MUNICIPAL RESEARCH 2016 OUTLOOK

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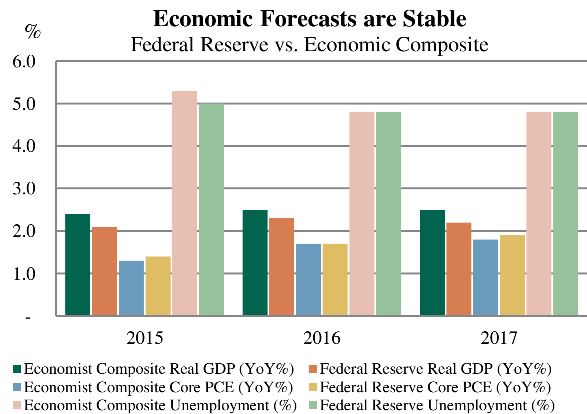
SUMMARY

Broadly, we expect stability in the municipal sector for the next 12-18 months under a base case scenario of continued slow economic growth. At the same time, each sector under the municipal umbrella has unique structural and operating characteristics that will create differentiation in the coming year. This paper examines:

1) Relevant factors impacting each sector in the 12-18 month outlook period,
2) Resiliency of each sector should an unexpected economic downturn occur, and
3) Credit specific strength and risks that inform our individual security selection.

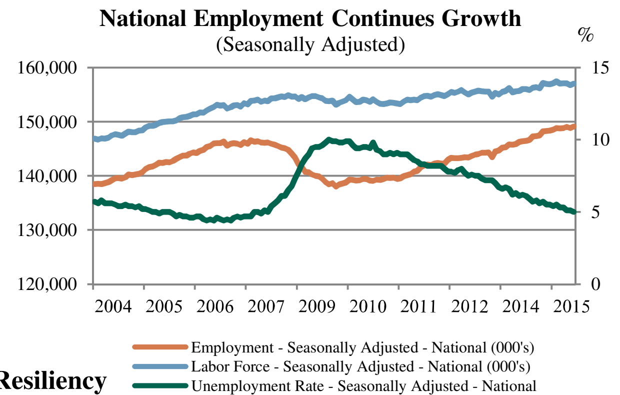
Sector Outlook

The outlook for each municipal sector reflects our opinion on whether key macro factors will be predominantly beneficial or challenging for the sector's fiscal health in the next 12-18 months. Individual outlooks reflect our base case expectation for continued slow and broad economic growth as well as unique sector-specific factors. The outlook does not reflect an issuer's ability to navigate these macro factors, nor does it suggest credit trajectory or rating movement for any individual issuer. The sector outlook considers all issuers in the sector, but is also weighted by market presence.



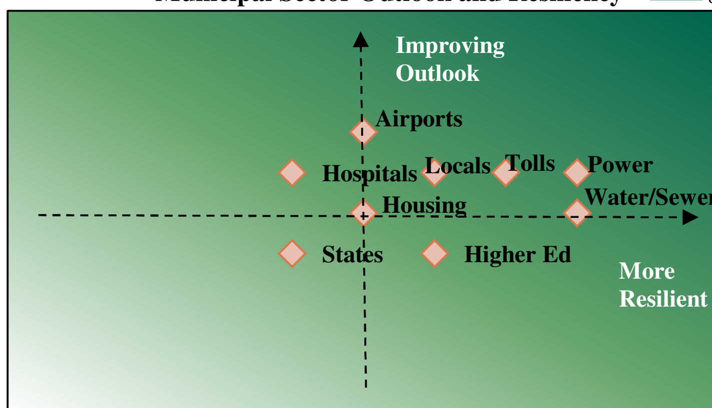
Sector Resiliency

The resiliency position reflects a sector's ability to withstand a material economic downturn. We continue to view the municipal market as fundamentally resilient. However, resiliency for some is lower now than it has been historically. Many tax dependent sectors have simply not experienced the level of robust growth to create safety margins in budgets and reserve levels, or tax capacity to withstand a significant downturn without measured credit stress. This opinion specifically considers historical revenue volatility, elasticity of market demand, flexibility of operating costs, fixed cost burden, and current reserve position. In many cases, we consider the current fiscal position relative to pre-recession positioning.



Source of charts: Bloomberg

Municipal Sector Outlook and Resiliency



Sector Discussions

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Credit Market Movers and Headlines

The next 12-18 months will see continued challenges in the municipal sector. The following topics are likely to bring various levels of volatility to the sector.

Election Year: With the upcoming presidential election, ideas of policy, tax, or spending changes are likely. While we don't anticipate any real changes until well into 2017, the impending election may bring some market volatility simply based on rhetoric and projections. The perennial issues of tax-exemption, potential for a new type of "Build America Bond" program, and intervention in distressed credit situations are a few direct examples that can cause disruption. Federal infrastructure spending, higher education loan and grant support, research support, and Medicaid and Medicare funding are examples of changes that will indirectly impact credit strength and public perception of the municipal market.

Pensions: As with previous years, we anticipate continued focus on pensions as key state level decisions are made and new Governmental Accounting Standards Board (GASB) reporting requirements highlight underfunding. States at the forefront of this discussion include Illinois, New Jersey, Kentucky and Connecticut given liability size and funding status. Local governments as well as public universities will for the first time reflect pension liabilities on the balance sheet and report a pension expense. These new reporting standards will bring an increased level of transparency for pension obligations previously not available under old standards. Realization of these obligations on entity balance sheets may spur price movement. (See Municipal Research piece "The Impact of Pensions on Municipal Credit" dated June 2015)

Security Provisions: We expect the market to continue to be critical of old frameworks surrounding security provisions. We expect some spread volatility as distressed issuers hammer out legal claims, and as investors and rating agencies adjust opinions and methodologies based on potential and real outcomes. Like California, other states, including Michigan, Illinois and New Jersey, are considering the potential impact of assigning statutory liens to local debt issues in an effort to protect market access. We will continue to view credit strength as the fundamental indicator of repayment, but note potential for price changes based on the market's interpretation of these changes. The implications of this action could be to narrow spreads for General Obligation Unlimited Tax (GOULT) bonds compared to other states and widen differentiation between GOULT bonds and other appropriation or abatement structures. (See Municipal Research piece "Breaking Down the General Obligation Bond" dated September 2015)

