



Economy Shows Surprising Jump

The Employment Report for February was a game-changer. The key question is whether or not the Fed will begin to gravitate towards four fed fund increases rather than the three that has been indicated. Powell's optimistic testimony on the Hill suggests that he may be an advocate for more aggressive removal of accommodation over the course of the year. We have updated our economic forecast (shown on Page 3) reflecting our belief that this report was not a onetime phenomenon, but an indication of an acceleration in growth that could last most of 2018.

By Chris Mier, CFA / Strategist

Any concerns about a serious first quarter slump, as we have seen over the last few years in the first quarter of the year, have been substantially dashed by the February Employment Report. It is hard to find any bad news or weak points in the release. The change in nonfarm payrolls blew away expectations with an increase of 313,000. The composition of the increases was favorable with large gains in construction, retail sales, professional and business services, and manufacturing. These categories offer high employment multipliers and high compensation, indicating that there will be a stronger followthrough. The two-month revision in payrolls to +54,000 frames the February increase as something other than a one-month wonder, and casts the labor market in a stronger light than the previous evaluation. Lending additional support was the increase in the labor force participation rate, which grew 0.3% to 63.0% after several months of a clear bottoming trend. The employment to population ratio also showed some spunk, rising 0.3%.

The “on the other hand” aspect of the report was the sluggish tone to average hourly earnings, which fell on a year-over-year basis to 2.6%. In our view, this is just a minor stumble in the inevitable rise in wages as the labor continues to beat expectations and show strength uncharacteristic of a 9-year old economic recovery. The other minor blot was the lack of improvement in the underemployed, again likely a temporary factor.

Does this tip the scales between the anticipated three fed fund increases and a possible fourth increase? It depends. For the Fed, the answer is not yet. The weak performance on the wage front will buy the FOMC more time to wait for confirmation on inflation. The market, however, will likely begin to continue to gravitate towards a fourth move. The 2-year Treasury note yield may rise another 25 basis points, after having risen 48 bps since the December 13th FOMC meeting, before new data moves opinion strongly enough to coalesce around the three increase view, or the revised view perspective.

In this Issue

Economy Shows Surprising Jump	1
Economic and Interest Rate Forecast — March 2018	3
Market Review <i>Data Diffusion / ADS Index</i>	4
Illinois Race for Governor	5
Drought Making Comeback as Market Concern	9
Revenue Reality Driving Innovation in Higher Education	13
Market Review <i>Historical Monthly Bond Price Changes</i>	16
Market Review <i>The Yield Curve</i>	17
Market Conditions	19
Loop Capital Markets Upcoming Negotiated Calendar	20

Economy Shows Surprising Jump

The growth in the labor force will provide a boost to retail sales, which had an uncharacteristically poor showing in the January data. Since we believe the economy has ratcheted up to a higher level of job growth relative to our previous view, we see retail sales as resuming its solid growth track with the release of February data on March 14th.

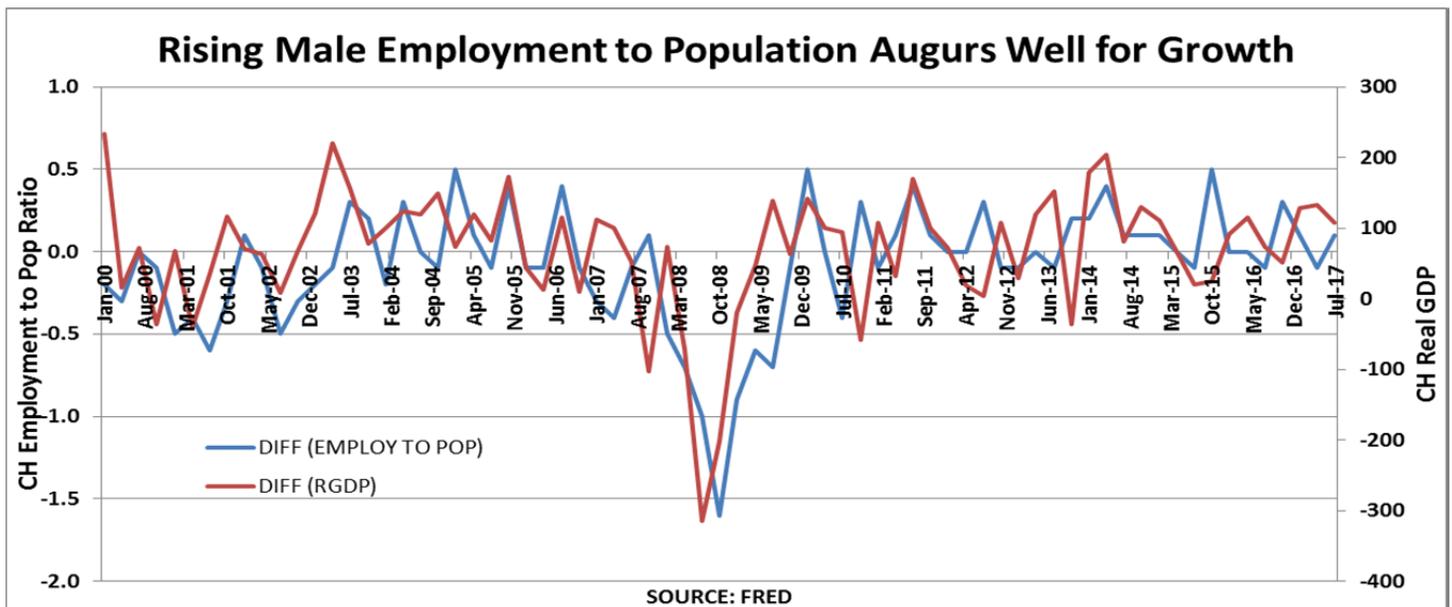
Key Points

- GDP growth in the first quarter has been weak due to faulty seasonal factors or the impact of severely bad weather. First quarter growth has averaged 0.7% below the 4th quarter, the second worst, since 2001.
- The tax cuts should provide stimulus to consumer spending as the reduction in income tax withholdings has added to A/T Disposable Income. The monthly increase in January was the 10th largest in over 8 years.
- The savings rate, however, has been drawn down to a low 3.2%, after peaking at over 6% in 2015.
- Stock market volatility could slow consumption from wealth effects as consumers respond to an increase in risk aversion and slow their spending.

- Consumer confidence remains at sky-high levels. However, high confidence has not always meant high spending.
- The Administration’s tariffs will raise the costs on a wide variety of goods, including automobiles, food and beverage cans, appliances and others. Retaliation from trading partners and attendant rising prices may choke off some spending.

Strength in the labor market, improving wages, and lofty confidence continue to be the primary drivers behind continued strength in consumption. At present, the other problematic factors discussed—tariffs, low savings, stock market volatility are a sideshow that bears watching.

Should strengthening in the economy beyond current expectations occur, the market may have failed to fully discount the Fed’s possible need to expedite removal of accommodation. If that is the case, Chairman Powell may assert himself more strongly. Given his optimistic views on the economy, the February Employment Report may be all he needs.



Economic and Interest Rate Forecast — March 2018

Factors Supportive of Lower Rates

Existing and new home sales fell 3.2% and 7.8% in January, respectively, as the supply of houses on the market dropped to a record low, boosting prices and sidelining prospective first-time buyers in certain markets.

Vehicle sales cooled off to annualized 16.96 million units in February, about 2% less than the rate 12 months ago, as automakers eased up on discounts.

The Administration has imposed tariffs on imported steel and aluminum despite widespread GOP opposition, including from Gary Cohn, who resigned as a head of the National Economic Council.

Factors Supportive of Higher Rates

The U.S. added 313K jobs in February vs. 205K consensus forecast, while December and January readings were revised up by 54K total. The unemployment rate remained steady at 4.1%, but labor force participation rate rose 0.3% to 63%, indicating that people who were on the sidelines are re-entering the workforce.

ISM manufacturing index hit 60.8 in February, the strongest reading since May 2004, driven by a surge in employment and inventories.

Consumer confidence jumped in February to the highest level since 2000.

Figure 1 Economic and Interest Rate Forecast — March 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	2.5	2.9	3.1	2.8	2.8	2.8	2.7	2.7	2.6	2.3	2.9	2.7
Core PCE Deflator	1.8	1.5	1.4	1.5	1.5	1.7	1.8	2.0	2.0	2.1	2.2	2.0	1.6	1.8	2.1
Unemployment Rate*	4.7	4.4	4.3	4.1	4.1	4.1	4.0	3.9	3.8	3.7	3.6	3.7	4.4	4.0	3.7
Nonfarm Payrolls (chg in 1000s)	532	569	425	662	700	600	540	480	450	450	440	440	2,188	2320	1780
S&P 500	2,327	2,398	2,467	2,603	2,755	2,789	2,823	2,858	2,893	2,928	2,964	3,001	2,449	2,806	2,946
Short-Term Interest Rates*															
Fed Funds Target (%)	0.70	0.95	1.16	1.20	1.42	1.68	1.89	2.16	2.41	2.68	2.68	2.68	1.00	1.79	2.61
3-Month LIBOR (%)	1.07	1.21	1.31	1.46	1.90	2.14	2.33	2.58	2.82	3.03	3.03	3.03	1.26	2.24	2.98
7-Day SIFMA (%)	0.69	0.84	0.82	1.05	1.15	1.35	1.50	1.65	1.80	2.00	2.10	2.20	0.85	1.41	2.03
Treasury Interest Rates*															
2-Year Treasury (%)	1.24	1.29	1.36	1.69	2.15	2.37	2.55	2.78	2.99	3.10	3.13	3.15	1.39	2.46	3.09
3-Year Treasury (%)	1.51	1.47	1.51	1.81	2.31	2.49	2.65	2.86	3.04	3.15	3.18	3.20	1.57	2.58	3.14
5-Year Treasury (%)	1.94	1.81	1.81	2.06	2.54	2.70	2.82	2.99	3.14	3.25	3.28	3.30	1.91	2.76	3.24
7-Year Treasury (%)	2.25	2.07	2.06	2.25	2.70	2.80	2.92	3.08	3.23	3.34	3.37	3.39	2.16	2.88	3.33
10-Year Treasury (%)	2.44	2.26	2.24	2.37	2.77	2.92	3.04	3.20	3.34	3.45	3.48	3.50	2.33	2.98	3.44
30-Year Treasury (%)	3.05	2.90	2.82	2.82	3.05	3.23	3.37	3.55	3.72	3.85	3.88	3.90	2.89	3.30	3.84
Municipal Interest Rates*															
30-Year MMD (%)	3.08	2.86	2.75	2.71	2.92	3.07	3.18	3.33	3.46	3.56	3.56	3.55	2.85	3.12	3.53
Muni Yield Curve Slope (%)	2.21	2.02	1.93	1.58	1.52	1.42	1.38	1.38	1.36	1.26	1.16	1.05	1.93	1.42	1.21

