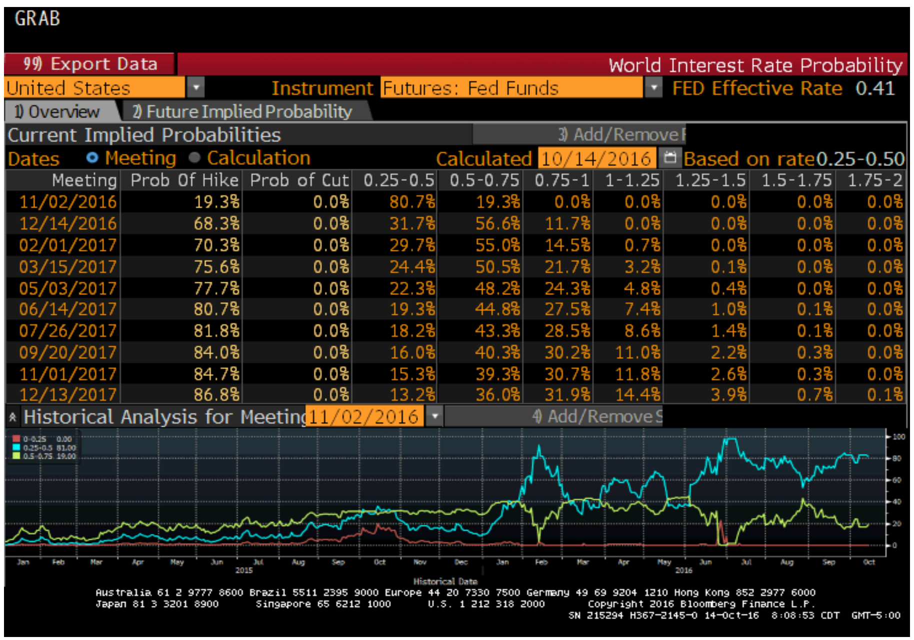
Quarterly Market Review **Fall 2016**

<u>Market Update</u>:

Fed fund futures priced in a low probability of a September rate hike and the Fed did not disappoint by holding rates steady. The municipal market saw yields drift higher for the quarter as the Fed fund futures market show an increased probability the Fed will raise rates in December. Yields on the AAA 2, 5 and 10 year parts of the yield curve increased by 21bps, 13bps and 14bps, respectively.

A noticeable outcome of the meeting was three regional presidents dissented, the most since December 2014, signaling a growing divide within the Fed. November may be a "live" meeting, but the consensus is the Fed will not hike until after the election, putting December in focus. Currently the futures market is pricing in a 19% chance for November and 68% chance for December.



Meeting	Prob Of Hike	Prob of Cut	0.25-0.5	0.5-0.75	0.75-1	1-1.25	1.25-1.5	1.5-1.75	1.75-2
11/02/2016	19.3%	0.0%	80.7%	19.3%	0.0%	0.0%	0.0%	0.0%	0.0%
12/14/2016	68.3%	0.0%	31.7%	56.6%	11.7%	0.0%	0.0%	0.0%	0.0%
02/01/2017	70.3%	0.0%	29.7%	55.0%	14.5%	0.7%	0.0%	0.0%	0.0%
03/15/2017	75.6%	0.0%	24.4%	50.5%	21.7%	3.2%	0.1%	0.0%	0.0%
05/03/2017	77.7%	0.0%	22.3%	48.2%	24.3%	4.8%	0.4%	0.0%	0.0%
06/14/2017	80.7%	0.0%	19.3%	44.8%	27.5%	7.4%	1.0%	0.1%	0.0%
07/26/2017	81.8%	0.0%	18.2%	43.3%	28.5%	8.6%	1.4%	0.1%	0.0%
09/20/2017	84.0%	0.0%	16.0%	40.3%	30.2%	11.0%	2.2%	0.3%	0.0%
11/01/2017	84.7%	0.0%	15.3%	39.3%	30.7%	11.8%	2.6%	0.3%	0.0%
12/13/2017	86.8%	0.0%	13.2%	36.0%	31.9%	14.4%	3.9%	0.7%	0.1%

Source: Bloomberg.

