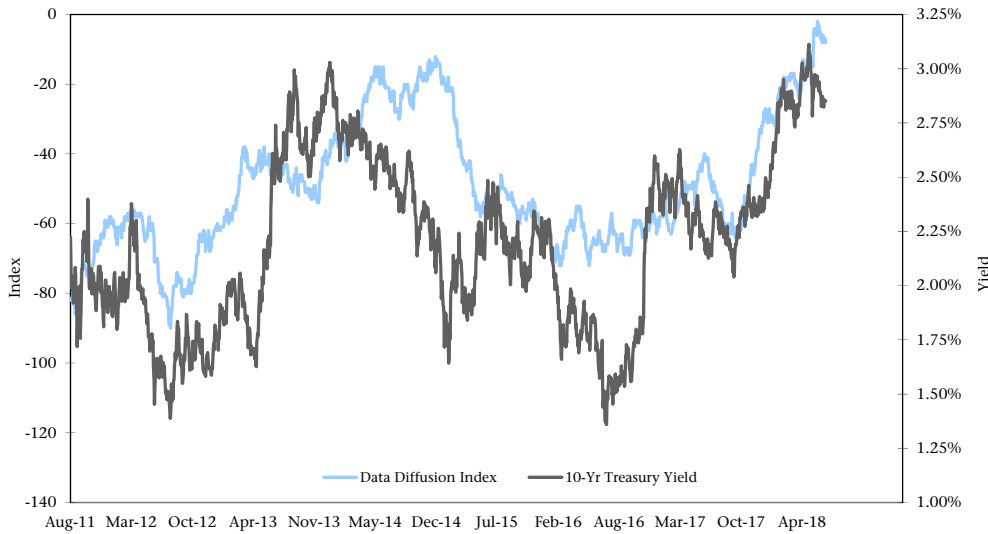
P: Preliminary Data

* 3-month average

Source: Loop Capital Markets' Analytical Services Division and Short-Term Desk. Black Text: Actual Blue Text: Forecast as of July 10, 2018

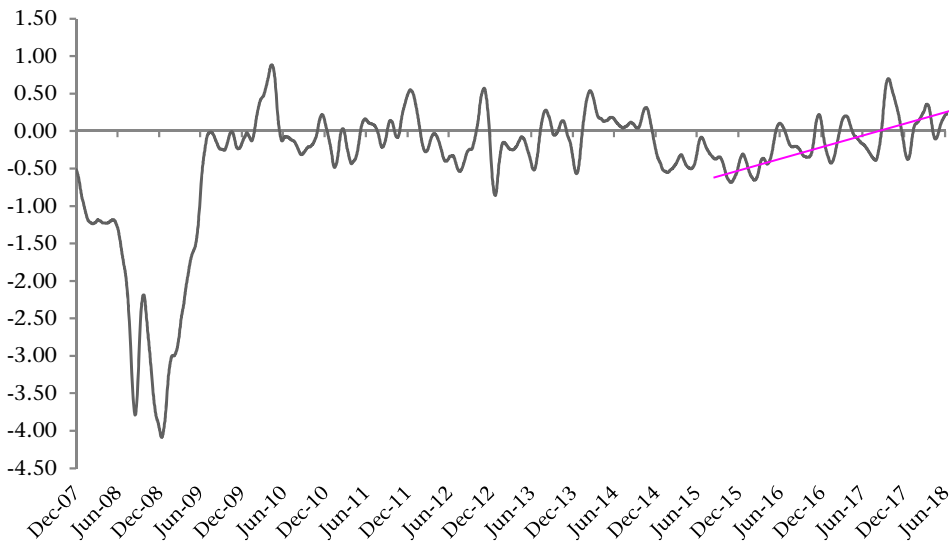
Market Review *Data Diffusion / ADS Index*

Figure 2 Data Diffusion Index vs. 10-Yr Treasury Yield



Sources: FRED, Loop Capital Markets

Figure 3 Aruoba-Diebold-Scotti Business Conditions Index (12/31/2007 — 7/14/2018)



Source: Federal Reserve Bank of Philadelphia

After reaching a multi-year high, data diffusion index eased 6 points since mid-June, and Treasury yields declined during that period.

Data Diffusion Index: We calculate the Data Diffusion Index based on 30 different weekly, monthly and quarterly economic releases, such as construction spending, capacity utilization and new home sales. If the number came above the consensus estimate (which is positive for economic growth) the index would increase by one, and vice versa. The Treasury yield is expected to track the data diffusion index (the yields would increase as the economy exceeds expectations and vice versa).

The index has been trending up the last 2 years and is currently slightly above trend growth of about 2%, represented by the flat line.

Reading the ADS Index: The index is designed to track real business conditions at high frequency. Its underlying (seasonally adjusted) economic indicators (weekly initial jobless claims; monthly payroll employment, industrial production, personal income less transfer payments, manufacturing and trade sales; and quarterly real GDP) blend high and low-frequency information and stock and flow data.

Houston Continues to Rebuild After Hurricane Harvey

By Rachel Barkley | Vice President

As we approach the one-year anniversary of Hurricane Harvey's landfall in the Houston metropolitan area, we look at the impact on the area, both physically and financially, as well as how the city is preparing for future storms.

Hurricane Harvey hit Texas in late August 2017, pouring more than 50 inches of rain on the area over a four day period. It was the second costliest storm in U.S. history, inflicting roughly \$125B of damage, trailing only Hurricane Katrina on an inflation-adjusted basis.¹

In total, 154,170 homes flooded in Harris County, 64% of which did not have flood insurance.² Approximately 3.3% of the Houston metro area's homes suffered damage that was expected to displace residents for less than a month while 0.1% of properties were destroyed.³ In addition, estimates of flooded apartments, condos and townhomes range from 5,000 to 15,000 units across the county, along with thousands of commercial structures. More than 32,000 residents were housed in temporary shelters immediately following the storm.⁴ Roughly 700 families across the state were still living in hotel rooms paid for by the program on July 1st, the last day of expected FEMA subsidies.⁵

The rebuilding process began immediately, as local governments removed debris from streets and surveyed damage. In September, Houston appointed a Chief Recovery Officer, Marvin Odum, to oversee the city's recovery from the storm and make it less vulnerable to future natural disasters.

Federal Assistance

Federal assistance has come from a myriad of agencies, focused on residential rebuilding as well as preparing the area for future storms, with roughly \$19B being approved so far. Through April, Houston had received \$163MM in cash advances from FEMA to aid disaster recovery efforts, including debris removal and emergency protective measures.

FEMA has so far approved \$8.9B in relief for individuals including 177,600 individual assistance requests (\$4.8B), 47,000 flood insurance claims (\$2.9B) and over 15,800 small business loans

(\$1.2B).⁶ It has also allocated \$695MM in disaster funds to Texas, while the Harris County Flood Control District expects to receive \$26.5MM in funding to buy out homes in floodplains.⁷

The Texas General Land Office (GLO) State Action Plan was approved by the federal government in late June. This includes a \$5B federal block grant for disaster relief, \$2.3B of which is directly allocated to Houston and Harris County.⁸ Houston and Harris County are required to submit their own plan for funding as an amendment to the state plan. The remaining \$2.7B of funding will go to pay for projects in other affected areas of the state.

The U.S. Army Corps of Engineers approved roughly \$5B in disaster recovery projects in Texas in July. The majority of this will be used for one project, a \$3.9B project on nearby Sabine Pass in Galveston Bay.⁹

In addition, the U.S. Department of Education announced \$89.4MM in funded for Texas school districts affected by the floods in April.¹⁰ However, this is far less than the \$1.64B of needs identified by the Texas Education Commissioner.

Capital Improvements and Debt Issuance

Local efforts have been focused on fixing infrastructure as well as preparing the area against future, potentially stronger, storms. A bond election is scheduled for August 25th for the Harris County Flood Control District, which would seek approval for \$2.5B in funding for 150 flood reduction projects. Potential projects include channel modifications to improve stormwater conveyance, regional stormwater detention basins, repairs to flood-damaged drainage infrastructure and wetland mitigation banks.¹¹ U.S. Representative John Culberson, who represents the district, has stated his support for the bond proposal, indicating that he can match each local dollar put towards flood recovery efforts with three dollars of federal funding.¹²

The City of Houston has roughly \$700MM in additional projects they plan on undertaking in the wake of the storm, including a

⁶ Harris County Flood Control District.

⁷ After Harvey, Houston has to get greener. Houston Chronicle. June 27, 2018.

⁸ Federal government approves Texas plan for long-term Harvey recovery funds. Texas Tribune. June 25, 2018.

⁹ Abbott: Feds approve \$5B for Harvey recovery. Houston Chronicle. July 6, 2018.

¹⁰ Texas schools hit by Hurricane Harvey eligible for \$89M in federal aid. Houston Chronicle. April 30, 2018.

¹¹ Harris County Flood Control District. <https://www.hcfdc.org/bond-program/>

¹² Bipartisan agreement: Culberson, Fletcher endorse \$2.5B flood bond. Houston Chronicle. July 9, 2018.