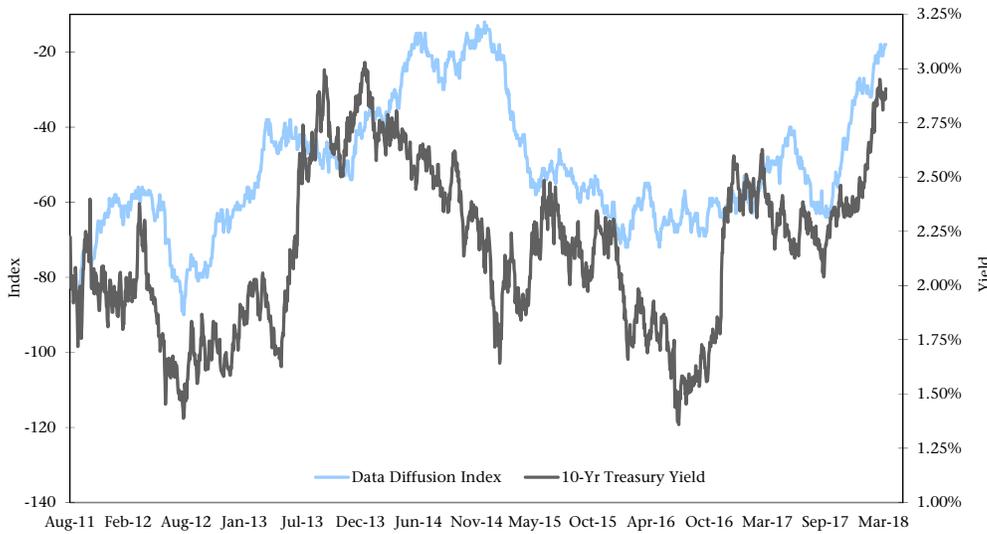
P: Preliminary Data

* 3-month average

Source: Loop Capital Markets' Analytical Services Division and Short-Term Desk. Black Text: Actual Blue Text: Forecast as of March 12, 2018

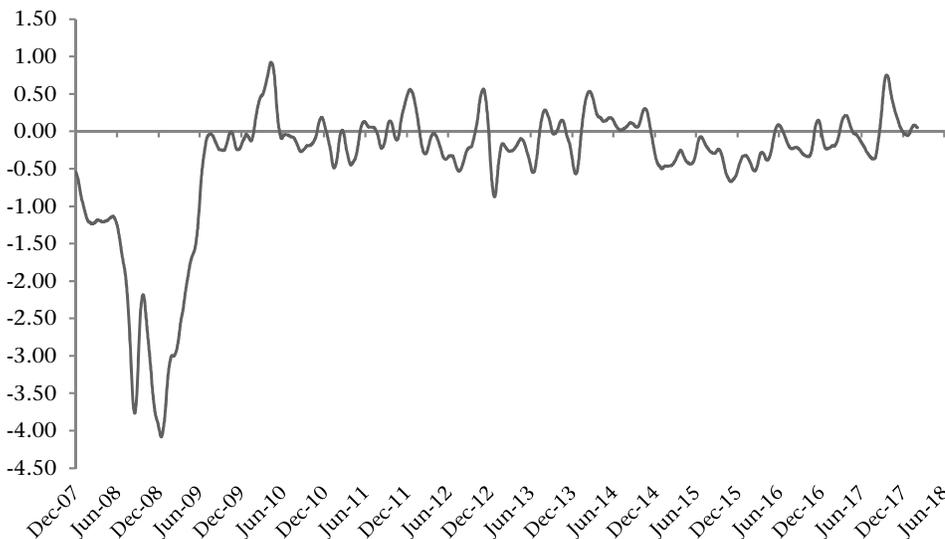
Market Review *Data Diffusion / ADS Index*

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 — 3/3/2018)



Source: Federal Reserve Bank of Philadelphia

As economic releases came in stronger than expected over the last 6 months, Treasury yields rose.

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 surged to 0.75 in mid-October, but subsequently returned to neutral territory. The comparison is relative to 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.

Illinois Race for Governor

By Ivan Gulich | Senior Vice President

The 2018 primary elections for Illinois Governor will take place on March 20. Eight candidates are on the ballots—two Republicans and six Democrats. Governor Rauner is challenged by Jeanne Ives, a member of Illinois General Assembly. On the Democrat side, candidates for Governor include Jay Robert “J.B.” Pritzker, Daniel Biss, a member of the Illinois Senate, Chris Kennedy, Tio Hardiman, an adjunct professor and anti-violence activist, Bob Daiber, a school superintendent from Southern Illinois, and perennial candidate Robert Marshall, a radiologist.

A notable feature of this election cycle is that it is dominated by very wealthy individuals. Governor Rauner, a private equity investor with assets estimated at close to \$1 billion, spent a record \$65.3 million to become Illinois' governor in 2014, contributing \$27.6 million of his own funds.¹ So far, he has self-funded his \$56 million 2018 war chest.²

In May 2017 Rauner's campaign has received \$20 million contribution for his re-election bid by Ken Griffin,³ the CEO of Citadel and the richest person in Illinois, whose fortune is estimated at \$9.1 billion. Personal wealth of Democratic front-runner J.B. Pritzker, an heir to Pritzker family fortune and a successful investor, is estimated at \$3.5 billion.⁴

What some media outlets have dubbed the “Battle of the Billionaires” sets the stage for one of the most expensive governor races in US history.

Republican Primary Contest

While Republican primary voters are broadly familiar with Rauner's record and his policies, his opponent State Representative Ives, first elected in 2012 to serve suburban Chicago's 42nd District, has low name recognition. 60% of male and 75% of female likely Republican voters have never heard of her.⁵

Jeannine Ives positioned herself as a conservative alternative to Rauner, especially in terms of social issues, such as abortion, transgender rights and immigration, where he is seen as vulnerable.

She promises to repeal Illinois income tax hike, but not immediately, because (1) the money is needed to pay the backlog of unpaid bills and (2) it would take two years just to get something through the General Assembly. Her moderate position on taxes opened her up to attacks. Governor Rauner, who earned fiscal bona fides during his epic budget battle with Speaker Madigan, vetoed the tax increase, but his veto was subsequently overridden. Since both chambers are expected to remain firmly in Democrat hands after November elections, the cut in 4.95% flat personal income tax rate is unlikely, irrespective of who will occupy the governor's mansion in 2019.

Ives promises to institute a 1% hard cap on property taxes as a percentage of home value, which would be fiscally problematic, since property taxes, which easily exceed 2% of home value in much of the state, fund local school districts. She proposes to eliminate hundreds of millions of dollars in new state funding for CPS and cut state budget by eliminating the Obamacare expansion and shifting new state workers to a 401(k)-type plan.

Despite being ahead in the polls by a 20 point margin⁶ Rauner is leaving nothing to chance. His campaign is flooding Republican primary voters with mailings in which Ives is called “Mike Madigan's favorite candidate”. She is allegedly a completely unelectable “fringe” candidate opposed to freezing property taxes, the only representative to vote against increasing the property tax exemption.⁷ Ives, who has raised only \$400K as of the end of December, has not been as nearly effective countering Rauner's commercials, despite subsequent \$2 million cash infusion from a conservative businessman from suburban Chicago.⁸ However, Ives' campaign did send a 40-page booklet to Republican primary voters,⁹ attacking Rauner from all angles by meticulously dissecting his governorship.

While Governor Rauner was accused of distorting Ives' record by her campaign, the reality is that most voters do not have the time or patience to investigate legislative records of unfamiliar candidates in order to arrive at their own conclusions. Ives' edge over Rauner on social issues may not move as many voters as would have been the case just a few years ago, since GOP voters' social attitudes have moderated.