Puerto Rico: While unlikely, extending bankruptcy protection to Puerto Rico could materially disrupt the market given the change of legal framework surrounding investors' claims on principal and interest payments, and implications for the broader market. The restructuring of Puerto Rico outside of bankruptcy will have market implications, but is less likely to cause a material disruption as investors, at this point, expect a restructuring of some kind to begin in 2016. Additionally, a large portion of Puerto Rico's debt is now held outside of the traditional municipal market, thereby limiting impact. (See Municipal Research pieces "Municipal Research: Puerto Rico" dated July 2015 and "The Real Thing: Puerto Rico Defaults" dated August 2015)

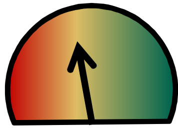
Affordable Care Act (ACA) and Medicaid Expansion: ACA implications have been broadly felt across the municipal market. We expect presidential debates, election outcomes, and growing clarity around cost implications for states and tax-payers to broadly impact municipal credit profiles in late 2016 and beyond. Federal reduction in support for Medicaid expansion begins in fiscal 2017 and will challenge states already struggling to meet growing costs.

Infrastructure Spending: The House and the Senate passed the 5-year $305 billion Fixing America's Surface Transportation Act (FAST) and it was signed into law on December 4. The funding breakout will send the bulk of the funds to highway programs and the remainder to transit. The bill does not identify new funding mechanisms, but finds funding through the remains of the gas tax and various internal transfers, particularly the Federal Reserve's balance sheet reserves. FAST significantly reduced transportation (TIFIA) loan funding by 30% compared to lifetime annual funding. The most positive facet for the bonds community will be the increased issuance of grant anticipation revenue (GARVEE) bonds. This development may bring increased issuance to the market in 2016. As long as the Federal Government fails to act on a long-term transportation policy and funding source, we will be cautious of the sector. States will continue to implement more long-term, large highway and other transportation infrastructure projects.

Capital Gains Revenue: Many states are now highly dependent on high income earners for revenue – some upwards of 50% reliant. A substantial portion of that revenue is derived from capital gains taxes. Weak market returns in 2015 will impact 2016 fiscal year collections – particularly with March and April tax payments. Overall, greater tax dependence on the wealthy in many states creates greater general volatility in annual tax collections. Many of these states do not have sufficient flexibility or reserves necessary to absorb a higher degree of volatility, particularly in the face of rising fixed costs in the form of pensions, other post-employment benefits (OPEB), Medicaid and debt payments.

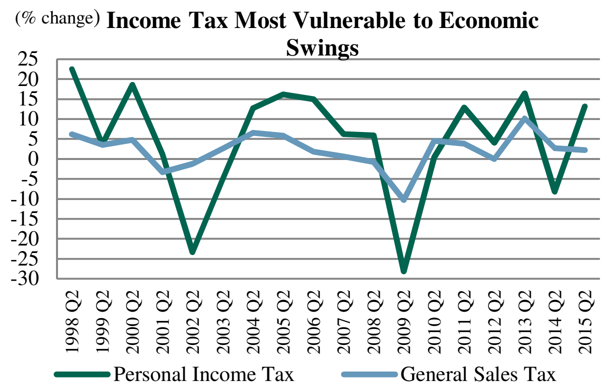
STATES

Sector Outlook: The outlook for states is somewhat challenged as we expect expense pressure to outweigh modest revenue growth and strain already lean reserves. The outlook for the state sector is highly bifurcated with budgetary pressures and low reserve levels weighted more heavily to high debt issuing states.



Income taxes should demonstrate continued growth as states fully realize last year's job growth as well as benefit from continued job creation, even if at a slower pace. Sales tax will grow, but at a modest pace often under optimistic budget expectations. The decline in oil prices will continue to pressure revenue for oil dependent states in the next year. Weak equity market performance may cause underperformance of state income tax revenues, particularly for states that are highly dependent on high-income earners.

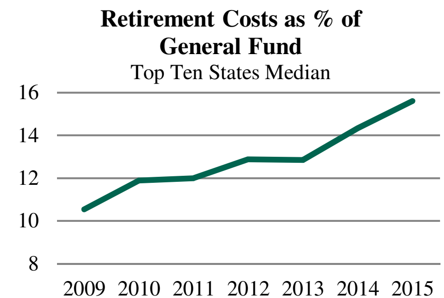
While we expect modest revenue for most states, budgetary demands will easily consume organic revenue growth – largely with respect to pension costs, federal Medicaid reimbursements that will begin to fall in fiscal 2017 (Oct 2016), demand for educational and social services, and deferred infrastructure needs.



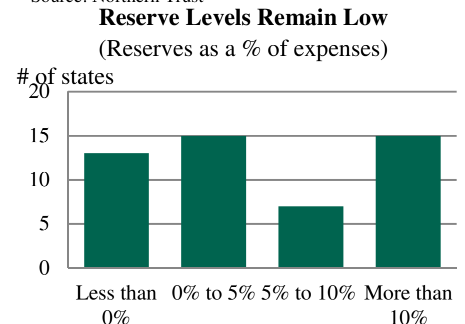
Source: Rockefeller Institute

Sector Resiliency – Reduced Resilience: Historically, state resiliency has been fundamentally very high. However, current resiliency is comparably low due to the slow economic recovery which left states with large legacy costs, budgets with little room for easy additional cuts, a more dependent constituency, substantial infrastructure needs, and weak reserves and stabilization funds. In particular:

- State government revenues, particularly income tax, are highly vulnerable to market and economic swings.
- State budgetary cushion for withstanding revenue underperformance is thin. For example, state government employment levels remain below peak, higher education funding is down a median of 25% from 2008, and deferred maintenance needs are on the rise.
- Pension and OPEB costs are outpacing revenue growth. While median spending is moderate at 5.2% across all states, the ten most burdened states spend about 15% of general fund expenses just to meet obligations, up from 10% five years ago.
- Medicaid spending comprises a median 25% of state government spending. Federal support of the program will begin slowly declining in 2017 requiring the states to fill the revenue gap.
- States have limited reserves to withstand a moderate downturn