¹ Immediate Flood Report Hurricane Harvey. Harris County Flood Control District. June 4, 2018.

² Harris County Flood District.

³ Storm Accelerates Lease Cycle: Effective Rents on the Rise. CBRE. September 21, 2017

⁴ Immediate Flood Report Hurricane Harvey. Harris County Flood Control District. June 4, 2018.

⁵ More than 300 days later, FEMA-funded hotel rooms end for Harvey victims. July 1, 2018.

detention basin and canal project.¹³ Funding for the projects is expected to come from federal mitigation grants. A 25% local match is required for approved projects.

Dredging of the San Jacinto River is expected to begin soon. The project is being led by the U.S. Army Corps of Engineers and funded by FEMA.¹⁴

Real Estate and Construction

The storm had a significant impact on the area's real estate, including building regulations, housing supply and construction.

Area building regulations previously restricted development to one foot above the 100-year floodplain (estimated to have a 1% chance of flooding in a given year). Since the storm, both the City of Houston and Harris County have passed stricter regulations limiting development to two feet above the 500-year floodplain (estimated of having a 0.2% chance of flooding in a given year).¹⁵ In total, 20,000 parcels in Harris County are within the flood plain, with \$13.5B of development.¹⁶

These restrictions, while valuable for the long-term integrity of the housing structures, add additional costs to new construction in the area. The National Association of Home Builders estimates the cost of raising a foundation to be between \$13,000 and \$14,000 per foot.¹⁷ The Federal Reserve Bank of Dallas cautions that rising home prices may harm the area's housing affordability, which has been one of its key selling points for residents moving in from across the nation.

Harris County and Houston are each expected to receive roughly \$1.1B of federal housing aid from the \$5B GLO State Action Plan previously discussed. The city has released plans to invest roughly \$600MM of this into repairing or building single-family homes and \$375MM in apartment construction and rehabilitation.¹⁸ A minimum of 70% of this federal housing aid must be spent on projects for those making a maximum of 80% of the area's median household income. The Harris County Commissioners approved in July the county's plan to spend their \$1.1B in housing revenue, with \$222MM going to subsidize housing costs for renters, \$211MM to single-family repairs of storm damage, \$209MM for home buyouts, \$115MM to subsidize construction of new single-family homes, \$63MM to fund administrative costs and planning, \$15MM to

reimburse homeowners for storm repairs already made and \$7.5MM for a homeless prevention program.¹⁹

FEMA decided in April that the local housing market had recovered sufficiently to stop Transitional Sheltering Assistance aid to families who were renting before the storm, as enough apartments were then available.²⁰

There has been a rise in complaints against contractors in the area during the rebuilding process. In total, over 400 formal complaints and lawsuits have been filed in Harvey-affected areas since the storms, while the Better Business Bureau of Greater Houston and South Texas reports roughly 200 complaints.²¹ Contractors in Texas are not required to be licensed, which may increase the chance of problems.

Property Tax Impact

The latest property assessment period began January 1st. Property tax bills will be sent in October, with payment due Jan. 31, 2019.

In 2004, city voters approved Proposition 1, which limits ad valorem tax revenues to the lesser of 104.5% of the prior year's collections or actual fiscal 2005 collections, adjusted for cumulative inflation increases and population growth. The city is able to levy an additional \$90MM annually through Proposition H for the purpose of funding public safety. Additional property tax levies may be approved by voters. The state also limits the city to a maximum operations levy of \$2.50 per \$100 of assessed value, well above the fiscal 2018 rate of \$0.45. Mayor Turner had originally proposed a 9% one-year emergency tax increase to aid the city's storm clean-up costs. This idea was eventually tabled as the state provided funding.

Harris County officials are reportedly expecting the property tax base for the tax year 2018 to be relatively flat as growth in unaffected areas and rebuilding have offset losses.²² Property tax revenues account for 38% of governmental activity revenues for Houston.²³

Finances

Houston ended fiscal 2017 with \$351.9MM in General Fund reserves, equal to 14.6% of spending. The city's Controller's Office is projecting to end fiscal 2018 with \$273.3MM in reserves, which

¹³ Houston council OK's plan to apply for Harvey mitigation funding. June 23, 2018.

¹⁴ Dredging of San Jacinto's west fork to begin soon. Houston Chronicle. July 2, 2018.

¹⁵ After Harvey, Houston has to get greener. Houston Chronicle. June 27, 2018.

¹⁶ What's in Houston's worst flood zones? Development worth \$13.5 billion. Houston Chronicle. Dec. 13, 2017.

¹⁷ Assanie, Laila and Weiss. Harvey Highlights Houston MUD Bond Development Funding. Federal Reserve Bank of Dallas. Southwest Economy, Second Quarter 2018.

¹⁸ Houston releases Harvey recovery plan for \$1B in housing aid. Houston Chronicle. June 7, 2018.

¹⁹ Harris County Commissioners Court OKs plan to spend \$1.1B in post-Harvey federal funds. July 10, 2018.

²⁰ City of Houston Monthly Financial Report April 2018.

²¹ Complaints against Houston-area contractors rise as residents rebuild after Hurricane Harvey. June 11, 2018.

²² Harris County, schools plan for flat tax base in the wake of flooding damage to properties. Community Impact Newspaper. February 15, 2018.

²³ City of Houston Fiscal 2017 CAFR.

would be \$51.6MM above the targeted 7.5% of expenditures.²⁴ Property tax and sales tax revenues are both coming above budget for the year.

The city is projecting disaster recovery efforts will total \$2.5B, of which the city's share will be \$234.6MM.²⁵ In addition to the FEMA cash advances already discussed, the city has received \$50MM in state assistance, transferred \$20MM from reserves and other funds and received a \$100MM insurance advance.

Parting Thoughts

Work to identify the extent of the damage remaining is still ongoing. In June, the Texas General Land Office announced it was working with the University of Texas at Austin to survey affected counties as to how many Harvey storm victims were still displaced and the extent of home damage that had yet to be repaired.²⁶

Due to its location, Houston is expected to continue to be affected by hurricanes. Its previously lax building regulations have enabled a high degree of development in areas that are expected to flood periodically.

Recent capital improvements to prevent flooding have already been tested. The 2018 July 4th holiday was the wettest day in history for Houston, according to the National Weather Service.²⁷ City bayous held the additional water, while the city prepared by positioning high-water trucks around the city to rescue stranded residents and motorists.²⁸

Houston and other area local governments will need to continue to monitor the threat of flooding. While costly, the capital plans of area local governments should mitigate this risk to some degree.



²⁴ City of Houston Monthly Financial Report April 2018.

²⁵ City of Houston Monthly Financial Report April 2018.

²⁶ State officials want to know how much damage remains from Hurricane Harvey. Texas Tribune. June 6, 2018.

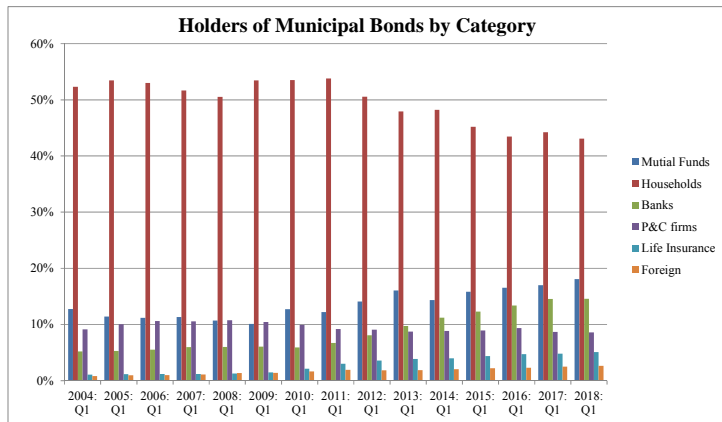
²⁷ Houston sets single-day record as July 4 rain pummels city. Newschannel10.com. July 5, 2018.

²⁸ Lessons from Harvey prepared Houston for July 4th flood, mayor says. ABC13.com. July 4, 2018.

Investment Trends among Muni Bondholders

By Ivan Gulich | Senior Vice President

We analyze factors that influence investment behavior among major categories of muni bond investors. The changing composition of muni holders since the end of 2003 is captured in the following chart.



Source: Federal Reserve's Flow of Funds Data

We performed our analysis using quarterly changes in muni holdings during this period for 5 largest categories of holders that jointly comprise about 90% of the muni market.

Muni Mutual Funds

Mutual fund share of the muni market has been steadily increasing in recent years. The sector is second largest holder of muni bonds after households. To test to which extent mutual fund flows are driven by yield movements we have regressed net changes in mutual fund assets vs. changes in muni rates. The daily average of 30-yr AAA MMD yields over the quarter was used as a proxy for muni rates.

The output shows that regression coefficient is statistically significant, with t-statistic of 8.8. The R-squared statistic indicates that changes in 30-Yr MMD explain 58% of quarter-over-quarter changes in mutual fund muni holdings.