<u>Lowering expectations</u>:

City and state pension funding remains in the forefront as low investment returns and increasing benefit requirements have led to growing unfunded liabilities.

Pension plans have reduced their exposure to fixed income assets over the past decade and increased their allocations to other assets in order to try to earn higher returns to keep up with growing liabilities. Additionally, as interest rates have dropped and market returns have seen increased volatility, plans have been forced to reduce their return assumptions. The Illinois Teachers Retirement System recently lowered its investment return expectations from 7.50% to 7.00%. This 0.50% reduction in expected return means the state will have to pay an additional $400-500 million just to keep the pension liability from growing. Public plans had a median rate of return of 1%, for the one year period ended June 30, meaning a drop in the assumed rate to 7% may not be enough to fully capture a more realistic return figure.

The City of Chicago recently approved raising the tax on water and sewer services in an attempt to shore up its municipal worker's pension The tax is to be phased in over four years and is expected to generate an additional $240 million for the city in 2020. The plan assumes a 7.5% return on investment; but only earned 1.80% and 7% for the one and five year periods ended in December. The city may very well be looking for additional revenue in 2020.

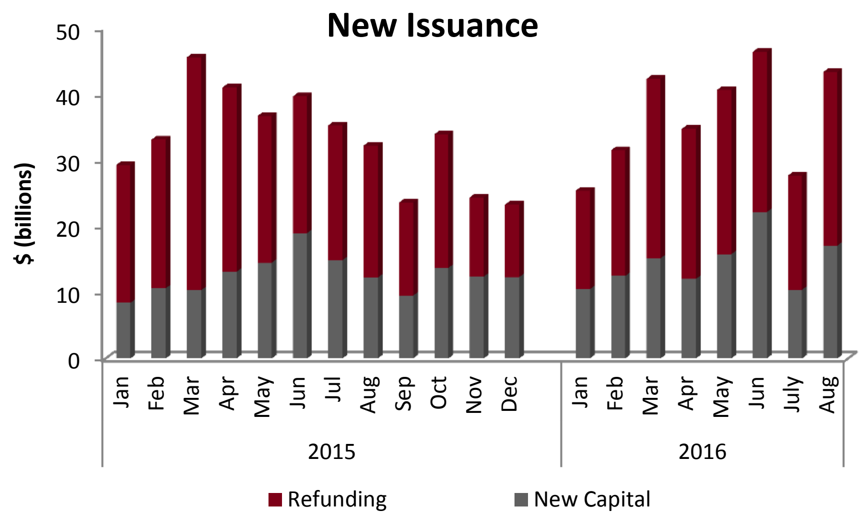
<u>Our take</u>: Municipalities can only raise taxes and fees so much before citizens become fed up and leave. The pension issue will have to be resolved on both the spending and revenue fronts. Illinois is currently the lowest rated state and in most need of pension reform. The Illinois Supreme Court has previously ruled against reform attempts citing the Constitutional guarantee protecting against the reduction of certain pension benefits. Illinois recently allowed a hike in the state income tax to expire costing the state an estimated $7-8 billion a year. Illinois's situation will require some combination of additional revenue along with expenditure cuts and or meaningful pension reform of unearned benefits.