Source: Northern Trust



Source: Northern Trust

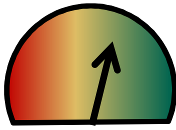
What we like about the sector:

- **State commitment to timely payment of debt service.** Economic and political incentives to pay debt service overwhelmingly support the continuation of timely payment. Constitutional or statutory priority of payment and limitations on structure and amount and keep budget burdens manageable and limit structural risk often found in other sectors
- As Sovereign entities, most states maintain a high level of **flexibility** to adjust a broad base of revenues and expenses to balance budgets but political willingness may be less flexible

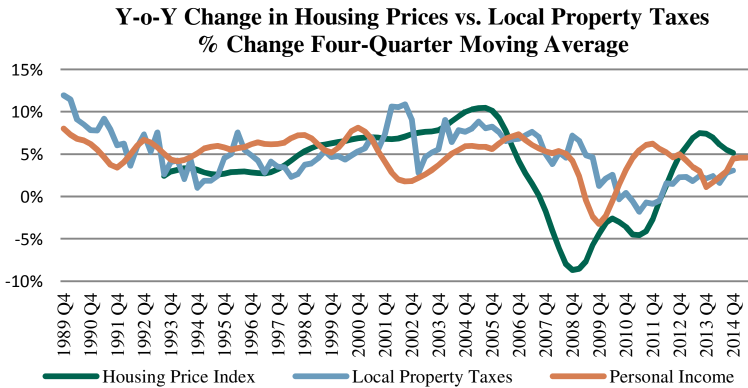
Risks

- States with **onerous pension liabilities**, particularly those that are currently underfunding required payments (i.e Illinois, New Jersey, and Kentucky) are vulnerable during this period of sluggish economic performance
- States with volatile revenue structures including **outsized dependence on very high earners and capital gains** (i.e. California) tax require greater reserves and superior cash management to withstand volatility
- **Oil dependent states** (i.e Alaska and Louisiana) will continue to face budget pressure should low oil prices persist
- **Demographic challenges** will impact states over the medium to long-term, particularly aging population and out-migration

LOCAL GOVERNMENTS



Sector Outlook: Our more supportive outlook for locals reflects a revenue base concentrated in property tax, local sales tax, and licenses and fees; all of which should exhibit growth in 2016. Our outlook also reflects more contained spending pressures and less federal government dependence. Positive home price growth in 2013, 2014, and 2015 will benefit local property tax levy growth in 2016. Stable employment growth since 2014 and annualized personal income growth of 4-5% throughout calendar year 2015 should support subsequent sales tax and licenses/fees growth in 2016. National League of Cities reports 42% of cities surveyed increased fees in 2015, an additional factor we expect to support revenue growth. The growth in pension and OPEB burden since the recession outpaced the revenue recovery and will continue to frustrate some budgets, particularly in states like California where retirement costs comprise upwards of 25% of budgets. While our outlook is more positive, distressed local credits are unlikely to see material improvement in 2016.



Sector Resilience - Resilient: Local government revenues are more resilient in the short term than state revenues due to the stability of property tax revenues. Not only are property taxes a lagging indicator in a downturn, but often, assessed value is capped at a rate lower than rising market value resulting in cushion to absorb market volatility. While this varies across states, this flexibility was demonstrated in the most recent recession, when local property tax revenue declines were a fraction of home price declines and recovered quicker than the housing market. Lastly, a large portion of cities and counties across the nation have rebuilt reserves near or above pre-recession peak.

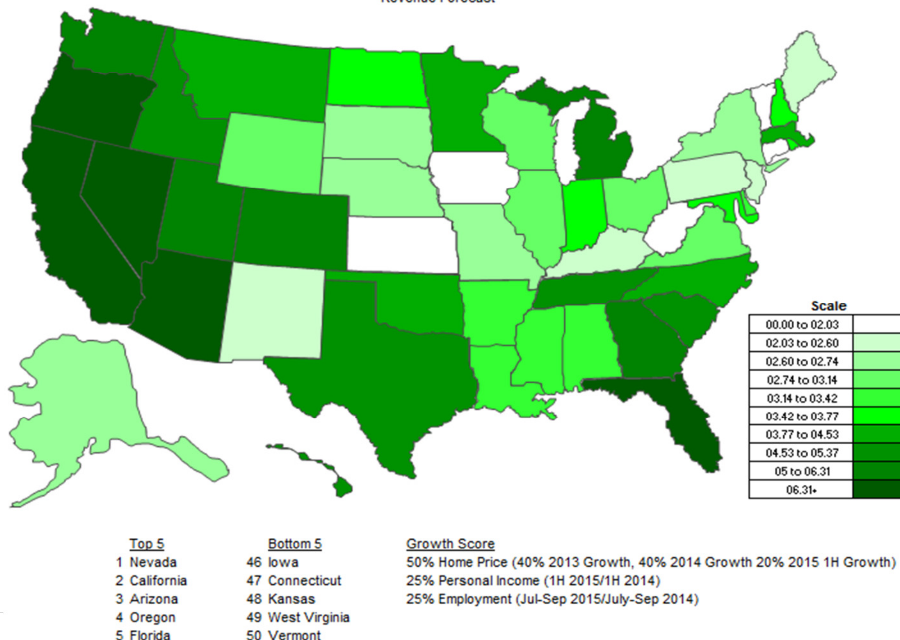
Many large cities face greater challenges in the near term largely due to elevated infrastructure needs, high carry charge on legacy liabilities, and weaker reserve levels. We see unrestricted net assets as a percentage of governmental revenues near its peak at 13%; down from 14% for all local governments in 2008. For large cities, the median is materially weaker at negative 20%; down from 0% in 2008.