REGRESSION OUTPUT (Mutual Funds)

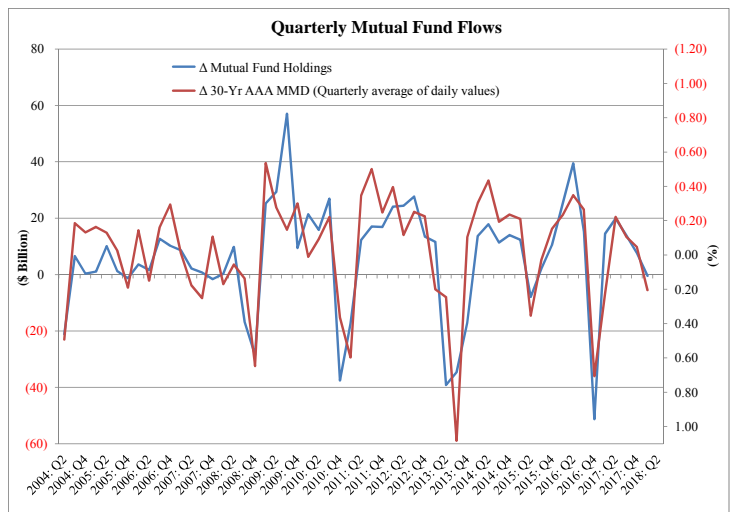
Regression Statistics	
Multiple R	76.7%
R Square	58.8%
Adjusted R Square	58.1%
Standard Error	12.68
Observations	56

ANOVA					
	df	SS	MS	F	Significance F
Regression	1	12,407	12,407	77.1609	0.0000
Residual	54	8,683	161		
Total	55	21,089			

	Coefficients	Std Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	4.83	1.70	2.84	0.0064	1.42	8.24
Δ 30-Yr MMD	(47.30)	5.38	(8.78)	0.0000	(58.10)	(36.50)

Source: Loop Capital

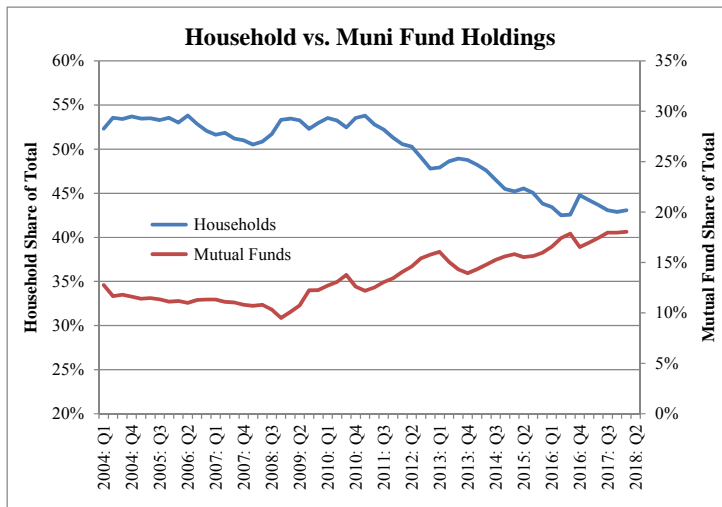
The following chart is convincing evidence that quarterly mutual fund flows follow muni rate movements. As rates fall, net inflows accelerate and vice versa.



Sources: Federal Reserve, TM3, Loop Capital

Individual Bondholders

Muni holdings by households have been declining in absolute terms since the end of Q1'11. Over the last seven years the sector has experienced net outflows of \$15.9 billion per quarter, on average, with ¾ of quarters experiencing outflows. Relative decline in household holdings (as share of overall market) is mirrored by the corresponding increase in muni fund holdings.

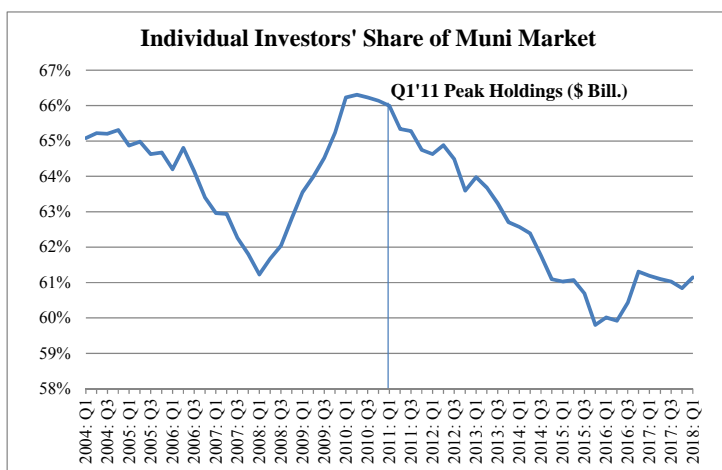


Source: Federal Reserve

The substitution effect is pronounced since the credit crisis, as individual increasingly deferred investment decisions to professionals.

The regression of two series of data shows that \$1 billion quarterly increase in muni mutual fund assets corresponds to a \$1.4 billion quarterly decrease in household muni holdings. The regression is statistically significant with t-statistic of 16.2 and R-squared of 82%.

We next examine muni bond assets held by individual investors (through direct holdings and muni funds) as share of overall muni market over time.



Source: Federal Reserve

Individual investors' holdings of muni bonds peaked in Q1'11, following a year that saw record issuance due to expiration of Build America Bonds program.

Somewhat surprisingly, regression analysis shows that quarterly changes in muni holdings by the household sector are unrelated to changes in muni yields, unlike the situation we observe in yield-sensitive mutual fund sector. One example of different levels of sensitivity to market developments between the two categories is the aftermath of Meredith Whitney's muni default warning in late December 2010. As a result of the warning, muni funds experienced net outflows of \$17.3 billion in Q1'11, while households recorded a \$2.7 billion net inflow during the same period.

How to explain retail clients' investment behavior?

As has been postulated by behavioral finance professionals, individual investors have a tendency to separate their money into different accounts based on miscellaneous subjective criteria, including the source of the money and the intended use for each account, often mentally dividing their investments between safe portfolios and speculative ones.

When purchasing muni bonds directly, retail investors lock in the yield they are satisfied with. Since their high-quality muni holdings are practically default-free, these investors mentally view their muni bond holdings as a safe component of their portfolio that produces guaranteed income. They may have high appetite for risk in their stock portfolio, but absolutely no tolerance for losses in their muni portfolio.

However, when these same investors purchase mutual funds they can check NAV and monitor the value of their muni portfolio daily. When muni yields spike during market downturns and their seemingly safe muni assets start losing value, risk-averse retail investors pull their money out, exacerbating market swings and forcing mutual fund managers to liquidate assets in the declining market. In making their investment decision, retail clients often compare (higher) benchmark yield vs. (lower) mutual fund yield and decide to sell before mutual fund assets depreciate further.

This behavior exacerbates market moves and result in cyclical outflows from mutual funds that can last for many consecutive weeks. When the market eventually bottoms and benchmark yield declines below muni fund yield, retail investors jump back into the market, marking the beginning of the new investment cycle.

We have also regressed changes in households' direct muni holdings QoQ against quarterly redemptions for the entire muni market (maturing and called bonds). Unsurprisingly, the regression is statistically significant, with t-statistic of 4.9 and R-square of 30%. The regression against household sector redemptions would probably generate an even stronger relationship. This suggests that households are generally buy-and-

hold investors that don't trade their bond portfolios in response to yield movements.

Separate studies have found no evidence that retail clients reduce their muni holdings in response to tax cuts and vice versa. The Tax Cuts and Jobs Act (TCJA) is no exception. In Q1'18 households reduced their muni holdings by only \$1.1 billion, compared to an average \$17.6 billion quarterly outflow in 2017. In Q4'17, when it was apparent that Congress would pass tax cuts, households added net \$9.8 billion to their muni portfolios.

Banks

Depository institutions have become third largest category of muni bondholders in recent years, increasing their muni holdings by 145% over the last 8 years. Banks were the only net purchasers of munis for 33 consecutive quarters through Q4'17. Since 30-yr MMD yield fluctuated within 1.93% to 5.08% range during this period, bank muni purchases were clearly not driven by yield considerations.

In the wake of the financial crisis banks were flooded with liquidity, borrowing money through various Fed programs at close to 0% interest rate. Many investors pulled money out of the market and remained in cash, which boosted deposits. With limited opportunities to increase loan volume due to stricter underwriting standards and general risk aversion, banks have parked part of this capital in safe muni assets, especially bank-qualified bonds that are valuable because of the tax-exemption.

To test this hypothesis, we have regressed quarterly changes in bank muni holdings vs. respective changes in commercial bank deposits since 2010, when banks started boosting their muni portfolios, which were fairly stable in previous years. The regression has a statistically significant coefficient that indicates that about 7.5% of extra deposits flowed to muni bonds, with an R-squared of 35%.