¹ Pearson, Garcia: Rauner spent nearly \$36 a vote to become Illinois governor, Chicago Tribune, January 16, 2015

² McDermott: ‘Moneyball’: The 2018 Illinois Governor's Race, Chicago Tribune, January 11, 2018

³ McCormick: Citadel's Griffin Contributes \$20 Million to Illinois Governor, Bloomberg, May 17, 2017

⁴ Forbes

⁵ We Ask America Statewide GOP Gov. Primary Poll 1/16/2018

⁶ SIU Poll: Republican Gov. Rauner, Democratic candidate Pritzker lead governor races, Chicago Tribune, February 28, 2018

⁷ Roll Call Vote, House Bill 156, April 6, 2017

⁸ Sfondeles: Rauner pulls out big guns against Ives—links conservative rival to Madigan, Chicago Sun-Times, February 6, 2018

⁹ Chris Cleveland: The Governor You Don't Know, Jameson Books, 2018

Governor Rauner, a self-funded candidate seemingly not beholden to special interests, comes across as an ambitious and aggressive politician who routinely tears down his political opponents. This stylistic resemblance to Trump, tempered by Rauner's Midwestern manners, along with Governor's unyielding stance during the budget standoff, makes him fairly popular among the GOP base and a clear favorite in the primary election on March 20.

Democrat Primary Contest

J.B. Pritzker

Jay Robert "J.B." Pritzker is a venture capitalist, entrepreneur, philanthropist, managing partner and co-founder of the Pritzker Group based in Chicago and a member of the Pritzker family known in business for the Hyatt Hotel chain. He is an attorney, a member of the Illinois State Bar Association and Chicago Bar Association.

Pritzker is a front-runner whose fundamental strength is the ability to self-fund his campaign. Without Pritzker on the ballot, Rauner would have a much easier task getting reelected due to his unsurmountable funding advantage, the power of incumbency and relative obscurity of Pritzker's strongest competitor, Senator Daniel Biss. Also, with Pritzker on the top of the ticket, Democrats will be able to reallocate dollars from governor's race to reelection efforts by vulnerable legislators.

Consequently, most prominent Illinois Democrats, including U.S. Senators Dick Durbin and Tammy Duckworth, have endorsed Pritzker. He has an unofficial, but widely known backing of Speaker Michael Madigan¹⁰, who is a Chairman of Democratic party of Illinois, as well as party establishment, including endorsements from organized labor and affiliated organizations.

As an establishment candidate, Pritzker is running a traditional campaign that addresses the interests and concerns of various Democratic constituencies. As governor, he promises to protect the seniors, immigrant families and the environment, curb gun violence, legalize marijuana and concurrently fight the opioid epidemic. Pritzker is committed to protecting LGBTQ rights, Illinois veterans and expanding early childhood education. His priorities include raising wages, providing economic stability, implementing criminal justice reform, domestic violence prevention plan, jobs plan and a healthcare plan.¹¹

In an unusual move, Governor Rauner has injected himself in Democrat primary race early on by heavily attacking J.B. Pritzker, a

first time in memory that a sitting Illinois Governor would openly play in opposing party's primaries.¹²

Rauner's commercial consists of the recording of the phone conversation between disgraced former Governor Blagojevich, who is serving a 14-year sentence on federal racketeering charges, and J.B. Pritzker. From the recording, secretly taped by the FBI in 2009, it appeared as if Pritzker was supportive of Blagojevich's unethical conduct and open to being named Attorney General in some kind of a quid-pro-quo deal with the freewheeling governor.¹³ There is concern among Democrats that Rauner's ads will continue to deflate Pritzker's poll numbers.

The FBI wiretaps also revealed that Pritzker's made offensive comments about prominent African-American politicians, prompting former Illinois Senate President Emile Jones to call for his withdrawal from governor's race.¹⁴

Ironically, Pritzker cannot attack Rauner for "buying his way into office". These allegations, which dogged the governor since entering politics, resonated among Democrat blue collar constituents. Understanding voters' sensibilities, Rauner points out on the campaign trail that he made his money in business, while Pritzker mostly inherited his fortune.

31.0% of Democrat primary voters would vote for Pritzker as of February 25, 2018.¹⁵

Daniel Biss

Senator Biss has been a member of Illinois Senate since January 2013, after an election in which he received twice as many votes as his GOP rival. 9th district includes a string of wealthy northern Chicago suburbs such as Glencoe, Glenview, Wilmette and Winnetka as well as Evanston, a liberal community and home of the Northwestern University.

Biss has positioned himself as a liberal alternative to centrist Pritzker. He proposes to create well-paying jobs through direct government investment, introduce free higher education as well as \$15/hr minimum wage. He strongly supports union rights and collective bargaining and wants to make it easier for temporary and part-time workers and those participating in the "gig" economy to unionize.

¹² Miller: Pritzker campaign passes test after Rauner's new attack ad, Chicago Sun-Times, January 24, 2018

¹³ Pearson: Rauner hits Pritzker with Blagojevich wiretap ad, Pritzker responds with veterans' deaths spot, Chicago Tribune, February 22, 2018

¹⁴ Spielman: Emil Jones: Pritzker showed 'true colors' should withdraw from governor's race

¹⁵ SIU Poll: Republican Gov. Rauner, Democratic candidate Pritzker lead governor races, Chicago Tribune, February 28, 2018

¹⁰ McDermott: "Moneyball": The 2018 Illinois Governor's Race, NPR Illinois, January 11, 2018

¹¹ JB Pritzker for Governor

The Senator's plan to fully fund pensions relies on passing a progressive income tax and financial transaction tax, and on consolidating pension systems into fewer funds. Progressive income tax would also generate dollars that would replace regressive property taxes as primary funding source for K-12 education in Illinois. Biss supports an elected school board for Chicago Public Schools as well as the re-introduction of rent control to make housing more affordable.

The Senator believes that healthcare is a universal right, which is why Illinois needs Medicare-for-All that would also be funded with a progressive income tax and by closing corporate tax loopholes. He voted to expand Medicaid eligibility.

Biss wants to combat climate change, pursue environmental justice and carbon emissions limits and move Illinois toward 100% renewable clean energy by implementing Clean Power Plan, which was blocked by the EPA, in State of Illinois. He proposes overhauling the justice system by ending the war on drugs, legalizing marijuana, ending monetary bonds, releasing convicts to reduce prison population and implementing gun control measures. He espouses liberal views on immigration and LGBTQ rights.¹⁶

Senator Biss thinks that Speaker Madigan's grip on Illinois politics has not only hurt the State, but also prevented implementation of progressive policies, saying it was "time for him to go".¹⁷

21% of Democrat primary voters would vote for Biss as of February 25, 2018.¹⁸

Chris Kennedy

Kennedy is a real estate developer who is leading construction of Wolf Point project in downtown Chicago, a construction project backed by more than \$1 billion in private financing. Having a famous last name (the candidate is the son of Robert Kennedy) represents both a blessing and a curse. The positive effect is instant name recognition. On the other hand, positioning himself as an independent anti-establishment candidate who is willing to speak truth to power appears incongruent with Kennedy's family background.

Kennedy promises to implement an economic plan that would protect workers, increase opportunity and restore equity, without putting forward specific proposals, other than to establish planning

councils and commissions, hold regional Blue-Ribbon Economic Development Summits, and create a Council of Economic Advisers. He plans to wrestle away more dollars from the federal government and philanthropic organizations in the form of grants to fund his programs. Basic research at major Illinois universities would be developed into applied research, spurring new ideas and products that would attract additional investments in companies that power economic growth.

Kennedy strongly supports organized labor and \$15/hr minimum wage. He wants to build a pipeline between high schools, community colleges and technical schools and building trades unions to give all students an opportunity to join the workforce as full union participants.

Kennedy promises to "fight against illegal attempts to steal workers pension under so-called pension reform" by making it harder for the state to skip payments into the pension system and by carefully scrutinizing investment fees for state's pension funds. His central tenet for growing Illinois economy is to invest in Illinois-based companies. To do so, the Kennedy administration would create an Illinois Index Fund of 100 of Illinois' best performing companies that will be designed to mimic the performance characteristics of the S&P 500. The Governor will then direct the State Employees' Retirement System (SERS) to invest a portion of their pension fund in the index, jumpstarting direct investment in the businesses at the forefront of Illinois' economy.

Other initiatives include increasing broadband capacity to bridge the digital divide, promoting Illinois' agricultural products and revitalizing waterways, roads, highways, and rail lines.¹⁹

On a campaign trail, Kennedy is known for some awkward, uncomfortable moments. During a candidate forum in January, Kennedy argued for putting extra \$1 billion in State budget for education. When pressed by a moderator where this extra money would come from, Kennedy proposed increasing property taxes on some allegedly under-assessed Chicago skyscrapers, even though the State doesn't get a cut from local property taxes.²⁰

Tracking polls are currently showing a dip in support for Biss and an increase for Kennedy in the Democratic primary race for governor. 17% of Democrat primary voters would vote for Kennedy as of February 25.²¹

¹⁶ Biss Wallace for Illinois

¹⁷ Garcia, Pearson: Dem gov. debate: Kennedy, Biss bash Madigan; Pritzker won't say if it's time for speaker to go, Chicago tribune, October 17, 2017

¹⁸ SIU Poll: Republican Gov. Rauner, Democratic candidate Pritzker lead governor races, Chicago Tribune, February 28, 2018

¹⁹ KennedyForIllinois.com

²⁰ Miller: Illinois governor's race: Chris Kennedy still isn't ready for prime time, Chicago Tribune, January 26, 2018

²¹ SIU Poll: Republican Gov. Rauner, Democratic candidate Pritzker lead governor races, Chicago Tribune, February 28, 2018

Other Candidates

Among less known candidates, Tio Hardiman distinguished himself by receiving 28.1% of primary vote running against former Governor Quinn in 2014.²² He proposes levying a fee on transactions at the Chicago Board of Trade and Cboe Options Exchange and introducing a progressive income tax of 7-10% on incomes of \$250,000 or more. Hardiman also advocates increasing funding for programs that decrease violence and promote equality.²³

The lopsided influence of Chicagoland on Illinois politics is illustrated by the fact that Daiber, a regional schools superintendent and a farmer from Southern Illinois, is the only candidate for governor from either party who resides outside Cook and DuPage counties, which jointly comprise 48% of Illinois population.²⁴ Daiber's website contains no information on his position on issues of interest to primary voters. At the candidates' debate in October, he strongly defended Speaker Madigan for "holding Illinois together in difficult times".