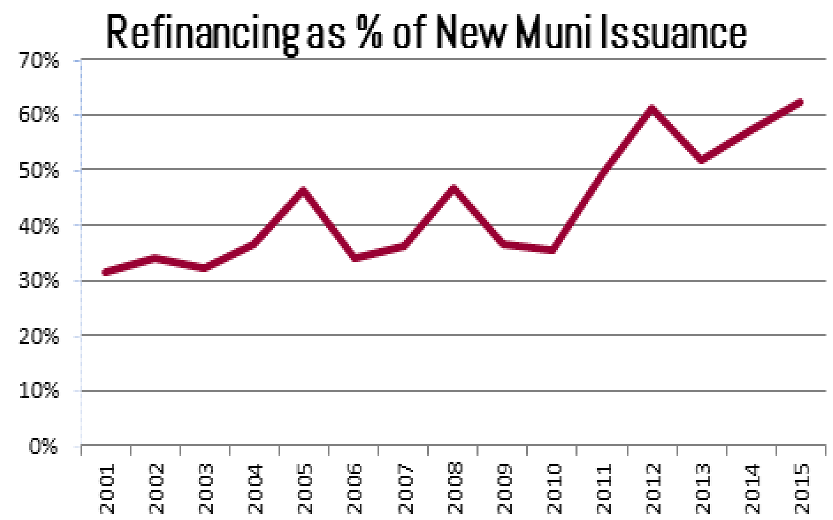
Uptick in supply - reducing costs or enhancing infrastructure?:

The month of July experienced a year-over-year dip in supply, while August saw a surge to over $40b in issuance (an over 30% increase from August 2015). Refundings have dominated the new issue landscape, over the past year, as issuers take advantage of the current low yield environment. Refundings led the way in August, but there was a significant uptick in the amount of new money deals also. Total deal volume in August was 61% higher than July, with new money deals making up 52% of the volume.

Our take: The uptick in issuance may be partially explained by issuers concern over the possibility of an interest rate hike by the Fed sometime this year. Refinancing issues have captured a greater share of total issuance over the last fifteen years, as municipalities take advantage of lower and lower yields. The increase in new money deals may be explained by municipalities getting ahead of an expected increase in borrowing costs to finance capital projects that have been delayed. The market expects a rate hike in December, we will be watching the next few months to see if the increase in new money issuance continues.

Regardless, the increase in volume didn't seem to disrupt the market. Yields on the longer end of the curve remained relatively stable with the 10-year finishing August 2 basis points (bps) higher than where it started. The short end of the curve saw the most volatility with the two-year and three-year yields rising 7 bps and 8 bps, respectively. The movements and shape of the yield curve (5 bps flatter for the month) seem to represent more concern over a possible rate hike rather than the increase in issuance.





Source: SIFMA.

Municipals – Adding Value by Lowering Portfolio Volatility

Fall 2016

We ran an analysis in early 2015 to determine the relationship between tax-exempt municipal bond yields and taxable U.S. Treasury yields. Our goal was to see if there was a strong correlation between the two asset classes and if municipal yields were less volatile than their taxable Treasury counterparts. We found that the two asset classes were highly correlated, with municipals being less volatile.

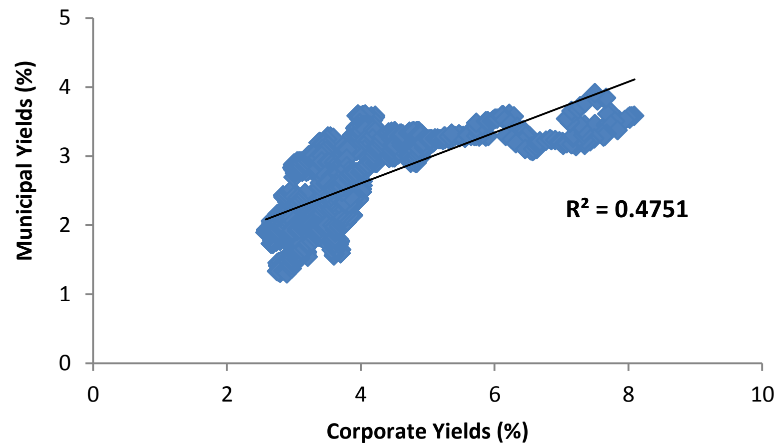
We recently re-ran this analysis to see if anything has changed over the last two years. As expected, the correlation between tax-exempt municipals and taxable Treasuries remained high and municipals remained less volatile. The regression analysis shows that since 2003, for every 100 basis point increase in the 10 year Treasury yield, the mean increase of the 10 year tax-exempt municipal yield was 62 basis points.