Q1'18 was the first quarter during which bank muni portfolios declined by net \$15.8 billion, or 2.8%. This could be due to corporate tax rate cut from 35% to 21%. However this was also the first quarter that commercial bank net deposits were negative.

Congress is currently working on legislation that would require regulators to classify readily tradeable investment-grade municipal securities as Level 2B high-quality liquid assets (HQLA), the same level as for mortgage backed securities.²⁹ If these efforts are successful, HQLA designation will likely increase bank demand for munis.

Property & Casualty Firms

P&C firms' share of the muni market has stagnated at about 8% to 9% since 2010. Their muni portfolio inflows and outflows do not seem to be driven by changes in muni rates. Part of the reason could be insurance firms' focus on book yield and accruals and not so much on mark-to-market value of assets.

P&C muni flows are likely influenced by relative value of munis compared to other fixed income classes. To test this hypothesis we regressed quarterly changes in muni assets vs. respective changes in sector's other fixed-income holdings. It turns out that 37% of quarterly changes in P&C muni assets can be explained by shifting assets to and from other fixed-income classes (Treasuries, corporates, agencies and sovereigns). The regression coefficient is minus 0.57, suggesting that 57% of aggregate net changes in other FI portfolios held by insurance companies flow in and out of their muni portfolio.

We have found no relationship between flows in and out of insurance companies' aggregate FI portfolio and stock market performance, which suggests that P&C firms allocate capital to fixed income and equity portfolio based on target allocation. Of course, P&C investment decisions and consequently muni flows depend on the flow of premiums as well as payout dynamic.

Finally, Property & Casualty firms, in aggregate, boosted their muni assets in Q4'17 and increased them marginally in Q1'18, which indicates that their muni holdings were not adversely impacted by corporate tax cut.

Life Insurance Companies

Life insurance companies have steadily increased their muni assets since the credit crisis. Because these firms do not benefit from tax-exemption, they purchase mostly higher-yielding taxable munis. During the seven quarters that BABs were issued, life insurance companies almost doubled their muni holdings.

The regression of quarterly net inflows/outflows vs. changes in muni rates since Q1'11 shows that life insurance firms are very sensitive to changes in interest rates and that they buy opportunistically.

²⁹ Kyle Glazier: Munis as HQLA comes closer to reality, The Bond Buyer, May 11, 2018

REGRESSION OUTPUT (Life Insurance Companies)

Regression Statistics	
Multiple R	75.0%
R Square	56.2%
Adjusted R Square	54.5%
Standard Error	2.3811
Observations	28

ANOVA					
	df	SS	MS	F	Significance F
Regression	1	189.00	189.00	33.33	0.0000
Residual	26	147.41	5.67		
Total	27	336.41			

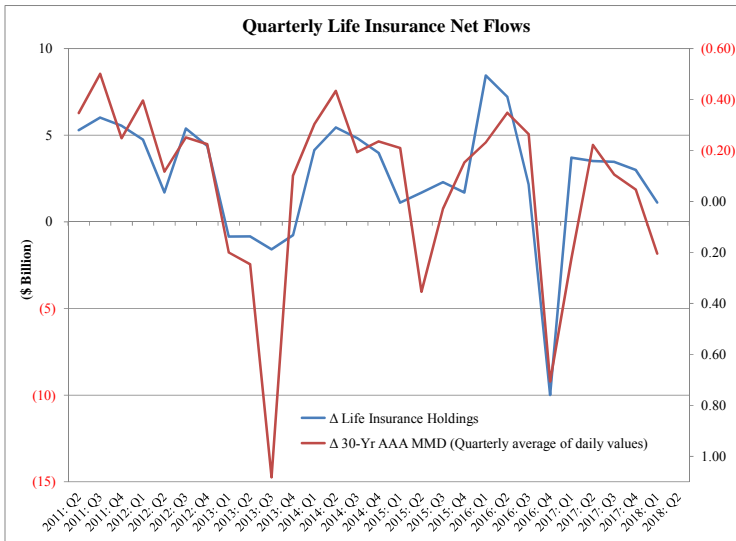
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	2.24	0.46	4.88	0.0000	1.29	3.18
Δ 30-Yr MMD	(7.53)	1.30	(5.77)	0.0000	(10.21)	(4.85)

Source: Loop Capital

Interestingly, using daily average of 30-yr AAA MMD yields over the quarter as a proxy produced better correlation that using a taxable benchmark, such as 30-yr Treasury yield.

Conclusions

Various categories of muni bondholders have different degrees of sensitivity to interest rate movements. Changes in tax rates have relatively little impact on investor behavior. A variety of investment objectives and considerations, in addition to yield movements, affect purchase and sale decisions. The tendency among many bondholders to buy-and-hold munis and focus on book yields reduces asset turnover. Due to idiosyncrasies characterizing a highly segmented muni market, the impact of major policy changes, such as those introduced by the TCJA, are often less severe than anticipated.



Sources: Federal Reserve, TM3, Loop Capital

Auto Industry Struggles to Keep Pace

By Chris Mier, CFA | Strategist and Ariane Uwamba | Intern

The auto industry is complex, as it is intricately woven into the economics of producing countries and employs a large workforce scattered among a wide variety of support industries. The industry can play a bigger political role than it should, given its size. Frequently governments regard their domestic auto industries as sources of domestic security. This study outlines some of the major municipal finance and economic factors, such as protectionism, affecting the auto industry today.

The auto industry has been going through a period of unprecedented change. President Trump's threat to slap 25% tariffs on imported cars and car parts places a tremendous amount of pressure on an industry that relies on a complex supply chain and is facing major technological changes such as self-driving vehicles development. The effects of the existing tariffs are evidenced recently by Harley-Davidson's announcement that it would have to accept and work around the short-term costs of new EU tariffs by moving some production overseas. The industry is characterized by a complex production chain with regard to the source of inputs, where component parts are manufactured and assembled. Tariffs would disrupt the manufacturers' current strategy of optimizing production cost and timing. A complete overhaul of the supply chain management process could be the ultimate result.

The proposed tariffs could also cost 100,000 U.S. jobs by 2019.³⁰ General Motors, the largest US auto maker and employer, responded to Section 232,³¹ highlighting that trade actions by the Trump administration will add risks including higher costs that could spiral into more expensive car prices and a decline in vehicle sales.

The "Auto Alley"

The auto industry in the U.S. is highly clustered. In 2010 a large number of assembly and auto plants were located in a region known as the 'Auto Alley'. The Auto Alley is a narrow corridor, approximately 700 miles long and 100 miles wide, located in the interior of the United States between the Great Lakes and the Gulf of Mexico extending northeast into Canada. The spine of the corridor is formed by two north-south interstate highways (I-65 and I-75).³²

³⁰ Economic analysis and research consultancy, Oxford Economics

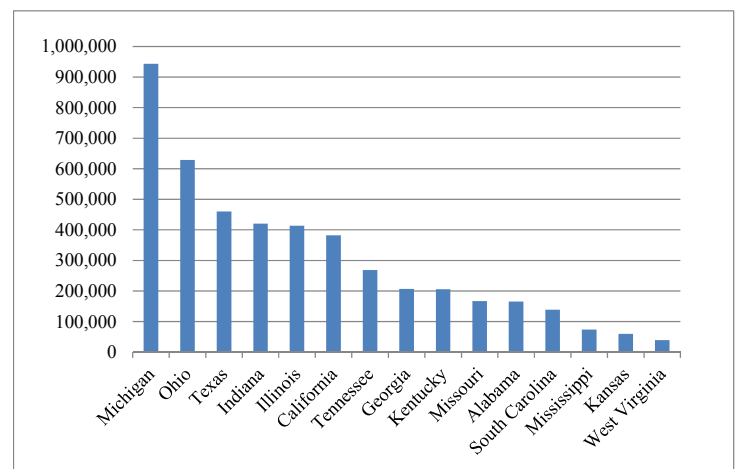
³¹ General Motors, Comments on U.S. Section 232 National Security Investigation of Imports of Automobiles and Automotive Parts

³² Handbook of Industry Studies and Economic Geography, edited by Frank Giarratani, Geoffrey Hewings, and Philip McCann, Edward Elgar, 2013 (Chapter 2).

The top 15 states for auto manufacturing are listed in order of employment: Michigan, Ohio, Texas, Indiana, Illinois, California, Tennessee, Georgia, Kentucky, Missouri, Alabama, South Carolina, Mississippi, Kansas and West Virginia.³³

The concentration in Michigan and nearby states reflects the industry's historic base and the dominance of Detroit's Big 3 automakers: General Motors, Fiat-Chrysler, and Ford Motor Company.

Total Auto Jobs in the "Auto Alley"



Source: Auto Alliance of Automobile Manufacturers

Plants located in Southern states of the U.S. are newer, mostly foreign-owned, attracted by lower labor costs, non-unionized labor, government incentives and the proximity to ports. The Big 3 still dominate the industry, as they operate 43 plants, of which 25 car and truck assembly plants are located in the U.S, 11 in Mexico and 5 in Canada.³⁴ Foreign automakers also have a significant presence in the U.S, as there are 18 auto assembly plants operated by Asian (Toyota, Honda, Nissan, Hyundai and Kia) and European companies (Mercedes-Benz and Volkswagen).