Robert Marshall's solution to State's fiscal challenges is to dissolve the State of Illinois politically and replace it with three smaller states (1) Chicago, (2) Suburban Cook and collar counties, and (3) Downstate Illinois. Each of these brand new states would have their own Constitution, Governor and two Senators. Successor states would divvy up bonded debt and other liabilities of the State of Illinois and subsequently resolve their fiscal issues as they see fit.²⁵

As of the end of December, Hardiman, Dauber and Marshall have raised 5K, 90K and 30K, respectively for their campaigns, much if it from self-donations and loans. The combined support for these three candidates among Democrat primary voters was 3.3% as of January 30, 2018.

The Outlook

Biss, Kennedy and Hardiman are targeting voters on the left wing of the political spectrum. Since Pritzker has no credible competitors vying for support of centrist, establishment voters, the fractured field works to his advantage. Taking into account Pritzker's fundraising advantage and the support from unions that can deploy members to knock on doors on his behalf on Election Day, he is a favorite to win the primary.

Senator Biss could conceivably present a credible challenge to the frontrunner by inspiring a broad-based revolt among liberal

Democrats against entrenched establishment politicians allied with a centrist billionaire who has well publicized vulnerabilities.

Chris Kennedy is in close competition with Daniel Biss. The two runner-ups are essentially syphoning off support from each other. The remaining candidates do not have realistic chances to win the primary race.

In our opinion, the most likely outcome of March 20 primaries is a Rauner-Pritzker face-off in November.

²² Ballotpedia

²³ HardimanForIllinois.com

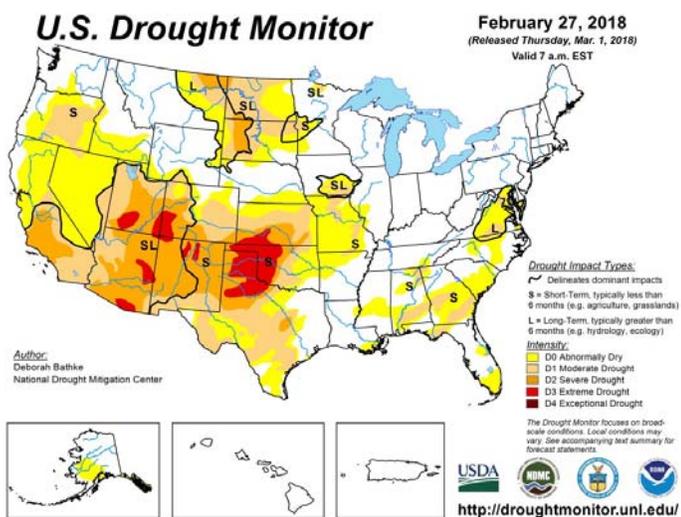
²⁴ Illinois Department of Public Health: County Population Estimate for Illinois as of July 1, 2014

²⁵ Illinois Democratic candidate for governor: Robert Marshall, Chicago Sun-Times, February 2, 2018

Drought Making Comeback as Market Concern

By Rachel Barkley | Vice President

Drought conditions are spreading across the country. Currently 59% of the country is in some state of drought, up from 33.7% a year prior.²⁶ However, conditions vary greatly across the country. The Northeast and the majority of the Midwest are so far relatively unscathed, while few areas of the West and Southwest remain unaffected. Currently, 100% of Arizona, Nevada and Utah are under some level of drought impact, followed closely by New Mexico (99.9%), Kansas (98.8%), Oklahoma (92.3%), California (91.5%), Colorado (89.8%) and Texas (77.3%).



Perhaps most concerning is the rapid acceleration of drought conditions and what it may mean going forward. A year ago, only 8.4% of Texas exhibited any form of drought conditions, while New Mexico and Utah each had 13% of land mass.

We'll take a closer look at the two largest issuing states, California and Texas.

California

The Drought Severity and Coverage Index (DSCI) currently stands at 159, with 47.9% of the state in a moderate to severe drought.²⁷

Much of California is currently benefitting from 2017 being one of the wettest in recent history, refilling the reservoirs and ending the 2012-2016 drought. Major state reservoirs remain well stocked, with only Perris Lake and Lake Oroville well below their historical

average.²⁸ However, water levels have fallen as a percentage of the historical average in many reservoirs in recent months. Lake Shasta, the state's largest reservoir, began the year at 124% of the historical average and is now on par with the average. It will fall below average within the month without a significant influx of precipitation.

The federally owned Central Valley Project (CVP) which provides water to the state's Central Valley region, has been harder hit this year. Precipitation at CVP basins has ranged from 45% to 74% of historical averages as of March 1st.²⁹ Due to a lack of adequate storage, it operates on a year-to-year basis in terms of determining its water allocations. In February, it announced its initial water supply allocation for the CVP, with agricultural contractors South-of-Delta expected to receive only 20% of their contract total. The CVP is particularly important as it provides water to much of the state's agricultural land.

The state took significant action during the 2012-2016 drought, which will aid the area's ability to manage current conditions, as well as future droughts. Included in this was Governor Brown's California Water Action Plan, which was intended to provide a foundation for water management going forward, the Sustainable Groundwater Management Act of 2014 and voter-approved Proposition 1 of 2014, which authorized \$7.5B of water bonds to fund investments related to water storage, groundwater sustainability and drought preparedness, among other uses. The state also continues to update its official Water Plan every five years and is currently working on its 2018 planned update.

Long-term plans for the state include the Water Fix project, originally titled the Bay Delta Conservation Plan, a \$17B infrastructure plan to update the water delivery system. Currently, water flows from the Sacramento-San Joaquin Delta to 25 million residents across the state, including the San Francisco Bay area, the Central Valley and Southern California. However, the water conveyance system is quite dated. The Water Fix plan would build two 150 foot tunnels to carry water from the Sacramento River under the Delta to intake systems in two stages. Stage One has been estimated to cost \$11.1B in undiscounted 2017 dollars, with a construction period of 2018-2031.³⁰ Once in place, the tunnel is expected to have a 100 year life span.

²⁶ U.S. Drought Monitor. February 27, 2018.

²⁷ U.S. Drought Monitor. February 27, 2018.

²⁸ California Data Exchange Center. California Department of Water Resources. March 4, 2018.

²⁹ U.S. Natural Resources Conservation Site.

³⁰ Economic Analysis of Stage I of the California Water Fix. The Brattle Group. February 12, 2018.

The largest program cost allocations for the Water Fix project are to the Central Valley Project (45%) and the Metropolitan Water District of Southern California (26%), with other participating water agencies financing the remainder.³¹ In October, the Metropolitan Water District of Southern California approved the district's share of financing for the project, equal to roughly \$4.3B over both stages.³² Anticipated cost increases from the project have already been incorporated into the district's financial forecast and rate increase projections. The Board of the Santa Clara Valley Water District, which receives 40% of its water supply from the Delta, also voted in October to support Water Fix.³³ However, the project may be delayed as more than a dozen cities, water agencies and environmentalists sued the state in late February in regards to the project, seeking to make the water board release information on its discussions with project stakeholders.³⁴

Local level initiatives have also been put in place to aid water conservation efforts. San Diego has year-round permanent water use restrictions, which remain in effect regardless of drought status. It also has additional programs, such as a grass replacement rebate, to encourage conservation.

The impact on California's credit quality is expected to be minimal if current drought conditions persist or worsen. The state successfully managed through the 2012-2016 drought and has an exceptionally diverse economy. On a local level, agricultural areas would be most impacted. The state's energy sector faces potential pressure as water is used to cool power plants. On a national level, half of all water is used for power generation.³⁵

Municipal water utilities in California are numerous and have varied levels of risk associated with drought. Many utility systems have implemented strategies from lessons learned in prior water cycles which allow them to maintain their overall quality to bondholders and have ample cash on hand.

Long-term, the state will have to balance its limited water resources with competing needs for residential developments, utilities and agriculture.

³¹ California Waterfix Finance and Cost Allocation Fact Sheet.

³² METROPOLITAN BOARD OFFICIALLY ENDORSES CALIFORNIA WATERFIX, APPROVES SOUTHERN CALIFORNIA'S \$4.3 BILLION SHARE OF THE PROJECT. The Metropolitan Water District of Southern California. October 10, 2017.

³³ Governor Brown Issues Statement on Santa Clara Valley Water District's Vote to Support WaterFix. State of California. October 17, 2017.

³⁴ California Cities Sue State, Allege Secret Discussions of Water Project. Courthouse News Service. February 27, 2018.

³⁵ Kearney, Melissa et al. In Times of Drought: Nine Economic Facts about Water in the United States. The Hamilton Project. October 2014.

California Largest Water Utilities Metrics Fiscal 2016

Utility	Service Area	Moody's Rating	Debt Service Coverage	Days Cash on Hand
East Bay Municipal Utility District	Alameda County/Contra County/City of Oakland	Aa1	1.65	479
Metropolitan Water District of Southern California	Portions of 5 southern counties	Aa1	0.97	401
Santa Clara Valley Water District	County of Santa Clara, Silicon Valley, City of San Jose	Aa1	1.85	377
San Diego County Water Authority	City and County of San Diego	Aa2	1.4	181
San Francisco Public Utilities Commission	City and County of San Francisco	Aa2	1.05	568
Los Angeles Department of Water and Power (Water Utility)	City of Los Angeles	Aa2	1.8	172

Sources: CAFRs, Moody's and Loop Capital

Texas

Less than five months after Hurricane Harvey, more than three quarters of the state is currently experiencing drought conditions. The panhandle and north Texas are currently impacted the most. While conditions have eased somewhat in the past two weeks due to rainfall, the DSCI stands at 166, with 11.5% of the state in an extreme drought and an additional 10.6% in a severe drought, as defined by the National Drought Monitor.³⁶

Currently reservoirs are 85.5% full, in line with the 1990-2017 median and levels from the year prior.³⁷ This provides a buffer from current conditions.