We expanded our analysis to include taxable corporate bond issues. We found that corporate bond and municipal bond yields also have a high correlation. The regression analysis showed that since 2003, for every 100 basis point increase in the Bloomberg Barclay's US Corporate yield, the mean increase of the 10 year tax-exempt municipal yield was 58 basis points (95% confidence interval 57-59 bps). As expected, corporate bond yields historically have seen more volatility than both municipals and Treasuries.

We would attribute this greater volatility to more volatile corporate credit spread compression or widening. The underlying fundamentals of municipals tend to develop at a slower pace than more economically sensitive corporates. Hence the spread at which municipal credits trade relative to the risk-free rate, tends to be less volatile as well.

Additionally, the lower volatility can be attributed to the tax exemption offered by municipal bonds. Tax free income is attractive regardless of which way the market moves. Many investors hold-to-maturity, or at least tend not sell as much. The dynamic in the taxable bond space is different as money will rotate to whichever asset class is offering the highest return/yield. The Fed raises rates when economic conditions are improving. These improving conditions should benefit municipalities through higher tax collections. This coupled with the higher credit quality of muni's vs corporates helps explain why municipals don't experience the same volatility of their spread product counterparts.

Municipals vs. Corporate Yields (Post-2008)

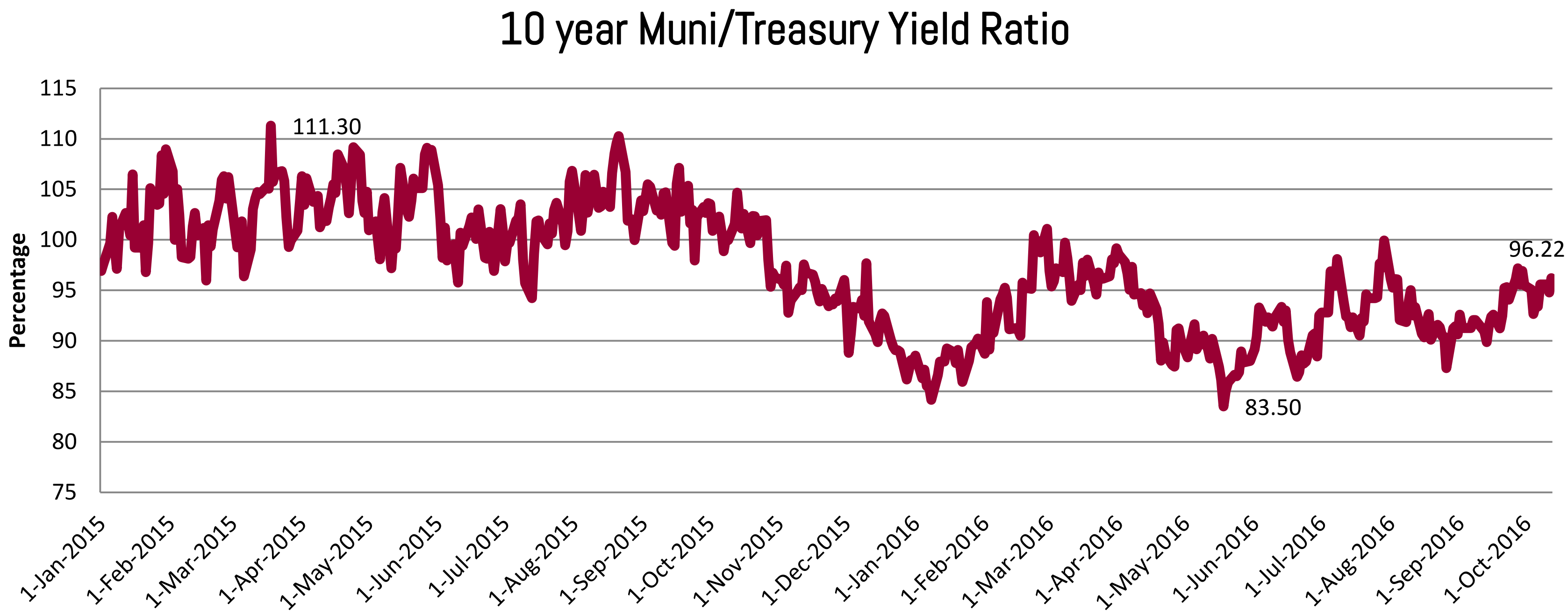


Source: Bloomberg

We decided to further expand our analysis by narrowing the time frame analyzed to post-2008. The correlation between municipals and corporate bonds dropped significantly (R^2=0.48). Additionally, the volatility of municipal yields versus corporates dropped significantly. For every 100 bps increase in corporate bond yields, municipal yields only have increased 37 bps.

The message we are trying to convey is: while rising interest rates can impact a bond portfolio negatively, we feel municipals should fair better than their taxable counterparts. Tax free income, coupled with the overall higher credit quality of municipals helps keep municipal bonds volatility lower than that of taxable bonds. This has been the case in the past and we believe this will continue in the future for laddered, high quality municipal bond portfolios.