What we like about the sector

- **Property tax resilience** and ability to raise levies in real estate downturn
- Operating **fund balances are in better position** to withstand a downturn than 2008 recession.
- West coast locals hit hard by the recession are starting to show **strong recovery in home prices, employment and income**.

Risks

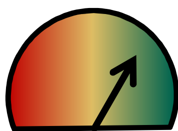
- Rapid growth of **retirement burden** in large cities will continue to frustrate budgets.
- Statutory requirements that prevent some local governments from fully **funding their ARC.**



Top 5	Bottom 5	Growth Score
1 Nevada	46 Iowa	50% Home Price (40% 2013 Growth, 40% 2014 Growth 20% 2015 1H Growth)
2 California	47 Connecticut	25% Personal Income (1H 2015/1H 2014)
3 Arizona	48 Kansas	25% Employment (Jul-Sep 2015/July-Sep 2014)
4 Oregon	49 West Virginia	
5 Florida	50 Vermont	

AIRPORTS

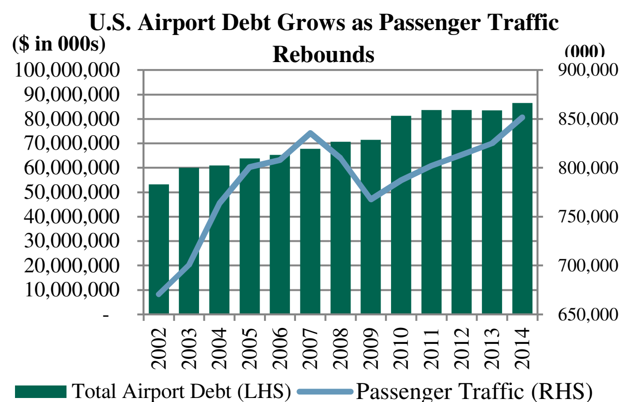
Sector Outlook: The airport sector is poised for continued growth driven primarily by our expectation of continued demand from travelers. Positive momentum exhibited by larger airports weighs more heavily on the outlook with medium and small airports still demonstrating growth, but at a level more supportive of a stable outlook.



Airports continue to be impacted by consolidating airlines and the evolution of the competitive landscape post-merger. Airlines have adopted a new strategy based on dominating one airport and forgoing marginal service elsewhere. This realignment further bolsters service at hubs with already strong presence and is resulting in individual airline monopolies at airports. The new normal is more seats through aircraft upsizing and fewer departures. This capacity discipline will continue to shape the winners and losers in the U.S. airport industry. Major hubs with strong underlying economies will continue to see better carrier service, fewer delays, larger aircraft, and more efficient turnarounds. Smaller and medium airports, some of which have been de-hubbed (Memphis and Cleveland) and others where more pruning will continue (Cincinnati) are the most at risk. As airlines replace smaller jets with larger aircraft, small hubs where local demand might not keep pace with aircraft upgauging will see financial pressure. Capital programs are expected to be skewed towards large hubs where host airlines will compete for passengers by updating facilities rather than capacity expansion, further increasing leverage in the near-to-medium term. For some small and medium airports with stagnant demand, capital projects will be deferred to provide some financial relief.

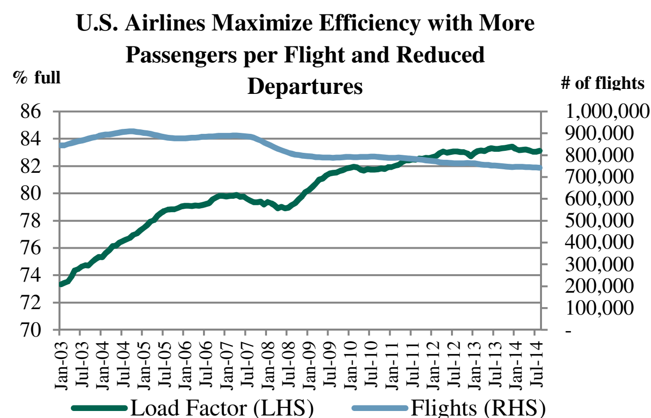
Sector Resiliency - Resilient: Passenger traffic and revenue generation is volatile and largely influenced by domestic and global business, airline sector, and oil prices. Nevertheless, the sector derives its strength from its essentiality of service, high barriers to entry, long-term airline agreements that allow full cost recovery, non-airline revenue (concessions, parking, car rental) that reduces airline-revenue concentration risk, and flexible capital programs that can easily defer non-essential projects. At the median, liquidity levels are above peak.

U.S. Airport Debt Grows as Passenger Traffic Rebounds



Source: FAA

U.S. Airlines Maximize Efficiency with More Passengers per Flight and Reduced Departures



Source: U.S. Department of Transportation

Larger Hubs Outperform in Passenger Enplanement Growth

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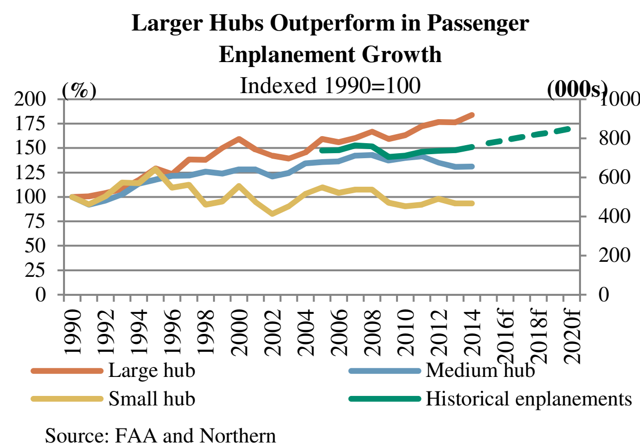


Source: FAA and Northern

What we like about the sector

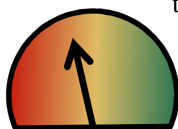
- **Mature airport hub** opportunity for organic growth due to proximity to major business centers
- **Demand for travel** driven by economic growth and low oil prices. FAA forecasts 2% growth in passenger traffic in 2016
- **Additional seating capacity** by replacement of smaller aircraft with larger ones at major hubs