Like California, drought conditions are relatively common for Texas, with periods of drought in every decade for the past hundred years, including the most recent drought from 2010 through 2014. Drought management has historically been handled largely at the local level in Texas, although state programs are increasing. The Texas' Water Development Board (TWDB) develops a water plan based on 16 regional water plans. The most recent plan update was for 2017 with another expected in 2022.

The state now requires each regional water plan to include a separate chapter on drought response. Retail public utilities and wholesale water suppliers are required to report when their water supply dips below 180 days. The peak level for the number of utilities falling below the 180-day mark was 58 in both November

³⁶ U.S. Drought Monitor. February 28, 2018.

³⁷ Water Data for Texas.

2014 and February 2015.³⁸ Water systems are required to have a contingency plan in case of a water shortage.

Texas localities have been enforcing water restrictions on an as-needed basis for several years. Restrictions range from voluntary to severe, with severe restrictions banning all outdoor water usage unless specifically exempted as seen in cases of livestock maintenance. In certain areas of the state, neighboring jurisdictions have coordinating plans to aid in significant water shortages.

The state also provides funding for local water projects through the TWDB. State Water Code and Article 3, Section 49 C through D-8 of the Texas Constitution allows for the TDWB to issue GO bonds for the purpose of providing funds to the state's political subdivisions to undertake water conservation and development projects. These loans provided by the state are then repaid by political subdivisions. Borrowing costs are typically lower for these local governments receiving loans through the TWDB due to the state's AAA credit rating. At the close of fiscal 2017, the TWDB has \$864.3MM of GO bonds outstanding.³⁹

In November 2013, voters approved Proposition 6, a constitutional amendment creating the State Water Implementation Fund for Texas (SWIFT) and the State Water Implementation Reserve Fund for Texas (SWIRFT). Related to Proposition 6 was HB 1025, which transferred an aggregate of \$2 billion of reserves from the state's Economic Stabilization Fund to SWIFT and SWIRFT to fund the projects. SWIFT provides low-interest loans, as well as extended repayment terms. A total of \$2.4B in SWIFT/SWIRFT revenue bonds have been issued by the state, including a \$1.07B issuance in October 2017.⁴⁰

Any political subdivision with a project included in the state water plan may apply for funding assistance through SWIFT. Eligible projects are prioritized according to criteria set forth in the state statute and focus on the population served, regionalization efforts, water needs met by the plan and local contributions to the project.⁴¹ State law requires at least 10% of SWIFT funding support rural communities while at least 20% is mandated to be used for water conservation and reuse projects.

In total, the state projects \$63B in capital costs are needed to implement the state water plan over the next 50 years, 57% of which (\$36.2B) is expected to require state assistance.⁴² The majority of this is front-loaded, with \$25.6B of needs projected for 2020-2029 and \$13.6B in 2030-2039. If not fully implemented, roughly a third

of the state will have less than half of the water supply required during a drought by 2070.

The state's credit rating is not expected to be impacted by drought in the near future. Much like California, local agricultural areas are expected to be hit hardest by a continuation of drought conditions, as agriculture relies to a greater degree on groundwater than reservoirs. Many of these areas also have growing oil and natural gas extraction industries, which rely on water for hydraulic fracking procedures.

Most water provision in Texas is through municipal utility districts (MUDs). MUDs receive operational funding from property taxes, subject to voter approval, as well as water and sewer revenues. The additional revenue of property tax provides additional revenue stability than traditional utilities which are funded solely through user revenues. Some of the larger cities have traditional water utilities, funded solely from user revenues.

Texas Largest Water Utilities Metrics Fiscal 2016

Utility	Service Area	Moody's Rating (Senior Lien)	Debt Service Coverage (All-In)	Days Cash on Hand
Houston Combined Utility System	City of Houston and surrounding communities	Aa1 Closed Lien/ Aa2 First Lien	1.47	748
San Antonio Water and Sewer System	San Antonio Metro Region	Aa1	1.74	342
City of Dallas Waterworks and Sewer System	City of Dallas	Aa1	1.74	*
City of Arlington Water and Wastewater System	City of Arlington	Aa2	3.55	111
Austin Water and Wastewater System	City of Austin and areas of Travis and Williamson counties	Aa1 First Lien (Closed)/ Aa2 Open Lien	1.87	197
North Texas Municipal Water District	Portions of Collin, Dallas, Kaufman and Rockwell Counties	Aa2	1.48	*

Sources: CAFRs, Moody's and Loop Capital

A combination of periodic droughts and rapid population increases are driving capital needs for many MUDs. The Texas Water Plan expects municipal demand for water to increase substantially in the next few decades. Some entities are working to address the issue, increasing capital spending and debt levels. Notably, the North Texas Municipal Water District is slated to start construction soon on the \$1.2B Lower Bois d'Arc Creek Reservoir, the state's first new reservoir in 30 years.

This is especially notable as the state has calculated potential economic losses from water shortages of \$73B in 2020, escalating to \$151B by 2070.⁴³

³⁸ Texas Water Plan. 2017.

³⁹ Texas Water Development Board Annual Financial Report. Fiscal 2017.

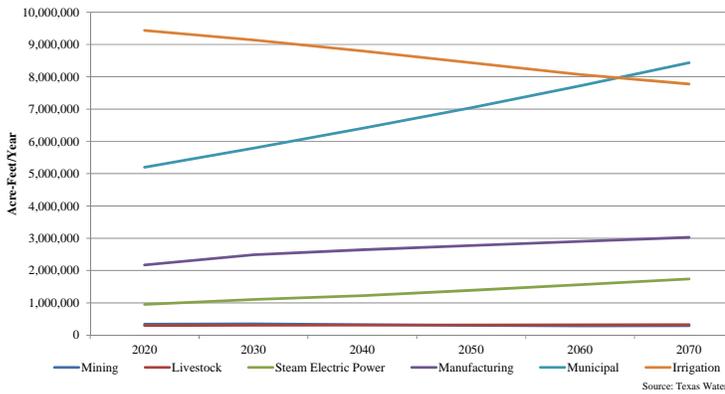
⁴⁰ Texas Water Development Board, State Water Implementation Revenue Fund for Texas Revenue Bonds, Series 2017A and 2017B. Official Statement. September 26, 2017.

⁴¹ Texas Administrative Code 363.1303-363.1304

⁴² Texas Water Plan 2017.

⁴³ Texas Water Plan 2017.

Texas State Projected Water Demand by Usage Type

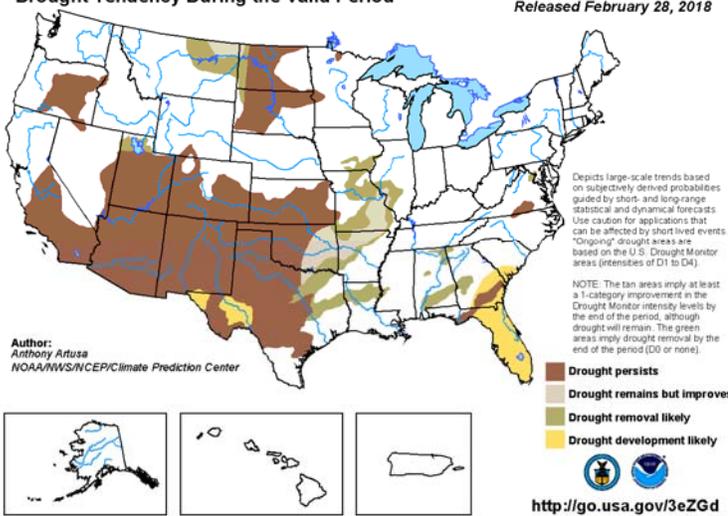


Going Forward

The U.S. National Oceanic Atmospheric Administration expects drought conditions to persist in the majority of affected areas over the near-term, while it also considers the development of drought conditions to be likely in Florida, southeastern Georgia and a portion of South Carolina.⁴⁴ California, Texas and all potentially affected states will need to monitor the short-term and long-term impacts of water shortages.

U.S. Monthly Drought Outlook Drought Tendency During the Valid Period

Valid for March 2018
Released February 28, 2018



⁴⁴ U.S. Monthly Drought Outlook. NOAA. February 28, 2018.

Revenue Reality Driving Innovation in Higher Education

By Maura Murrphy, CFA | Vice President

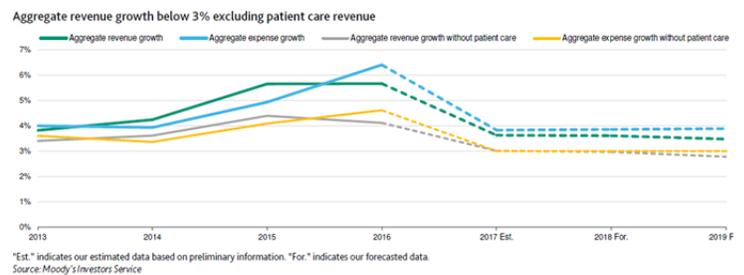
As discussed by recent commentary from Moody's,⁴⁵ higher education institutions continue to scramble to offset revenue shortfalls by engaging in a strategy of increasing market share (i.e., enrollment growth) while sustaining or enhancing quality standards (i.e., competitive position). A recent study shows hope for those colleges and universities equipped with strong national marketing programs and strong brand recognition.