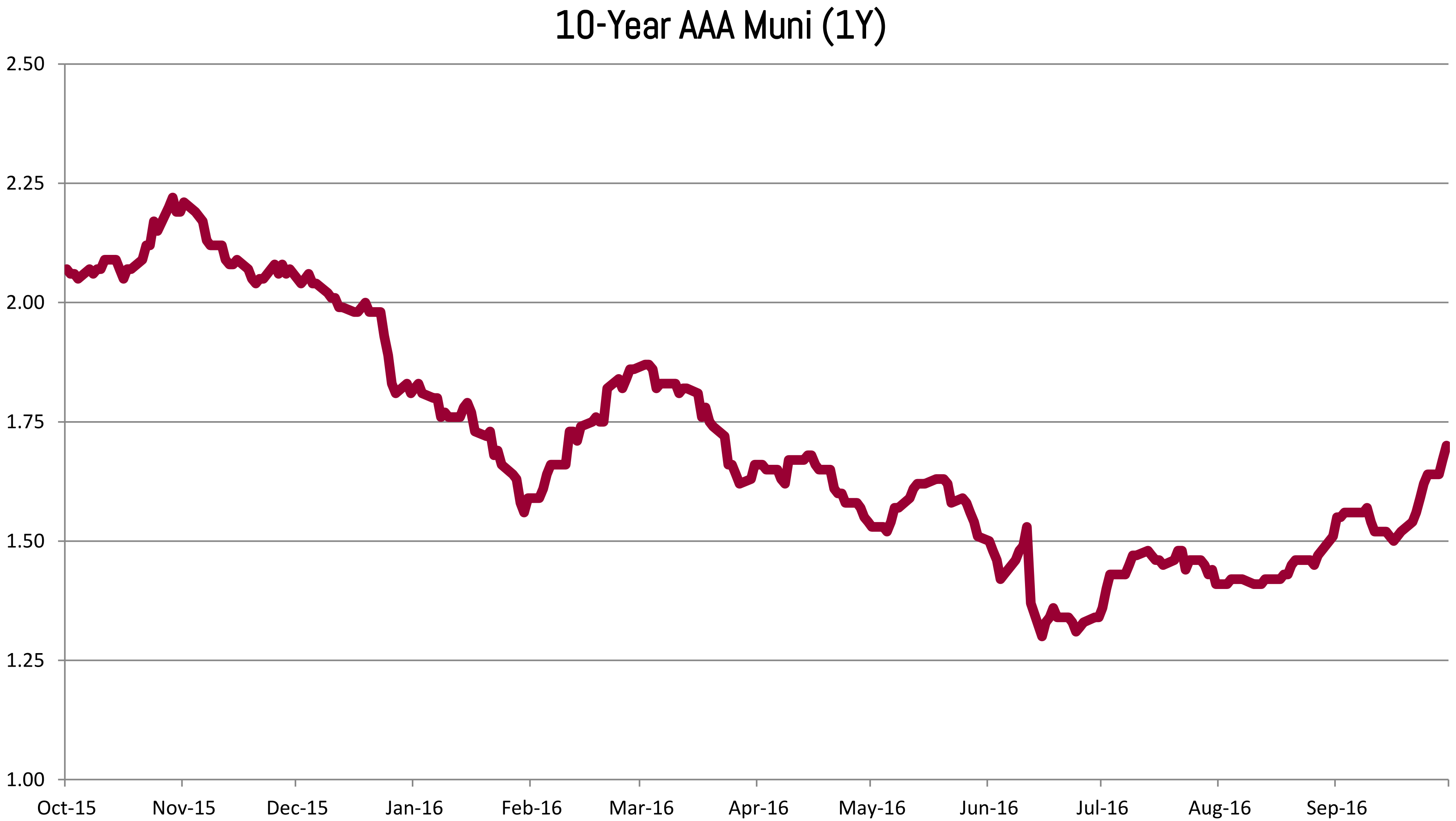
Quarterly Chart Book **Summer 2016**



Source: Bloomberg

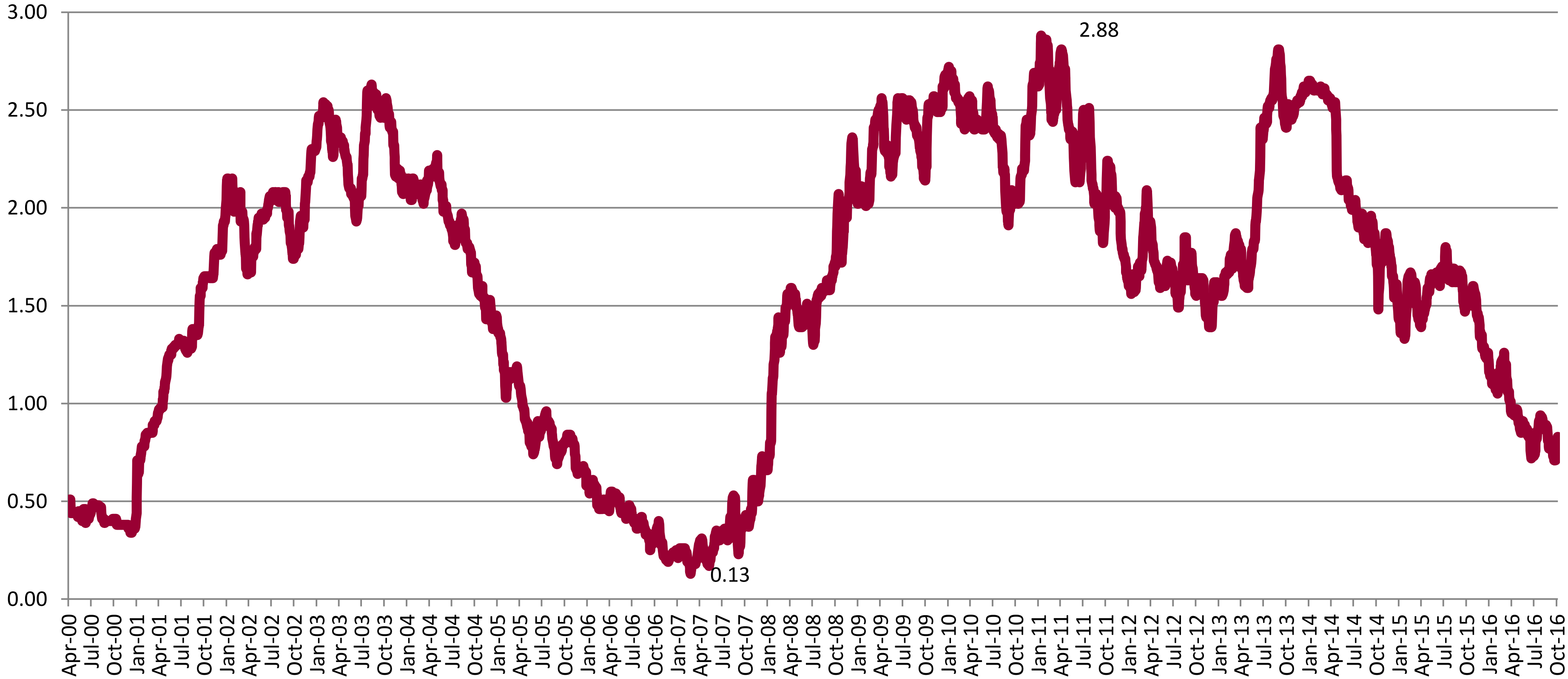
Today	96.22	**10-year average:**	97.82
High:	111.30	**5-year average:**	100.50
Low:	83.50		
Average:	97.11		