Risks

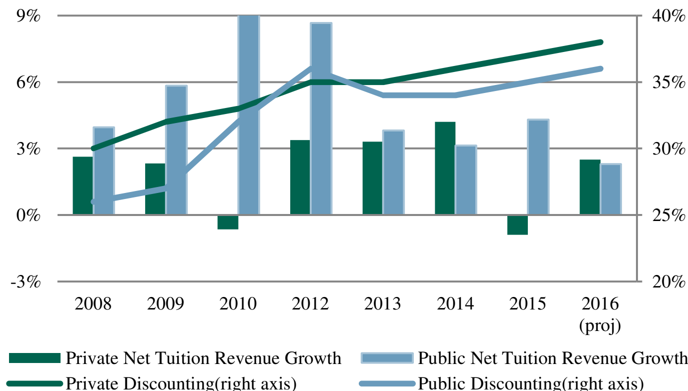
- **Medium/small hub** heightened exposure to airlines' service realignment and capacity reductions. Weaker service areas vulnerable to stagnant traffic growth
- Airline consolidation that resulted in elevated carrier **concentration** at most airports
- Recovering territories and rising demand will drive the need for **capital projects**

HIGHER EDUCATION

Sector Outlook: The outlook for higher education remains challenged in 2016. Demographic weakness, particularly in the Midwest and Northeastern states will create greater competition for a smaller number of students entering college. This combined with continued tuition price sensitivity and the demand for internally funded scholarships will again limit net tuition revenue growth; the largest source of revenue for the sector. According to Moody's annual survey, 30% private colleges and universities and 20% of publics expect negative growth in net tuition in 2016 with another 28% of privates and 34% of publics expecting weak growth below 3%. Smaller, high-cost, niche schools across the sector are likely to experience relatively greater stress in the next year given more narrow markets and greater consumer price-value consideration.



Median Net Tuition Revenue Growth Slows as Discouting (financial aid and scholorships) Continues to Grow

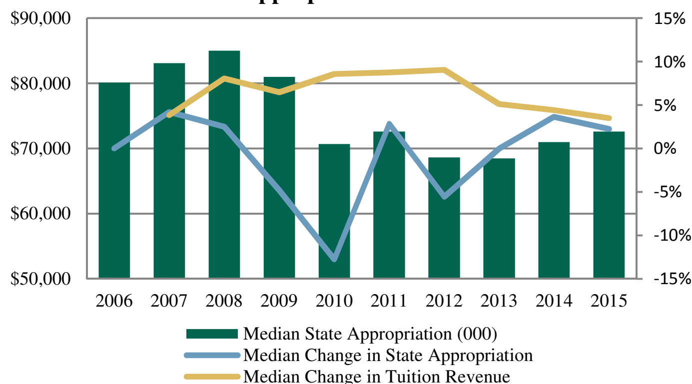


Source: Northern Trust

Federal research support for universities will increase modestly based on research funding proposals likely in the range of 3%. Endowment returns may underperform in fiscal 2016, marginally impacting next year's endowment draws, though most schools enjoy endowments now above pre-recession peaks.

For publics, state support will grow at a modest median of about 3% with total support still well below the pre-recession peak and outsized pressure for some state publics (i.e. Illinois and Louisiana). We expect credit pressure to be greater for smaller regional schools. We expect larger urban schools or flagships to fare better given greater demand, greater diversity of revenue and economies of scale.

Tuition Revenue Growth Continues to Exceed State Appropriation Growth



Source: Northern Trust

Sector Resiliency – Resilient: While sector challenges persist, we view investment grade quality colleges and universities as well positioned to withstand a material level of general economic volatility. Much of this strength is due to the sector's relatively affordable fixed cost burden, ability to resize operations and staff to some extent, generally good cash and reserve levels, limited pension burdens, potential for extraordinary endowment support, and the relatively inelastic demand for education. Importantly, the median cash and investment position of universities and colleges exceeds pre-recession peak. Diversity of revenues will prove helpful in a downturn. Small, niche schools are considerably less resilient.

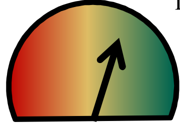
What we like about the sector:

- **Inelasticity of demand** for education can protect much of the sector in a downturn. Most often, weaker tier schools will bear the brunt of a decline in demand, with most investment grade issuers maintaining sufficient demand
- Private higher education offers **diversification of risks** because, unlike most of the market, this subsector has no exposure to state and local credit health and very limited pension burdens
- Many highly rated public and private entities have strong **diversity of revenues** that limit impacts from a single stressed revenue source and contribute to the resiliency of the sector

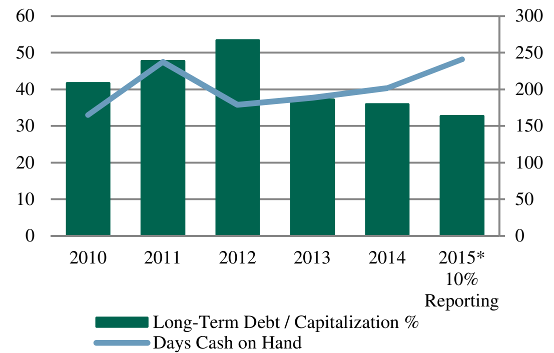
Risks

- Weak **demographics** (college age population) and tuition **price sensitivity** still impact much of the sector, limiting revenue growth for those highly reliant on this line item and requiring diligent line item controls.
- Public higher education continues to see significantly **lower support from states** compared to pre-recession levels.
- Potential for changes **federal policy** around research funding, Pell grants, student loans, and tax exemption.