Accelerating Revenue Pressure

Recently, Moody's downgraded the outlook for the higher education sector to negative from neutral based the expectation that expense growth of 4% will outpace 3.5% revenue growth over the next 12-to-18 months for four-year institutions with public universities especially vulnerable.⁴⁵ Moody's negative outlook reflects Federal funding cutbacks including for financial aid and research grants, limited flexibility for tuition increases, and the tax reform act's disincentives for philanthropic gifting. In addition, it cites concerns regarding the Administration's immigration and visa policies and proposals and their potential to depress international student attendance. Recent studies by the National Science Foundation and the Council of Graduate Schools confirm declining international student enrollment at both the undergraduate and graduate levels reversing multi-year growth trends. This development is negative because foreign students usually pay higher tuition than American students and because overseas enrollment has buffered declines in certain regions and socio-economic levels owing to regional outmigration and affordability issues.^{46,47}

Moody's based its forecast on a line-by-line analysis and ranges of estimated growth for individual revenue categories, the largest of which are tuition (74% of total revenue for private universities and 33% for public universities), state appropriations (0% private but a critical 24% for public institutions) and grants (14% private, 16% public). Moody's distinguishes those public institutions with patient care facilities which serve to supplement lackluster revenue growth elsewhere and account for 19% of all public institutions' revenue. The overall contribution of patient care is important for the 15% of public universities with teaching hospitals and research facilities. A deeper dive into Moody's overall expectation for 3.5% revenue growth shows midpoint revenue growth estimates of 3.9% and 3.4% for private and public universities.

Based on our analysis of these forecasts, public universities without patient care revenue should expect far greater than just a 0.5% gap between expense and revenue growth. In fact, their revenue growth on a best, most likely and worst case basis would be 3.4%, 2.8% and 2.3%, respectively, a disadvantage of up to nearly 20% in any of these scenarios, rendering them the most vulnerable to possible credit downgrades compared to counterparts with medical facilities or teaching hospitals.



Drive for Market Share

In our June 2017 report on the Higher Education Sector, we analyzed the WICHE 2017 study on secular enrollment declines and identified regional in- and out-migration trends favoring the Rocky Mountain area, the Southeast and the Great Lakes (excluding Illinois) to the detriment of the Far West, the Midwest and New England.⁴⁸

In its January 2018 edition, the Chronicle of Higher Education published a list of success stories featuring the 20 top private and 20 top public institutions which have the highest out-of-state in-migration rates for first-time college students. While the published results are not comprehensive, this study identifies the most successful in-migration experiences at the individual college level. It confirms that certain colleges demonstrate the ability to gain market share by attracting new students beyond the confines of their home states. On average, these 40 universities brought in 78% of their student body from out-of-state (in a range from 54% to 99%) and 46% from outside their particular region (in a range of 4% to 86%). These statistics compare to the average four-year college which draws 17% from outside its home state and 9% from outside its region.⁴⁹

⁴⁵ "2018 outlook changed to negative as revenue growth moderates." Moody's Investors Service. December 5, 2017.

⁴⁶ Hironao Okahana and Enyu Zhou. "International Graduate Applications and Enrollment: Fall 2017." Council of Graduate Schools. January 2018.

⁴⁷ "Science and Engineering Indicators 2018." National Science Board. January 2018.

⁴⁸ Chris Mier and Maura Murrphy. "The Higher Education Sector: Immersed in Challenges, Seeking Solutions, Redefining Missions." Loop Capital Markets. June 2017.

⁴⁹ "4-Year Colleges That Drew the Highest Percentages of First-Time Students From Out of State, Fall 2016." The Chronicle of Higher Education. January 28, 2018.

We analyzed the winning universities by region for in- and out-migration trends. The largest beneficiary of incoming student movement was the Southeast, with the University of Alabama at Tuscaloosa, West Virginia University and University of Mississippi attracting almost 21,000 students from out-of-state. The Northeast and Mideast US ranked second and third for out-of-state appeal. The regions losing students to these colleges were in the Mideast (defined to include New York and New Jersey), New England (particularly Massachusetts) and the Great Lakes (Illinois), confirming the conclusions of the 2017 WICHE study.

The study demonstrates that private colleges ranked far ahead of public colleges in terms of attracting students from outside their regions. Of the top 40 public and private colleges with the broadest appeal, 16 private universities drew the largest student populations from outside their areas, led by well-known East Coast “brands” as Yale (CT), Kings College (NY), Bennington (VT) and Dartmouth (NH), all of which are bucking the trend of out-migration from New England and the Mideast US. These top four colleges bring in 93%-99% of their population from out-of-state and 82-86% from outside their regions.

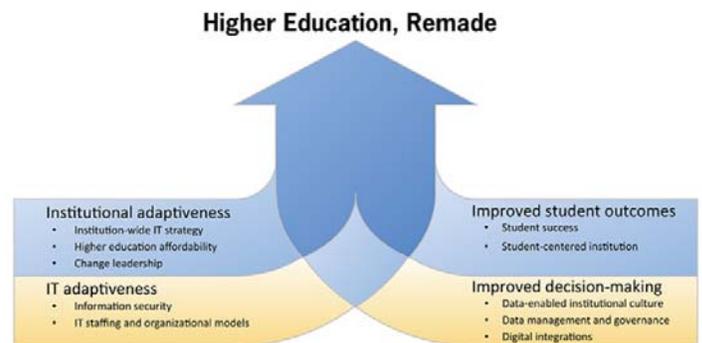
The 20 private colleges on the list bring in 91-99% from out-of-state and 34-86% from outside their regions. Private colleges in Washington DC occupied the top 6 spots on the list of 20 private colleges when ranked by percentage of out-of-state students, led by Gallaudet, American University, Georgetown, George Washington, Howard and Catholic University of America, all of which attracted between 37% and 73% from outside their Mideast region.

The study did not discriminate based on size of institution and identified smaller colleges that have unique product offerings catering to specialized niche student bodies. The top-ranked private university, Gallaudet in Washington DC, caters to hearing-impaired students and brings in 99% from other states and 73% from outside its region. The top-ranked public university, Haskell Indian Nations University in Kansas, requires that students be an enrolled member of a Federally-recognized American Indian tribe and draws 82% of its population from out-of-state and 60% from outside the Plains region.

Necessity Drives Invention

Major challenges on the revenue generation front have given way to the creation of “Chief Innovation Officers” at colleges per recruiter Russell Reynolds reports that 20-30% of the top 50 US universities have created these cross-functional roles, many of which center around promotion of strategic corporate partnerships,

entrepreneurship and research ventures.⁵⁰ Of the 195 universities, hospitals and research institutions surveyed, the Association of University Technology Managers reported that there was an 11% and 5% increase in 2015 and 2016 in the number of startups or technology transfer activities as a result of academic research with that number expected to grow.⁵¹ The schematic shows the integration of technology as a key to reshaping the approach to more efficient delivery of higher education.



Source: 2018 Educause Learning Initiative Review.

Collaborations

Three years ago, US News & World Report began a survey of “Most Innovative Schools” as an extension of its annual rankings of best colleges in the country.⁵² To appear on the list, colleges had to receive seven nominations from peer academics. Five of the 31 schools on the 2017 “Most Innovative Schools” list belong to the University Innovation Alliance (UIA), a joint venture begun by Georgia State University (GSU) and Arizona State University (ASU) in 2014. UIA is now a consortium of 11 public universities⁵³ representing 20% of the US’ large doctoral research universities, which is funded by 8 private foundations including Lumina, Gates, Ford, ECMC and Kresge.⁵⁴ UIA’s goal is to close the education achievement gap by leveling the playing field for access for lower income and first-time college attendees. By 2017, their collaboration has resulted in producing 25% or 6,000 more low-income graduates per annum.

Other Innovations

Besides these collaborations, other survival-of-the-fittest tactics⁵⁵ include:

⁵⁰ Meredith Rosenberg, Clara Dessaint and Emily Meneer. “The Emergence of the Chief Innovation Officer in Higher Education.” November 28, 2017.

⁵¹ Association of University Technology Managers US Licensing Activity Survey: FY2016. June 2017.

⁵² www.usnews.com/best-colleges/rankings/national-universities/innovative

⁵³ In addition to ASU and GSU, the other members on the 2017 list are UT at Austin, Purdue and U of Central Florida. UIA’s other members are Oregon State, UC at Riverside, U of Kansas, Iowa State, Michigan State and Ohio State.

⁵⁴ www.theuia.org

⁵⁵ Autumn A. Arnett. “5 trends poised to shake up higher education in 2018.”

www.educationdive.com. January 3, 2018.

- Atypical pre- and post-college enrollment support. Southern New Hampshire has begun a program called ‘College for America,’ a hybrid college offering supplemental support to its low-cost online curriculum including coaching, job placement and peer group coordination.⁵⁶ The program attempts to address the needs of low-income, first generation students.
- International “branch” campuses or partnerships. A recent study by ACE found that 72% of those surveyed found internationalization had accelerated with 29% reporting “high or very high levels of internationalization”⁵⁷ in 2016 compared to 20% in 2011.
- De-emphasis on traditional classroom or physical campus space. In March 2017, a medium-sized college, Brandman University located in CA and WA won an award from the American Council of Education for “Institutional Transformation” increasing its enrollment by 20% in five years, by de-emphasizing its traditional campus space, increasing its locations to 27, including 6 located directly on military bases.⁵⁸
- Non-degree program alternatives, including those focused on employability. Ranked #1 in the US News & World Report, Arizona State offers 150 undergraduate, graduate and certificate degree programs with 100% online access.
- Cutting edge technology including new online and mobile applications. Affiliated with Colorado State, its CSU Global program was the first online facility for working adults. The University of Texas at Austin now has its own energy grid to meet the electricity and A/C needs for its campus.