Auto suppliers are a critical component of the "Auto Alley". Of the top 100 auto parts suppliers to the North American auto industry almost two thirds are headquartered in Michigan, six in Ontario, and the remaining one quarter in other U.S. states with auto assembly plants (Ohio, Kentucky, Indiana, Tennessee, Georgia, South Carolina, and Texas). Each of the suppliers has multiple

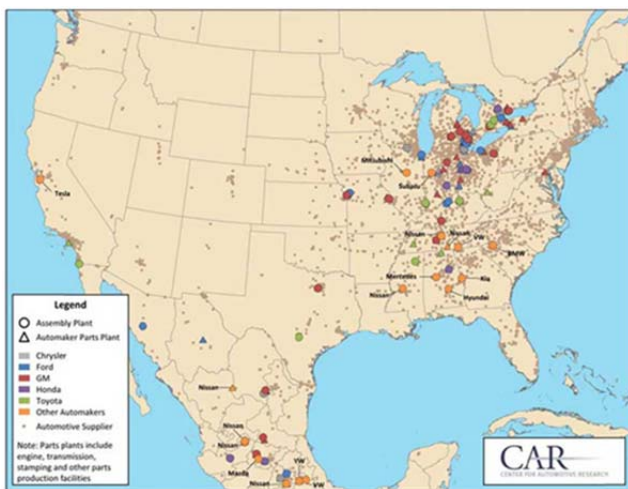
³³ Auto Alliance of Automobile Manufacturers

³⁴ Cuneo, Dennis. "The Changing Geography of the American Auto Industry." Area Development, 29 Aug. 2014

facilities producing vehicles parts and their locations are closely correlated with locations of auto assemblers, resulting in a high concentration in the U.S. portion of the Auto Alley.

In the U.S., there is substantial clustering of assembly plants and parts suppliers. This clustering is similar in Mexico where Asian and European companies operate a total of 11 auto assembly plants in pursuit of free trade deals with countries other than the U.S.³⁵ These automakers build inexpensive cars in Mexico where labor costs are relatively low, but where they can also take advantage of the potential gains from avoided export taxes.

U.S. “Auto Alley”



Source: Center for Automotive Research

U.S. Municipal Finance Issues

Employment: The auto manufacturing sector supports 7.2 million jobs or 3.8% of private sector employment:

- Auto dealers provide 1.65 million jobs
- Automakers support 2.44 million jobs
- Auto suppliers provide 3.16 million jobs

According to the Auto Alliance of Automobile Manufacturers, the industry offers \$500 billion in compensation annually and is responsible for \$205 billion annual tax revenues. Tax revenues included at least \$110 billion and \$95 billion in state and federal tax revenues respectively,³⁶ including local sales tax and state personal income and corporate taxes.

³⁵ “Mexico’s Growing Role in the Auto Industry Under NAFTA: Who Makes What and What Goes Where - Federal Reserve Bank of Chicago.” Canadian - U.S. Auto Pact - 13 Years After - Federal Reserve Bank of Chicago, June 2017, (pg 17)

³⁶ Center for Automotive Research study (2013) “Assessment of Tax Revenue Generated by the Automotive Sector for the Year 2013”

Corporate Tax Reform: Corporations like GM and Ford have been benefiting from last year’s tax bill (21% corporate tax rate). The bill has spurred economic growth as consumer spending increased and as fleet purchases by businesses to accommodate expanding workforce help auto industry sales.

Tariffs: Section 232 on steel & aluminum tariffs and Section 301 tariffs against Chinese imports could be detrimental to the auto industry. The industry is already feeling the impact of the steel and aluminum tariff rate increase.

The tariffs on \$34 billion in Chinese imports will affect a handful of automobiles imported into the US from China. The Chinese retaliation against these tariffs will affect less than the 267,000 vehicles that were exported from the U.S. to China in 2017.

Supply Chain & Logistics: Supply chain geography is changing as one out of three cars produced come from China and more than 60% of global production is in Asia and Oceania.³⁷ Over the next few years the nature of the product in the supply chain will change, as new types of engineering transform the economics of the sector. Technology making the self-driving car and connected cars possible is changing the way cars are built, where components are sourced, and how supply chains are managed. The following key trends are emerging in the auto supply chain:

- Data integration, making logistics more cohesive element of manufacturing process
- Greater level of visibility will be required to enable customization
- Use of cloud data to link supply chain, so the entire supply chain process becomes a one integrated global operation, rather than separate operations joined together by logistics, this will provide manufacturers with real-time data
- With the emergence of smart factories manufacturers will need to implement smart logistics as well

Environment & Energy: Groups like the Alliance for Auto Manufacturers are urging nine states to follow the California Zero Emission Vehicle (ZEV) mandate. The mandate also encourages states to adopt measures that can help increase sales, invest in infrastructure, develop consumer incentives and commit to buying ZEVs for state and local government fleets. Automakers have already invested in ZEVs, including plug-in electric and hydrogen-powered vehicles, and are looking to sell them in large numbers.

³⁷ <http://www.worldometers.info/cars/>

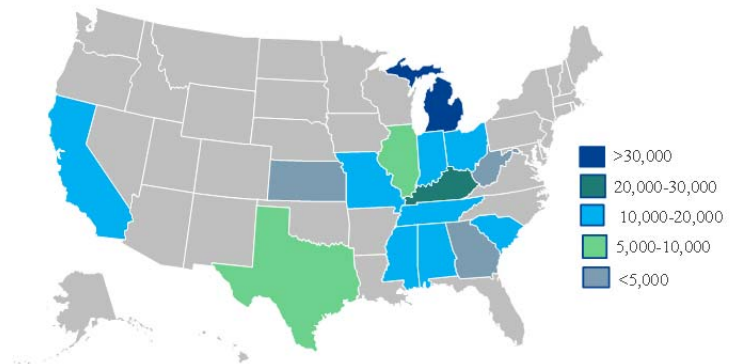
Economic Issues

Gas Prices: Despite rising gas prices, consumer preferences are still moving towards SUV and CUV (Crossover Utility Vehicle). This shift will increase automakers' revenues, which will result in further decreases in their production of sedans. Automakers will use their increased revenue to finance Electric Vehicle (EV) research and focus their efforts into designing more efficient vehicles to hedge against gas price fluctuations and stricter emission controls. In January, Ford announced its investment of \$11 billion in EV development to bring 40 electric models to market by 2022.³⁸ Additionally, some automakers are cutting down on sedan manufacturing and focusing on SUVs and trucks,³⁹ at the same time gas prices are increasing. Historically, sales of SUVs and trucks have run counter to gas prices. Although this has not panned out during this gas price increase yet due to the strong economy, if prices stay high and the economy turns auto makers could experience sales pressure.

Interest Rates: The rise in interest rates makes fewer vehicles affordable as auto loans are tied more to short-term interest rates than home loans. Thus, the Fed's interest rate increases are felt immediately by the auto sector. Most new vehicle auto loans range from 61-72 months. According to Experian automotive, 72-month loans accounted for 43.2% of new-vehicle auto loans in 2017, followed by 73-84 month at 30.4%.

Plant Location: A majority of the plants are located in the Midwestern and Southern states. Large automakers such as Toyota tend to rely on highly efficient networks of parts suppliers, as many cluster nearby to minimize transportation costs. Earlier this year, Toyota and Mazda announced a joint venture where they invested \$1.6 billion in a new automotive production facility in Huntsville, Alabama. According to Brookings, in exchange for the investment, which could create up to 4,000 jobs, the two Japanese auto giants will receive an estimated \$900 million in local and state economic incentives. In the last three decades, foreign automakers invested in nearly every major southern state: Alabama (Mercedes-Benz, Toyota), Georgia (Kia), Kentucky (Toyota), Mississippi (Nissan), South Carolina (BMW), and Tennessee (Nissan, Volkswagen). In the appendix we include a comprehensive list of these plants and their locations.

Number of Employees at Top Auto Plants



Source: Loop Capital Markets

U.S. Ports: Tariffs will hinder growth in revenue at U.S. ports by weighing on the auto industry. Ports in the Southeast are dependent on automotive trade. Through the Port of Charleston, BMW exports vehicles to 140 countries, making it the largest U.S. auto exporter. The tariffs have brought uncertainty to the South Carolina where BMW employs about 10,000 people and this has spurred concerns for the port. BMW exported cars worth \$10 billion from their plant in South Carolina.

At the Georgia ports of Savannah and Brunswick, which handle exports for large manufacturing operations in the Southeast, auto exports were up 12% in Q1 of this year, while auto-parts exports have risen 56%. However, due to recent tariffs imposed by the Trump administration, ports are set to see less traffic coming from the auto industry.