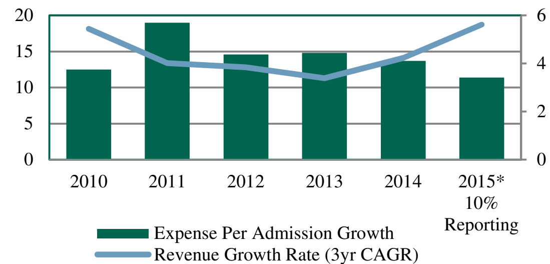
HOSPITALS



Sector Outlook: The short-term outlook for the hospital sector is improving. Not-for-profit hospitals are positively impacted by the Affordable Care Act (ACA) through a reduction of unpaid bills in states that expanded Medicaid. In addition, the sector is benefiting from a modest decline in leverage and rising unrestricted cash and investments given revenue growth. The Center for Medicare/Medicaid Studies estimates that the share of uncompensated care for hospitals will be reduced by $56 billion through 2020, a continuing credit positive for hospitals. Hospital consolidation has generated economies of scale and spurred technology advancement in the sector with resulting efficiencies that will continue to generate savings and improve effectiveness in 2016.



Source: Northern Trust



Source: Northern Trust

The sector remains in a long-term transition and is not without large challenges in the coming years. Hospitals are preparing for the increasing role of the patient as consumer by offering extended hours, team-based care, on-line communication with health professionals, and revamping antiquated billing systems. Hospitals have been slow to introduce new technology, compared to other industries, that makes the healthcare experience more consumer friendly. In order to comply with the ACA requirements, hospitals are in the process of transitioning from the fee-for-service model to a value-based model. Value-based care touches upon three areas: cost, quality and outcomes. The ultimate goal is to provide better quality and outcomes for the patient at a lower cost. If effectively carried out, the long-term outlook for the sector is bright. Currently, however, healthcare costs continue to rise above inflation and greater out-of-pocket costs in the form of co-pays and very high deductibles may slow or even reverse the current trend of lower bad debts for hospitals over the longer term. Quickly rising premium costs and required tax support for public exchanges and Medicaid expansion will continue to face political backlash, and legal challenges still threaten aspects of the ACA. Repealing or significantly changing the ACA is a possibility under new federal leadership.

Sector Resiliency – Reduced Resilience: The hospital sector maintains a lower level of resiliency compared to other municipal sectors. Despite higher sector liquidity, expanded Medicaid, and subsidized premiums under the ACA, hospitals remain vulnerable. This vulnerability is largely tied to increased reliance on government payers in excess of 50% of revenues for most hospitals. A challenged outlook and resiliency score for the state sector will flow down to hospitals in a recession environment. Additionally, downturn will lead to deferred elective procedures and uptick in uncollectables given weakened income and rising deductibles; all of which will impact operating results. Hospitals have become more operationally lean following the last recession and may face increased challenges in finding material additional expense savings.

What we like about the sector

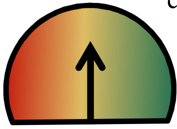
- Hospitals located in **states that expanded Medicaid** will continue to benefit from an increasing number of previously un-insured patients.
- The **trend of hospital mergers** will enhance the credit quality of lower rated partners and improve hospitals' bargaining power with insurers and suppliers
- **Quality of care should improve** over time as hospitals face fines for recurring procedures and readmissions

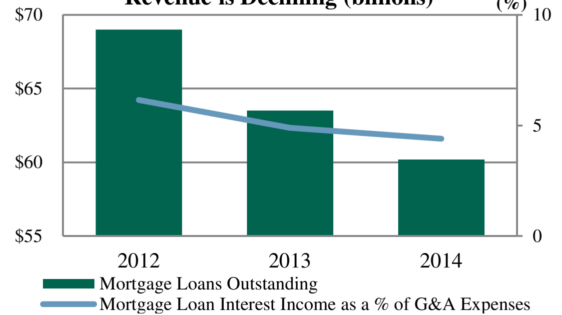
Risks

- Twenty **states opted out of Medicaid** expansion – not benefiting from expanded reimbursement.
- Double-digit **increases in co-payments and deductibles**, particularly on Health Insurance Exchanges, raise the potential for an increasing number of uncollectable accounts
- Nearly ten million **uninsured** have chosen to pay a fine rather than purchase health insurance that they don't want or cannot afford insurance.
- Changes in healthcare policy

HOUSING

Sector Outlook: Modest growth in the state housing sector should come with rising interest rates, particularly as the gap between high-grade bond prices and traditional mortgage rates widens prompting loan origination growth. Our expectation is for rates to increase in 2016 and millennials to gradually increase the rate of home purchases as the general economy improves. We expect loan origination to increase, though likely not enough to substantially improve loan portfolio profitability for the year. Profitability may also outperform somewhat should investment earnings surprise to the upside. Foreclosure rates are expected to continue to drop into 2016 as home price appreciation and employment expansion continue to take hold. Longer-term, state housing agencies are poised for growth as asset-to-debt ratios have increased and post-recession-era debt service costs remain lower than future interest costs.





Source: Moody's Investor Service

Sector Resiliency – Resilient: Loan portfolios tend to be conservative with a high level of insurance and therefore able to withstand a considerable level of housing market volatility. However, profitability could be challenged in a near-term downturn scenario as agencies emerge from a period of low loan origination and shrinking balance sheets. Persistence of very low interest rates or near term investment losses will also pressure profitability.

What we like about the sector:

- Conservative loan structures
- Increasing overcollateralization

Risks

- Material level of non-traditional loans
- Low insurance protections

TOLLS & TRANSIT

Sector Outlook: We expect continued healthy momentum in the toll sector - largely driven by sustained low fuel prices and a recovering national economy. Overall activity growth will likely be moderate at about 3% with revenues likely up closer to 5% as toll rates increase. Mass transit has rebounded from the Great Recession. New York MTA and San Francisco's Bay Area Rapid Transit (BART) are experiencing ever-increasing levels of ridership. Overall, the current trends in mass transit are expected to continue owing to urban congestion, the ramping up congestion pricing and the overall state of improved mass transit system. Debt service coverage should be at least stable for fare driven revenue bonds though infrastructure demands for the systems persist. Transit entities are typically not self-supporting with additional local sales tax support or similar sources of revenue dedicated to debt service. Across the country, we expect supportive revenue streams to be stable to increasing.