Higher education institutions will remain under the gun to intensify their creative approaches given the pressure from reduced Federal grant and state funding, as well as potential cuts in private philanthropy and new taxes on the largest endowments (in the wake of the TCJA of 2017). According to a joint study by ACE and TIAA Institute, little is known about the direct correlations all of these novel approaches have had on Higher Education’s top line. But the pressure is on.

To address margin squeezes, cost containment programs are also prevalent. The State of Georgia has contracted its public university system from 35 to 26 in the past decade while Wisconsin has chosen to merge its two- and four-year schools.⁵⁹ A study by Inside Higher Ed published in mid-2017 found that 71 % of chief business officers from 409 institutions surveyed agree that higher education is in the midst of a financial crisis. Between 38% and 44% of these CBOs expect to see reductions in administrative positions and increases in early retirement programs in the future.⁶⁰

⁵⁶ Allison Dulin Salisbury. “Can These New Colleges Help Solve Higher Education’s Equity Problem?”n EdSurge. November 15, 2017.

⁵⁷ Robin Matross Helms, Lucia Brajkovic and Bruce Struthers. “Mapping Internationalization on US Campuses: 2017 Edition.” American Council on Education.

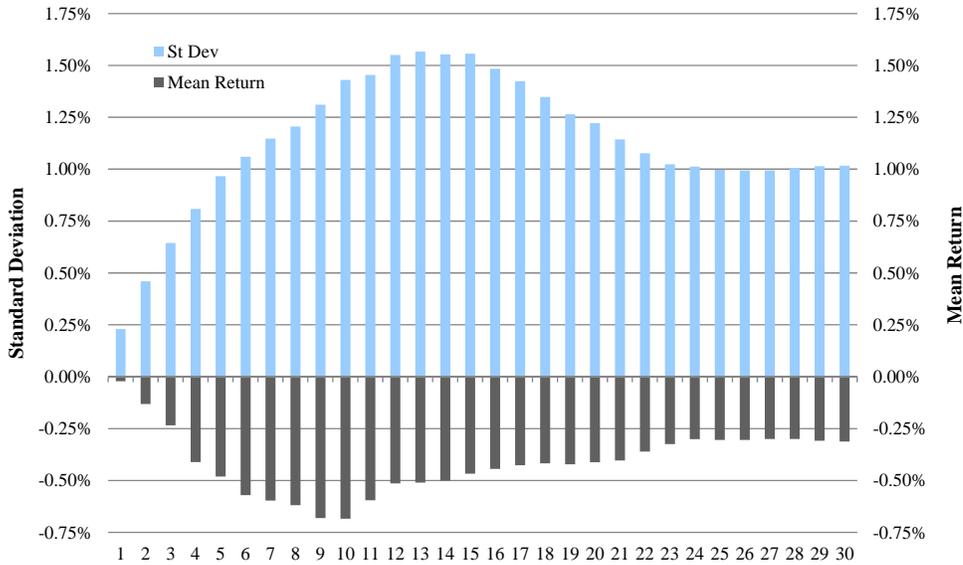
⁵⁸ www.acenet.edu/news-room

⁵⁹ Autumn A. Arnett. “The key higher ed issues for states in 2018.” www.educationdive.com. January 18, 2018.

⁶⁰ Scott Jaschik and Doug Lederman. The 2017 Inside Higher Ed Survey of College and University Business Officers.” Higher Ed and Gallup. July 29, 2017.

Market Review *Historical Monthly Bond Price Changes*

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



Sources: Loop Capital Markets, TM3

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

AAA MMD - MONTHLY PRICE CHANGE

Maturity	5	10	15	20	25	30
Mar-01	0.57%	0.55%	0.54%	0.46%	0.38%	0.15%
Mar-02	-2.72%	-3.06%	-2.44%	-2.13%	-1.97%	-2.05%
Mar-03	-0.27%	-0.56%	-0.24%	-0.16%	-0.31%	-0.16%
Mar-04	-0.58%	-0.96%	-1.10%	-0.78%	-0.63%	-0.71%
Mar-05	-0.97%	-1.50%	-1.34%	-1.02%	-0.55%	-0.55%
Mar-06	-0.75%	-1.89%	-1.65%	-1.57%	-1.41%	-1.41%
Mar-07	-0.04%	-0.79%	-1.26%	-1.18%	-1.18%	-1.18%
Mar-08	1.70%	3.14%	3.84%	2.69%	1.89%	1.97%
Mar-09	0.40%	-0.48%	0.56%	0.16%	0.08%	0.23%
Mar-10	-1.34%	-1.99%	-1.27%	-0.32%	-0.08%	-0.08%
Mar-11	-0.04%	-1.75%	-0.48%	-0.79%	-0.70%	-0.86%
Mar-12	-1.35%	-2.10%	-2.88%	-2.15%	-1.27%	-1.27%
Mar-13	-0.32%	-0.82%	-1.69%	-1.77%	-1.44%	-1.44%
Mar-14	-1.39%	-0.73%	0.16%	0.32%	0.48%	0.56%
Mar-15	-0.23%	0.49%	0.41%	0.32%	0.57%	0.57%
Mar-16	-0.63%	0.49%	0.82%	0.73%	0.98%	0.89%
Mar-17	-0.22%	0.33%	0.08%	0.16%	0.00%	0.00%
Mean	-0.48%	-0.68%	-0.47%	-0.41%	-0.30%	-0.31%
St Dev	0.97%	1.43%	1.56%	1.22%	1.00%	1.02%

Sources: Loop Capital Markets, TM3

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

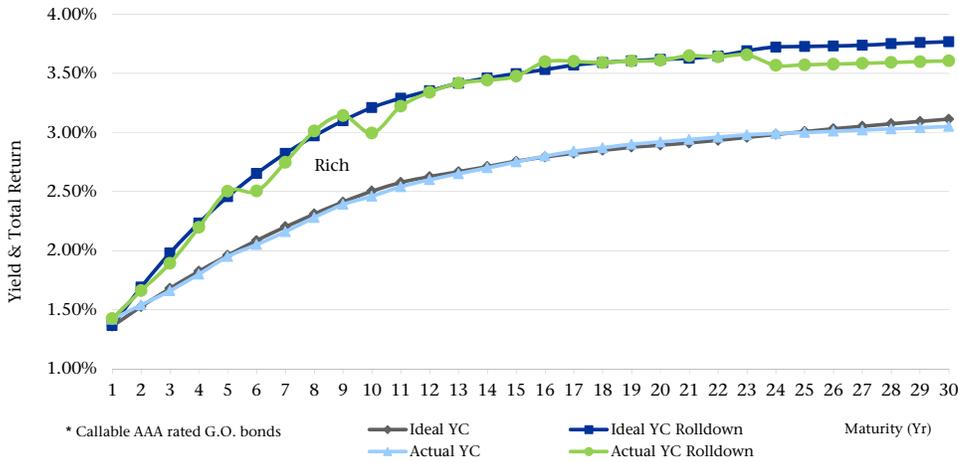
The returns in March were negative about 60% of the time, with bond prices declining, on average, 0.40% across the curve.

The 10-yr point has the lowest expected return.

The 10 to 18-year range was most volatile, with standard deviation of monthly bond price changes of 1.50%, vs. 1.00% on the long end of the curve.

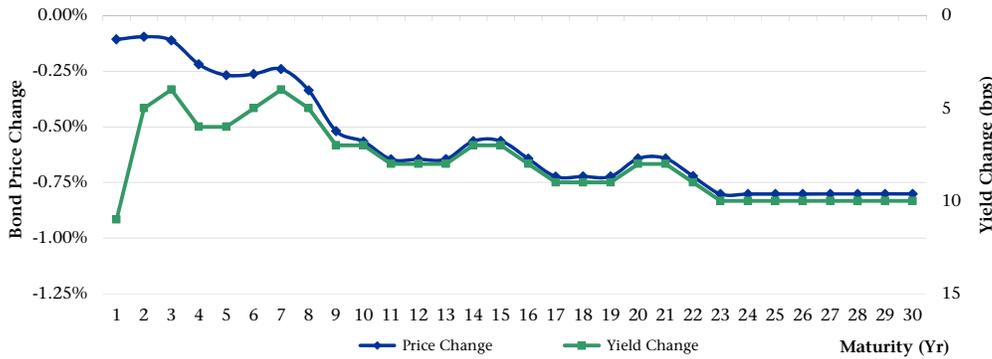
Market Review *The Yield Curve*

Figure 6 1-Year Forward Roll-down—Muni Benchmark Curve* (March 8, 2018)