Looking Ahead

The auto industry will continue to experience growth as sales forecast numbers remain unchanged for the year. However, the industry may experience some volatility in the upcoming months of the second half. As the economy continues to grow steadily, consumers are spending more, therefore the preference for SUVs and CUVs continues. However, auto loan interest rates have been steadily on the rise this year and this could result in sales declining through the end of the year.

The biggest uncertainty, however, comes from the potential for a trade war, and the Trump Administration's threat to potentially place 25% tariffs on imported vehicles and auto parts. Chinese tariffs have left many players in the auto industry wondering how those in the U.S. will cope with higher prices. Depending on the outcome of the Section 232 hearings taking place on July 19th and 20th, the auto industry will either see continued future growth, or auto manufacturers will have to redesign their supply chains and adapt to a more challenging economic environment.

³⁸ Carey, Nick. "Ford Plans \$11 Billion Investment, 40 Electrified Vehicles by 2022." Reuters, Thomson Reuters, 16 Jan. 2018, www.reuters.com/article/us-autoshow-detroit-ford-motor/ford-plans-11-billion-investment-40-electrified-vehicles-by-2022-idUSKBN1F30YZ.

³⁹ CBS News: Ford Motor Company "Mustang, focus crossover will be only Ford cars on the market in North America by 2020." April 26th 2018

Auto industry activity drives state income taxes for the majority of states that have auto manufacturers, property taxes from employers, sales taxes for product sales and, as a secondary effect, through employment. In 2017 alone, U.S. auto manufactures sold 17.1 million units,⁴⁰ making it the third year in which sales reached \$17 billion. States and localities with heavy concentrations of auto-related employment should be monitored for the impact of tariffs, the high value of the dollar, technological changes and other drivers of change in the industry as it evolves.

Appendix

GENERAL MOTORS			
Plant Name	Location	Products	No. of Employees
Arlington Assembly	Arlington, Texas	Cadillac Escalade, Cadillac Escalade ESV, Chevrolet Tahoe, Chevrolet Suburban, GMC Yukon, GMC Yukon XL	4,125
Bowling Green Assembly	Bowling Green, Kentucky	Chevrolet Corvette	1,004
Detroit/Hamtramck Assembly	Detroit, Michigan	Buick LaCrosse, Chevrolet Impala, Chevrolet Volt	1,732
Fairfax Assembly	Kansas City, Kansas	Chevrolet Malibu, Cadillac XT4 (2018)	2,260
Flint Truck Assembly	Flint, Michigan	Chevrolet Silverado, GMC Sierra	3,574
Fort Wayne Assembly	Roanoke, Indiana	Chevrolet Silverado, GMC Sierra	3,900
Lansing Delta Township Assembly	Lansing, Michigan	Buick Enclave, Chevrolet Traverse	2,637
Lansing Grand River Assembly	Lansing, Michigan	Cadillac ATS, Cadillac CTS, Cadillac CTS-V, Chevrolet Camaro	1,793
Lordstown Assembly	Warren, Ohio	Chevrolet Cruze	3,000
Orion Assembly	Lake Orion, Michigan	Chevrolet Sonic, Chevrolet Bolt, Opel Ampera-e	1,019
Spring Hill Manufacturing	Spring Hill, Tennessee	Cadillac XT5, GMC Acadia	3,028
Wentzville Assembly	Wentzville, Missouri	Chevrolet Express, GMC Savana, Chevrolet Colorado, GMC Canyon	4,035

FIAT—CHRYSLER AUTO			
Plant Name	Location	Products	No. of Employees
Belvidere Assembly Plant	Belvidere, Illinois	Jeep Cherokee	5,152
Jefferson North Assembly	Detroit, Michigan	Jeep Grand Cherokee, Dodge Durango	4,993
Sterling Heights Assembly	Sterling Heights, Michigan	Ram 1500	7,249
Toledo Complex	Toledo, Ohio	Jeep Wrangler	5,893
Warren Truck Assembly	Warren, Michigan	Ram 1500	3,283

TESLA			
Plant Name	Location	Products	No. of Employees
Tesla Factory	Fremont, California	Tesla Model S, Tesla Model X, Tesla Model 3	10,000

SUBARU			
Plant Name	Location	Products	No. of Employees
Subaru of Indiana Automotive, Inc.	Lafayette, Indiana	Subaru Outback, Subaru Legacy, Subaru Impreza, Subaru Ascent (2018)	4,673

HONDA			
Plant Name	Location	Products	No. of Employees
Honda of America Manufacturing, Inc.	Marysville, Ohio	Honda Accord, Acura ILX, Acura TLX, Acura NSX	4,200
Honda of America Manufacturing, Inc.	East Liberty, Ohio	Honda CR-V, Acura RDX, Acura MDX	2,500
Honda Manufacturing of Alabama, LLC	Lincoln, Alabama	Honda Odyssey, Honda Pilot, Honda Ridgeline, Acura MDX	4,500
Honda Manufacturing of Indiana, LLC	Greensburg, Indiana	Honda Civic, Honda CR-V, Honda Insight	2,500

NISSAN			
Plant Name	Location	Products	No. of Employees
Nissan North America, Inc. Smyrna	Smyrna, Tennessee	Nissan Leaf, Nissan Altima, Nissan Maxima, Nissan Rogue, Nissan Pathfinder, Infiniti QX60	8,000+
Nissan North America, Inc. Canton	Canton, Mississippi	Nissan Altima, Nissan Murano, Nissan Frontier, Nissan Titan, Nissan NV	6,400

FORD MOTORS			
Plant Name	Location	Products	No. of Employees
Flat Rock Assembly Plant	Flat Rock, Michigan	Ford Mustang, Lincoln Continental	3,510
Chicago Assembly	Chicago, IL	Ford Explorer, Ford Taurus	4,020
Dearborn Truck	Dearborn, Michigan	Ford F-150	4,190
Kansas City Assembly	Claycomo, Missouri	Ford F-150, Ford Transit	7,320
Kentucky Truck Plant	Louisville, Kentucky	Ford Super Duty, Ford Expedition & Expedition EL/Max, Lincoln Navigator & Navigator L	7,990
Louisville Assembly Plant	Louisville, Kentucky	Ford Escape, Lincoln MKC	4,610
Michigan Assembly Plant	Wayne, Michigan	Ford Focus, Ford C-Max, Ford Ranger (2018), Ford Bronco (2019)	3,550
Ohio Assembly	Avon Lake, Ohio	Ford F-650, Ford Super Duty (Chassis Cab)	1,650

TOYOTA			
Plant Name	Location	Products	No. of Employees
Toyota Motor Manufacturing Kentucky	Georgetown, Kentucky	Toyota Camry, Toyota Avalon, Lexus ES350	8,000+
Toyota Motor Manufacturing Indiana	Princeton, Indiana	Toyota Sequoia, Toyota Sienna, Toyota Highlander	5,100
Toyota Motor Manufacturing Texas	San Antonio, Texas	Toyota Tacoma, Toyota Tundra	3,100
Toyota Motor Manufacturing Mississippi	Blue Springs, Mississippi	Toyota Corolla	6,700
Mazda Toyota Manufacturing, U.S.A. Inc.	Huntsville, Alabama	Toyota Corolla (2021)	TBD
Toyota Motor Manufacturing Alabama	Huntsville, Alabama	4-cylinder, V6, V8 engines (2021)	1,450
Toyota Motor Manufacturing West Virginia	Lane Buffalo, West Virginia	4-cylinder, V6 engines, 6-speed automatic transmissions (2021)	1,600 (2013)

⁴⁰ Global and U.S. Automotive outlook 2018-2019 presentation, Haig Stoddard, Wards Intelligence

HYUNDAI			
Plant Name	Location	Products	No. of Employees
Hyundai Motor Manufacturing Alabama	Montgomery, Alabama	Hyundai Elantra, Hyundai Sonata, Hyundai Santa Fe	3,000

BMW			
Plant Name	Location	Products	No. of Employees
BMW US Manufacturing Company, LLC	Greer, South Carolina	BMW X3, BMW X4, BMW X5, BMW X6, BMW X7 (planned)	10,000

KIA			
Plant Name	Location	Products	No. of Employees
Kia Motors Manufacturing Georgia	West Point, Georgia	Kia Optima, Kia Sorento	3,000

HINO			
Plant Name	Location	Products	No. of Employees
Hino Motors	Williamstown, West Virginia	Class 6 & 7 Medium Duty Trucks (GVWR: 16,001 - 33,000 lbs.), Specialized Trucks	300+

VOLKSWAGEN			
Plant Name	Location	Products	No. of Employees
Volkswagen	Chattanooga, Tennessee	Volkswagen Passat, Volkswagen Atlas	3,500