Source: American Public Transportation Association

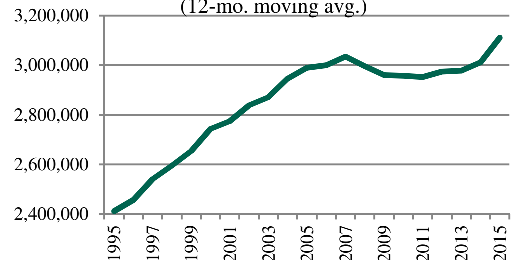
Sector Resiliency – More Resilient: Essentiality and a high level of liquidity give toll roads a high level of resiliency. Median days cash on hand for the toll road sector is 663 days, the highest among all tax-exempt sectors. While the last recession caused a dip in toll usage, the change was manageable. As with roll roads, mass transit enjoys a certain level of inelasticity. Additionally, the sector can have the backing of state and local governments as well as the ability to independently raise rates.

What we like about the sector

- Overall essentiality and resilience
- Independent rate setting power
- Lack of government interference

Risks

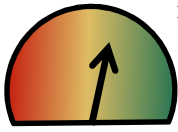
- Poor quality of traffic and ridership projects
- Public private partnerships with equity participation. This structure forces excess risk onto the bondholders



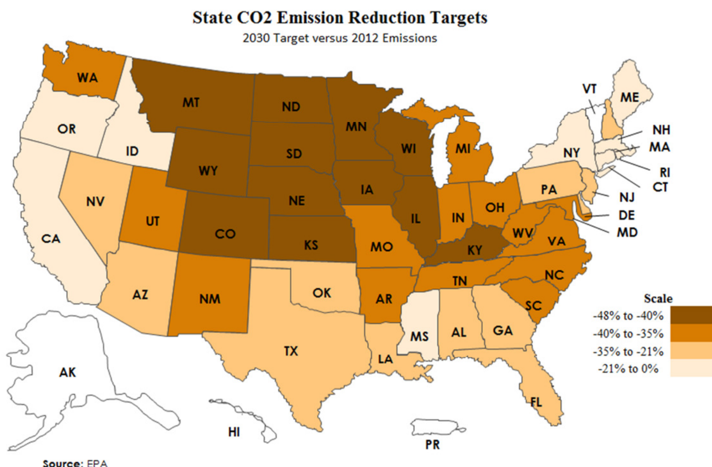
Source: Department of Transportation , Federal Highway Administration

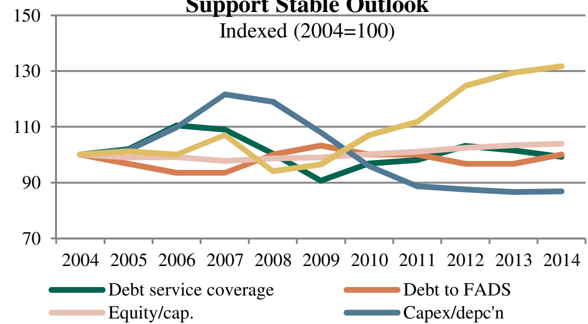
PUBLIC POWER

Sector Outlook: The sector has broadly recovered as key indicators point to a higher degree of stability given little fluctuation in financial metrics over the last 3 years. Observations point to a cycle of lower capital spending, rising liquidity, and stable leverage and debt service coverage ratios. City recovery and rising assessed values have also eased the pressure on utilities to support local governments through transfers and inter-fund borrowing. Weaker cities with large industrial presence and below median demographic indicators will continue to be pressured, as the benefits from the economic recovery have not been evenly felt across the country. The environmental discourse in this sector has recently shifted to carbon emission reductions with the EPA's final ruling on its Clean Power Plan. The plan will serve as a long-term strategy to cut carbon pollution from power plants and displace capital towards the development of more efficient and cleaner fossil fuel generation and expansion of zero-emitting capacity. The rule includes state interim and final targets to reach by 2022-2039 and 2030, respectively. In developing its plan, each state has the flexibility to select its own measures to achieve these targets. Plans are required to be submitted to the EPA by September 2016, at the latest by 2018. We believe that the impact for this outlook period will be non-material as compliance only starts in 2022. The cost of EPA compliance on credit quality will depend on each utility's implementation of its plan, capacity mix, and load demand. Utilities that own state-of-the-art coal plants, renewable resources, and efficient gas-fired generation will see a much smaller cost of compliance than those that are heavily dependent on legacy units. Issuance will certainly increase if demand warrants capacity replacement, but there will be at the very least some decommissioning and stranded costs to absorb throughout the process.

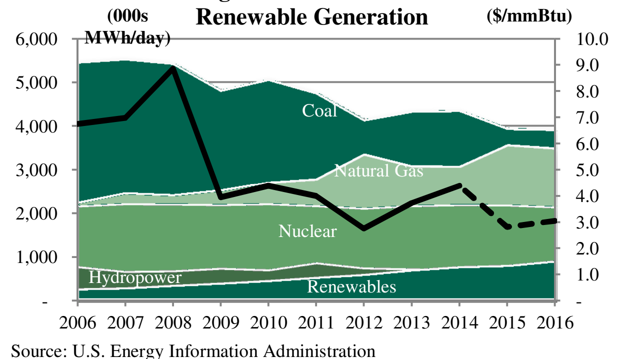


Sector Resiliency - More resilient: This sector derives its strength and stability from its essentiality to users, very low price elasticity of demand, the notion that municipal utilities benefit from their position as a natural monopoly serving their own service area, the large degree of autonomy that management has in setting rates sufficient to meet operating and capital expenses, and the reliable and to a certain extent the predictable cash flow generation.