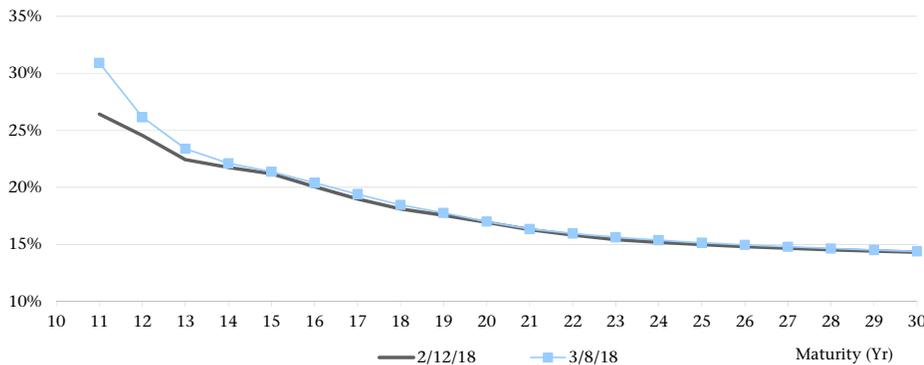
Sources: Loop Capital Markets, TM3 | *Callable AAA-rated G.O. bonds

Figure 7 Monthly Price Change — AAA GO Bonds* (2/9/18 — 3/9/18)



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

Figure 8 Implied Municipal Volatilities



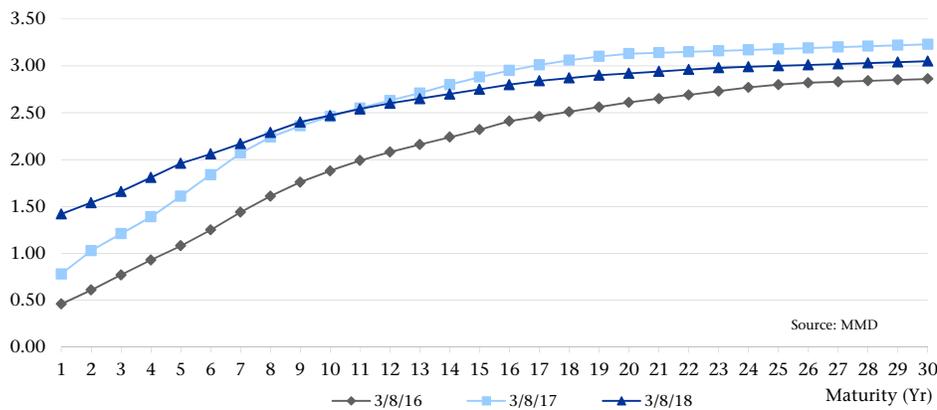
Sources: Loop Capital Markets, TM3 | *10-year call

The yield curve shows rich points on the MMD curve (6-yr, 10-yr, 24+ yr), based on one year holding period returns and assuming no change in the yield curve a year from now. The 23-yr maturity offers the highest expected total return.

Yields rose between 8 and 10 bps in the 11 to 30 year range of the yield curve last month.

Implied volatilities remained steady in the 14 to 30-yr range, but rose significantly for 11-yr maturity last month.

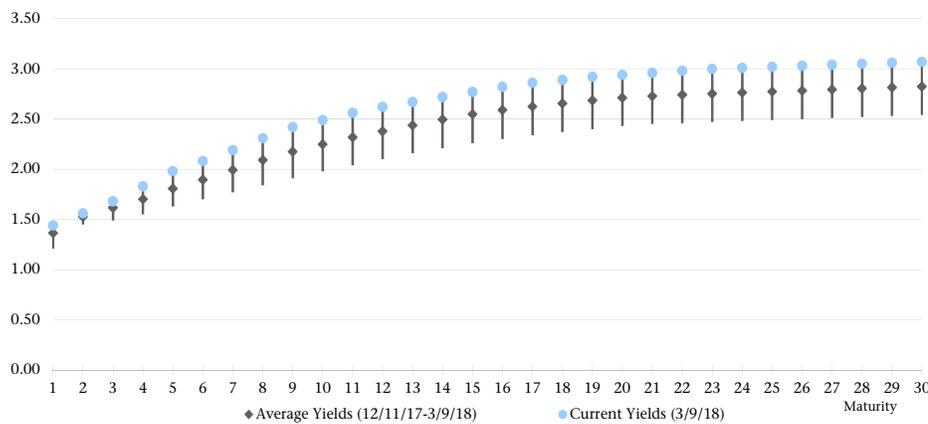
Figure 9 Current vs. Historical Municipal Yield Curves (%)



Source: TM3

Yields are about 20 bps lower on the long end of the curve and about 50 bps higher on the short end today than they were in March 2017.

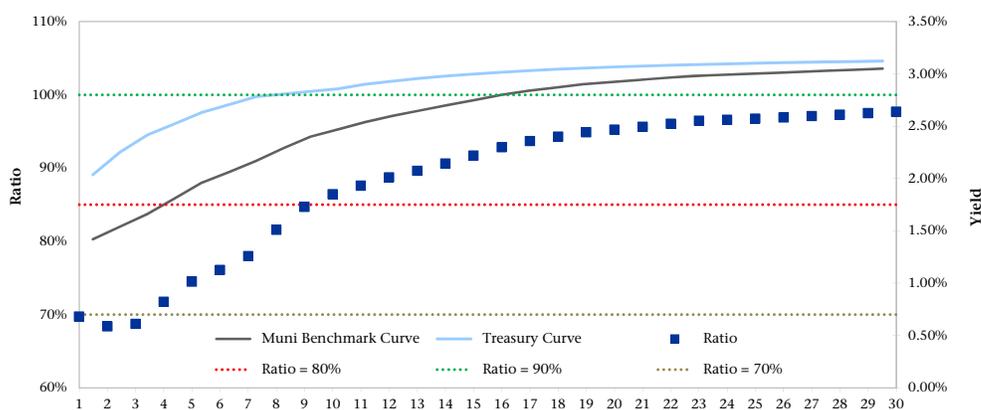
Figure 10 3-Month Average Benchmark Muni Curve Yield



Source: TM3

The yields are at their highest points in 3 months across the muni curve.

Figure 11 Muni and Treasury Yield Curves and Ratios



Sources: Eikon, TM3

The ratio curve has largely returned to the familiar upward sloping shape.

The ratios are above 95% in the 15 to 30-yr area of the curve.

Market Conditions

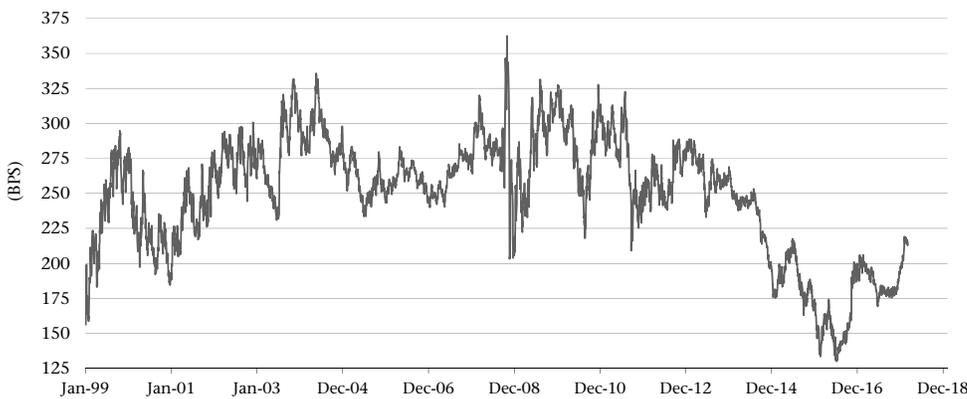
Figure 12 2 to 30-Yr Muni Spread (bps)



Source: TM3

The curve has steepened 53 bps year-to-date. Currently the 2 to 30-yr spread is 151 bps.

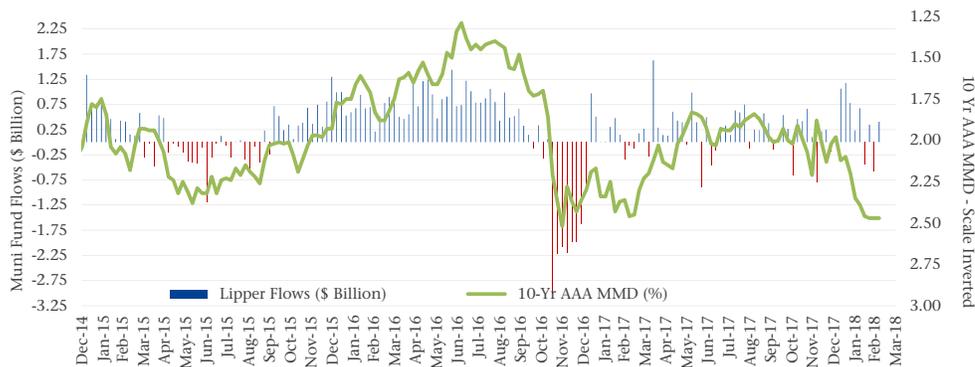
Figure 13 Inflation Expectations



Source: FRED

Fed's five-year forward breakeven inflation rate, derived from TIPS and regular Treasury yields, rose to 2.15%.

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



Source: Lipper

Muni bond fund flows have been volatile lately, with 4-week average flow negative \$70 million.

Loop Capital Markets Upcoming Negotiated Calendar

Date	Par Amount (\$ mil)	Issue	Loop Capital's Role
3/14/18	1,000.9	New York City Transitional Finance Authority Building Aid Rev. Bonds Fiscal 2018	Co-Manager
3/14/18	141.7	University of Connecticut Special Obligation Student Fee Revenue Bonds, 2018A	Co-Manager
3/15/18	240.0	County of Alameda (Measure A1) 2018 Series A, Ad Valorem Property Tax (Taxable)	Co-Manager
3/13/18	79.8	Oklahoma Water Resources Board Revolving Fund Rev. Bonds Drinking Water	Selling Group



"Today, scientists on Earth reported that the planet's dying atmosphere will now only support one species of cockroaches; and, of course, Keith Richards."

Analytical Services Division

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