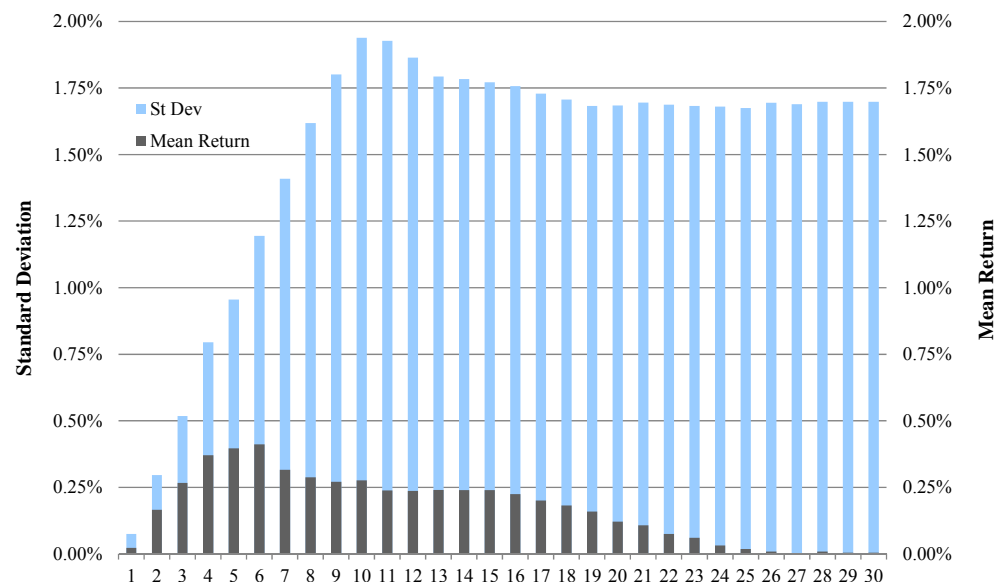
DAIMLER AG			
Plant Name	Location	Products	No. of Employees
Mercedes-Benz U.S. International, Inc.	Vance, Alabama	Mercedes-Benz GLE-Class, Mercedes-Benz GLS-Class, Mercedes-Benz C-Class	3,700
Mercedes-Benz Vans, LLC. (Fully operational 2020)	North Charleston, South Carolina	Mercedes-Benz Sprinter, Mercedes-Benz Metris (CKD, reassembly only)	1,300

VOLVO			
Plant Name	Location	Products	No. of Employees
Volvo Cars US	Berkley County, South Carolina	Volvo S60 (2018)	2,000



Market Review *Historical Monthly Bond Price Changes*

Figure 4 Muni Benchmark Callable Scale — Average Bond Price Changes (July)



Sources: Loop Capital Markets, TM3

We show historical bond price changes for each point on the muni benchmark callable curve during the month of July for the last 17 years.

The returns in July were positive 2/3 of the time, with bond prices rising, on average, 0.17% across the curve, with the front end of the curve outperforming longer maturities.

Figure 5 Muni Benchmark Callable Scale — Average Bond Price Changes (July)

AAA MMD - MONTHLY PRICE CHANGE

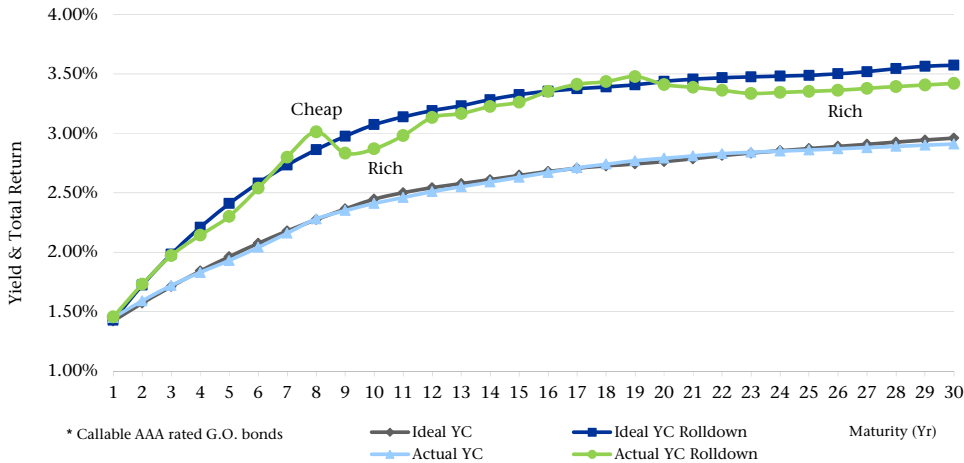
Maturity	5	10	15	20	25	30
Jul-01	0.75%	1.33%	1.32%	1.16%	1.23%	1.23%
Jul-02	1.06%	1.50%	1.40%	0.85%	1.00%	1.08%
Jul-03	-2.64%	-6.25%	-4.93%	-4.60%	-4.81%	-4.74%
Jul-04	0.53%	1.28%	1.43%	1.26%	0.70%	0.86%
Jul-05	-0.93%	-1.66%	-1.18%	-0.79%	-0.63%	-0.71%
Jul-06	0.58%	1.19%	1.03%	1.11%	1.19%	1.26%
Jul-07	0.58%	0.80%	0.71%	0.63%	0.55%	0.55%
Jul-08	1.25%	0.88%	-0.08%	-0.31%	-0.16%	-0.08%
Jul-09	1.45%	1.78%	1.12%	0.79%	0.16%	-0.23%
Jul-10	1.22%	1.80%	1.29%	0.64%	0.40%	0.40%
Jul-11	0.54%	0.65%	0.88%	0.56%	0.08%	0.00%
Jul-12	0.64%	1.65%	2.72%	2.79%	2.53%	2.61%
Jul-13	0.59%	-0.89%	-2.29%	-2.67%	-2.74%	-2.89%
Jul-14	-0.09%	0.00%	-0.08%	-0.08%	-0.08%	-0.16%
Jul-15	0.36%	0.74%	1.06%	1.05%	1.29%	1.29%
Jul-16	0.23%	-0.41%	-0.74%	-0.90%	-0.81%	-0.81%
Jul-17	0.63%	0.33%	0.41%	0.57%	0.41%	0.40%
Mean	0.40%	0.28%	0.24%	0.12%	0.02%	0.00%
St Dev	0.96%	1.94%	1.77%	1.68%	1.68%	1.70%

Sources: Loop Capital Markets, TM3

The 10-yr point was most volatile, with standard deviation of monthly bond price changes of 1.94%.

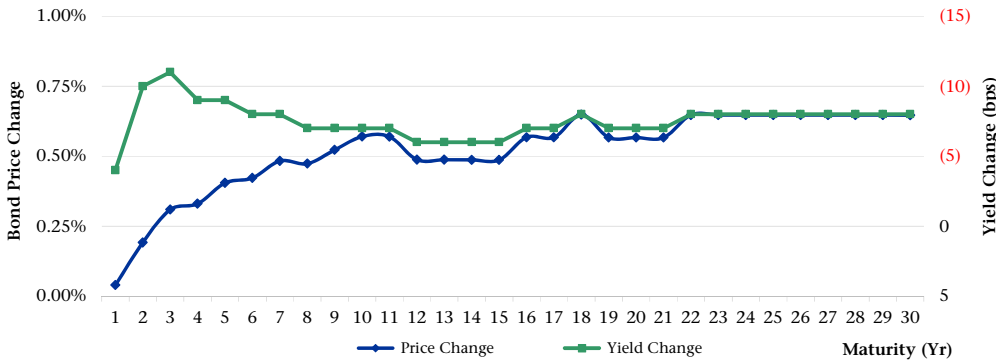
Market Review *The Yield Curve*

Figure 6 1-Year Forward Roll-down—Muni Benchmark Curve* (July 12, 2018)



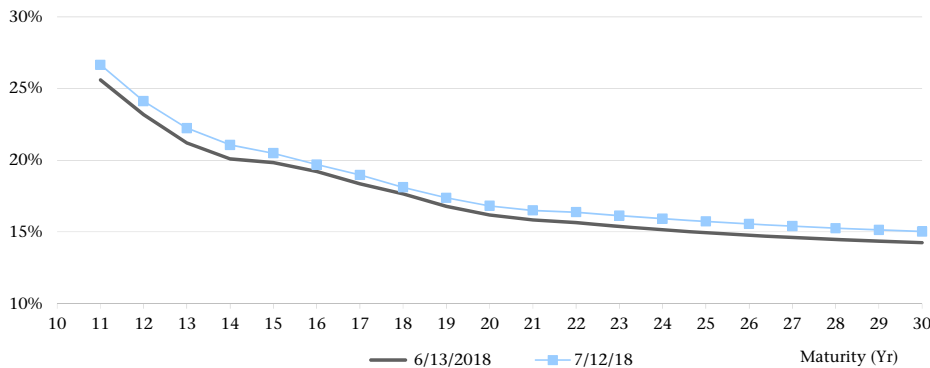
Sources: Loop Capital Markets, TM3 | *Callable AAA-rated G.O. bonds

Figure 7 Monthly Price Change — AAA GO Bonds* (06/15/18 — 07/16/18)