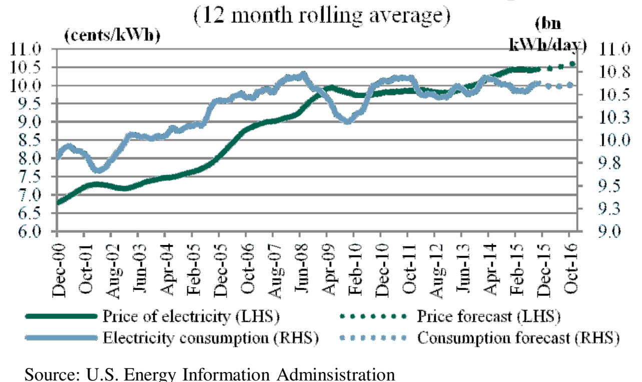




Source: Northern Trust



Source: U.S. Energy Information Administration



Source: U.S. Energy Information Adminsistration

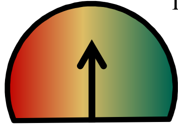
What we like about the sector

- Core **essential** service with very low price elasticity
- **Non-rate regulated** sector with capacity for rate growth

Risks

- **EPA** carbon emission rule favoring more costly generation
- **Slower energy sales growth** anticipated
- Potential **for rising natural gas prices**
- Cautious of reliance on coal production given changing regulations

WATER AND SEWER



Sector Outlook: The stable outlook is supported by expectations for continued strength in key median metrics like debt service coverage and liquidity. Stability is supported largely by rate increases and general constancy in water sales. California is an outlier from this outlook due to declining revenue driven by general conservation efforts and the persistent drought. Droughts and water supply pressure have always been a management consideration mitigating credit concerns as the majority of systems maintain sufficient water supplies. However most recently, systems in California are expecting modest to severe revenue underperformance due to better than anticipated conservation results. Most entities are implementing permanent or temporary rate increases to fill gaps in the coming years, but many will draw down on cash reserves in the current year – weakening the credit profile of impacted issuers. A strong El Nino may bring some relief to California this year, but will not cure the need for long-term supply solutions.

Longer-term, the prime challenge is the mismatch between fixed costs and falling water consumption across the nation and the need for additional capital investments to upgrade system infrastructure. Favorably, the ongoing economic recovery diminishes the likelihood for utilities to support municipalities. Currently, payment transfers are generally not existent across utilities, a positive for the sector.

Sector Resiliency – More Resilient: This sector derives its strength from the essential service provided to users, monopolistic business nature and very high barriers to entry. Consumer low price sensitivity coupled with local independent ratemaking authority and flexibility, further underpin the sector's continued strong fundamentals despite some of the existing challenges related to environmental regulation and water supply.

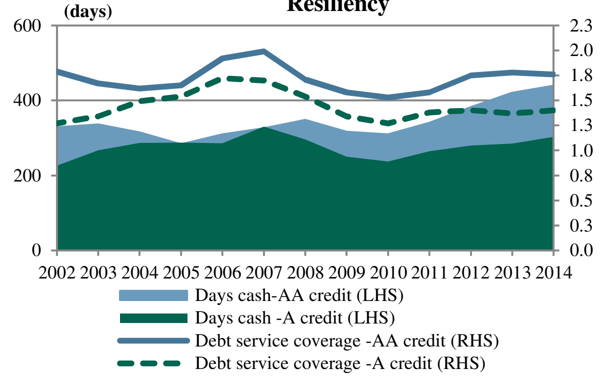
What we like about the sector

- Natural **monopoly** and high barriers to entry
- **Decoupling of revenues** from volumetric sales to offset growing conservation

Risks

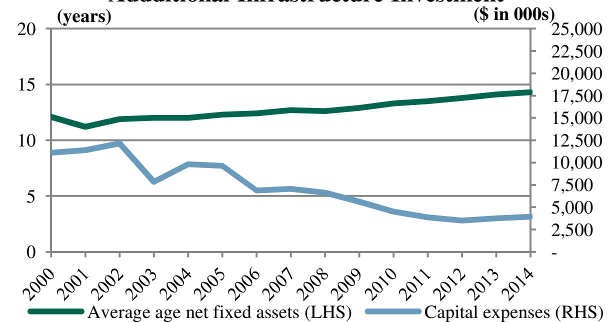
- Drought ridden areas subject to **conservation** order and resulting revenue declines
- Systems associated with or vulnerable to credit **weak local governments**
- Burdensome EPA mandates and ageing infrastructure requires **expensive capital plans** for some

Sustained Liquidity and Cash Flow Metrics Support Stable Outlook and Strong Resiliency



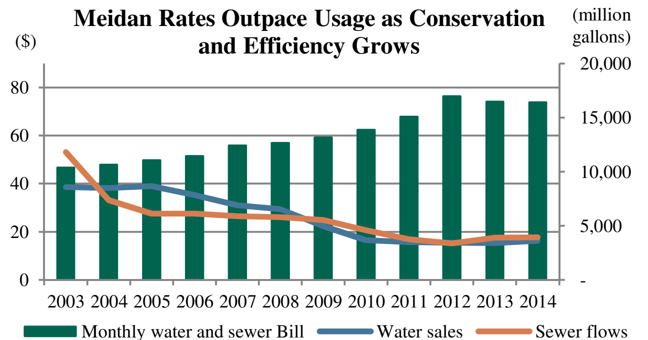
Source: The Northern Trust

Capital Metrics Indicate Need for Addditional Infrastructure Investment

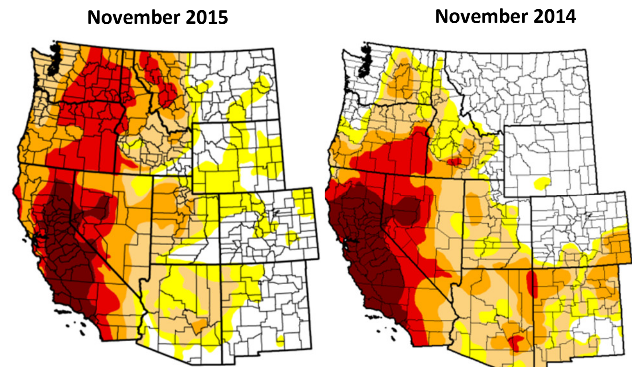


Source: The Northern Trust

Meidan Rates Outpace Usage as Conservation and Efficiency Grows



Source: The Northern Trust



Source: U.S. Drought Monitor

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