Quarterly Chart Book **Summer 2016**



Source: Bloomberg

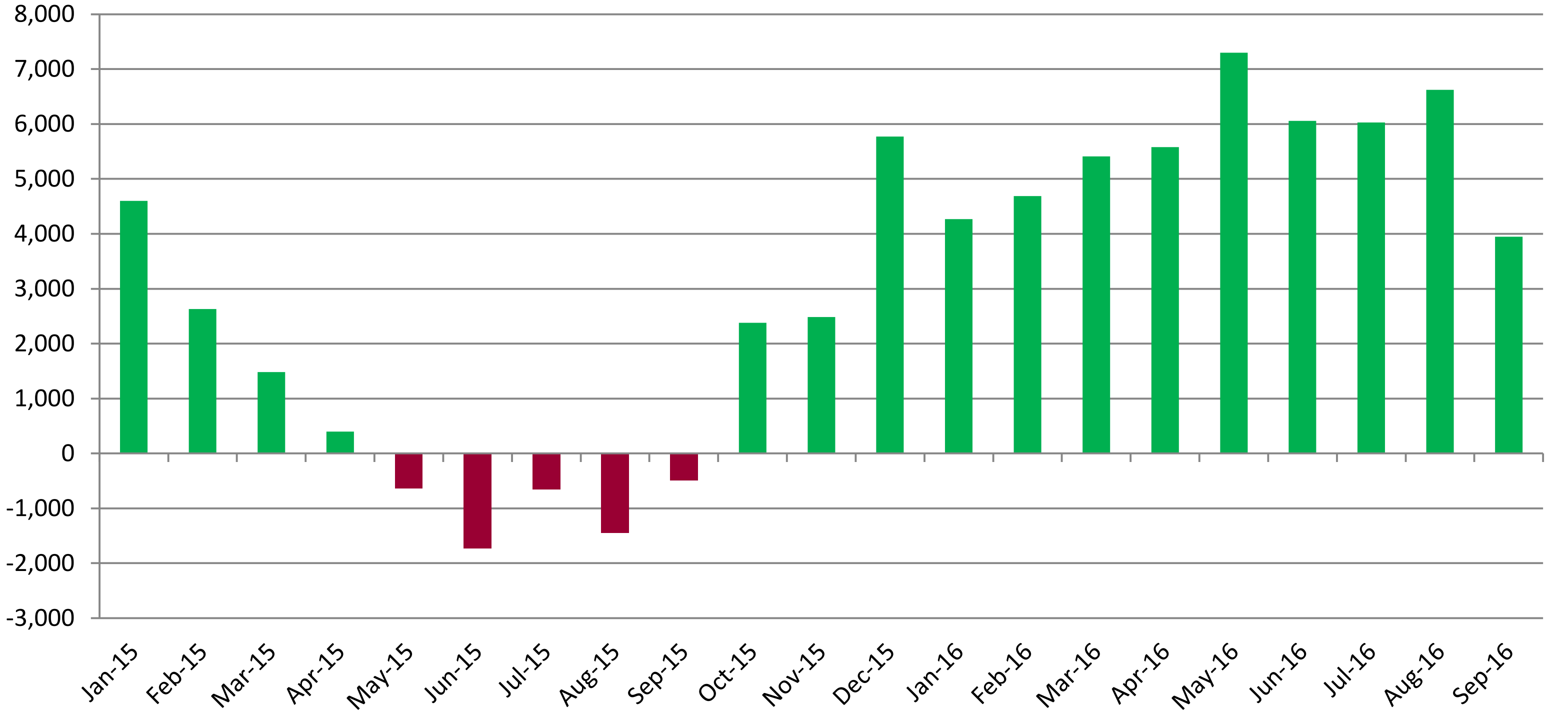
2s10s AAA Muni (Spread between 2-year and 10-year)