Sources: Loop Capital Markets, TM3 | *Price Change Only

Figure 8 Implied Municipal Volatilities



Sources: Loop Capital Markets, TM3 | *10-year call

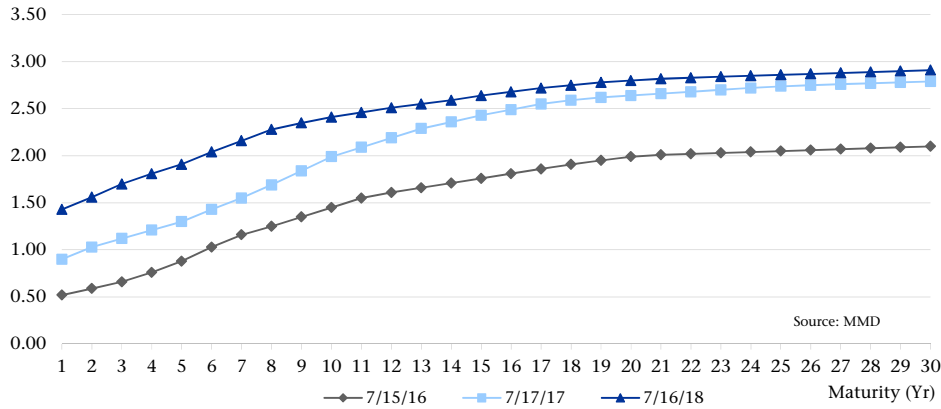
The yield curve shows rich (5-yr, 9 to 11-yr, 22+ yr) and cheap (8-yr) points on the AAA MMD curve, based on one year holding period returns and assuming no change in the yield curve. 19-yr maturity offers the highest expected total return.

Actual returns will depend on the level and shape of the yield curve a year from now.

Yields declined 8 bps, on average, across the yield curve over the last month. Yield movements on the front end have a smaller impact on price changes due to lower duration.

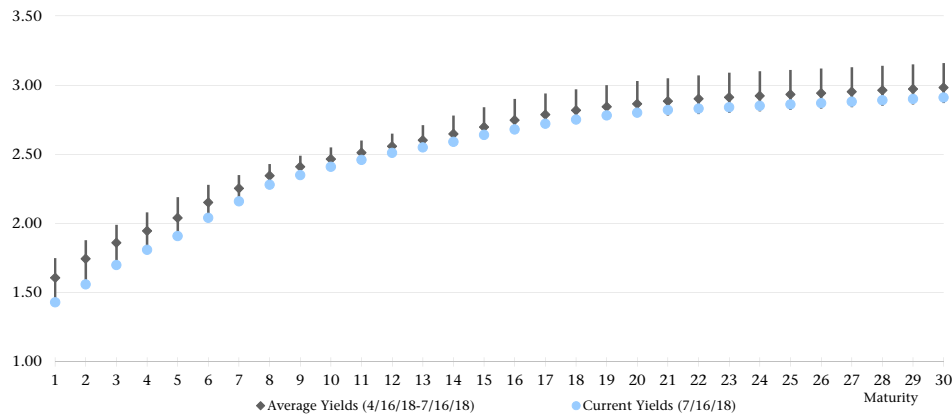
Implied volatilities rose by about 0.75% last month as yields fell across the curve. Since non-callable bonds appreciate faster in declining interest rate environment than their callable counterparts, the price differential between the two, and the respective implied volatilities rose as a result.

Figure 9 Current vs. Historical Municipal Yield Curves (%)



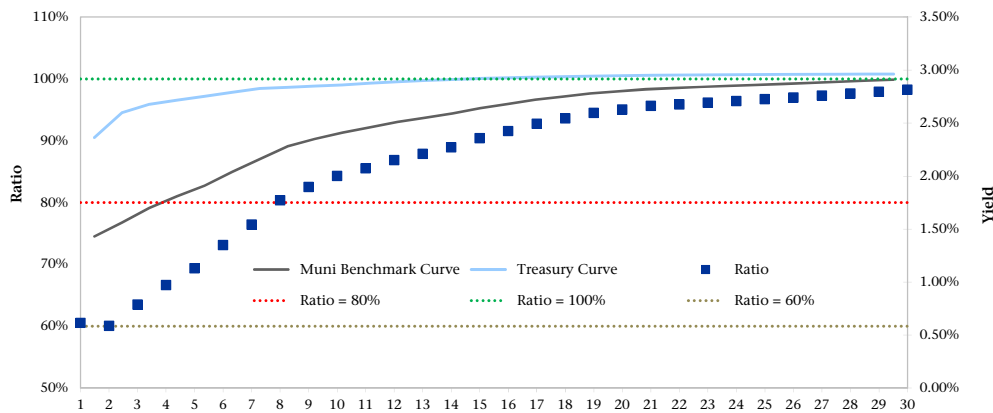
Source: TM3

Figure 10 3-Month Average Benchmark Muni Curve Yield



Source: TM3

Figure 11 Muni and Treasury Yield Curves and Ratios



Sources: Eikon, TM3

Yields are higher by about 85 bps across the curve compared to July 2016. The yield increased the most on the front end of the curve over the last 12 months, as the Fed tightened monetary policy.

The yields are at or close to their lowest points in 3 months across the curve.

The ratio curve has returned to the familiar upward sloping shape amid remarkable flatness of the Treasury curve. M/T ratios dropped to 60% on the front end of the curve, but remain above 90% in the 15 to 30-yr range.

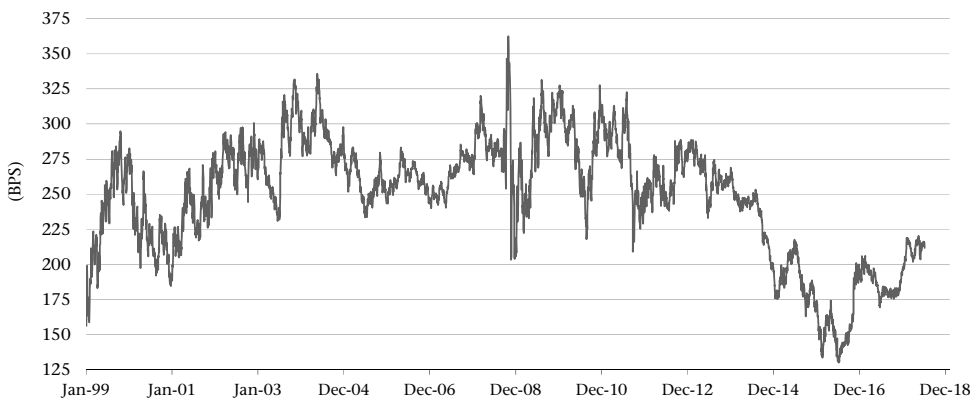
Market Conditions

Figure 12 2 to 30-Yr Muni Spread (bps)



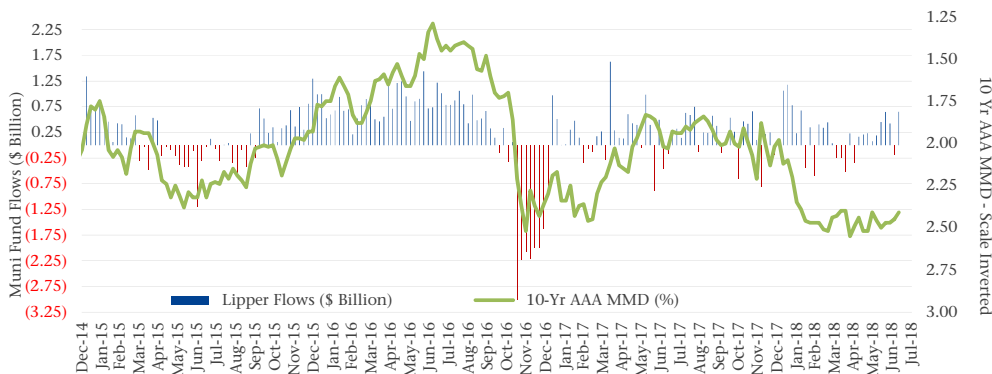
Source: TM3

Figure 13 Inflation Expectations



Source: FRED

Figure 14 Lipper Weekly Municipal Mutual Fund Flows (\$ Billion)



Source: Lipper

Yield curve slope has been range bound year-to-date.

Fed's five-year forward breakeven inflation rate, derived from TIPS and regular Treasury yields remains above the 2% mark.

Lipper fund flows have been positive lately. Average weekly inflow YTD is \$220MM, while 4-week average is +\$382MM.

Loop Capital Markets Upcoming Negotiated Calendar

Date	Par Amount (\$ mil)	Issue	Loop Capital's Role
7/18/18	1,211.5	New Jersey Transportation Trust Fund Authority Federal Highway Reimburs. Notes	Co-Senior Manager
7/18/18	199.8	County of Monroe Industrial Development Agency School Facility Revenue Bonds	Co-Manager
7/18/18	110.7	The Metropolitan District Hartford County General Obligation Bonds	Co-Manager
7/18/18	39.1	City of Columbia Parking System Refunding Revenue Bonds Series 2018 (Taxable)	Co-Manager
7/19/18	327.2	New York State EFC State Clean Water and Drinking Water Revolv. Funds Rev. Bonds	Co-Senior Manager

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