Source: Bloomberg

Today	0.83
High:	2.88
Low:	0.13
Average:	1.59

ICI Municipal Bond Fund Flows

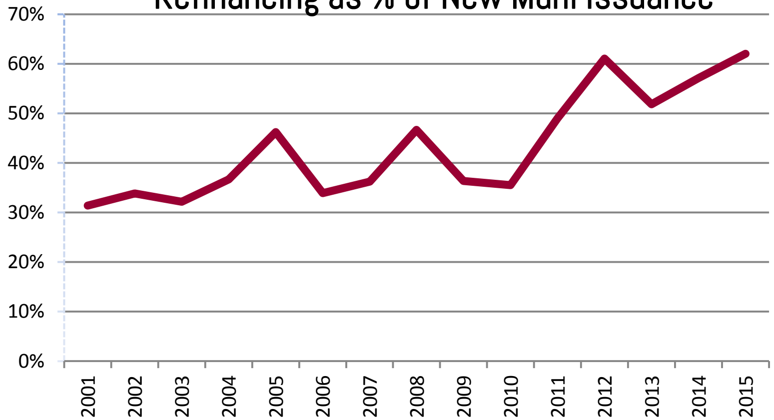


Source: Investment Company Institute

Quarterly Chart Book

Summer 2016

Refinancing as % of New Muni Issuance

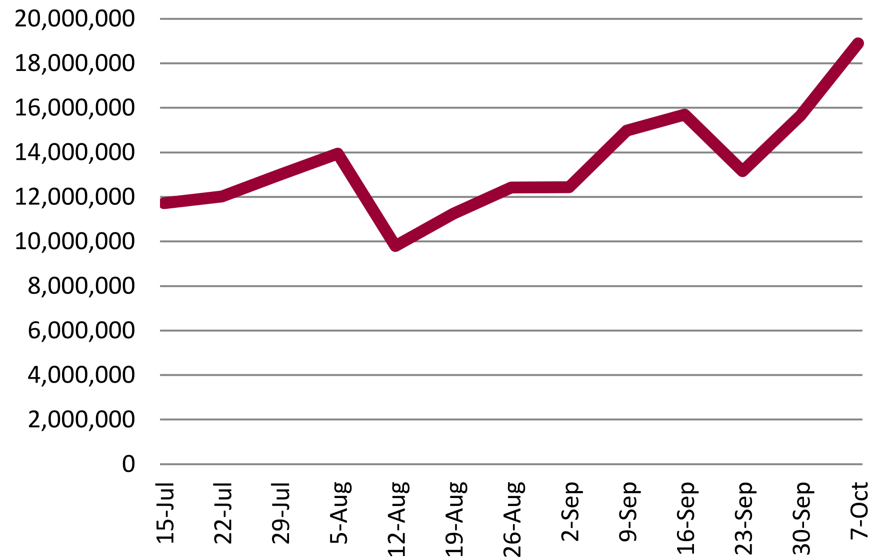


Source: SIFMA

State and Local Employment *(Thousands)*

Source: U.S. Census Bureau

30 Day Visible Supply



Source: Bond Buyer