Municipal bonds

Pensions on our mind

Thomas McLoughlin, analyst, UBS FS
thomas.mcloughlin@ubs.com, +1 212 713 3914

Kristin Stephens, analyst, UBS FS
kristin.stephens@ubs.com, +1 212 713 9854

- This report, extracted from our more comprehensive *America's Cities: Waiting for the rebound* publication (24 August 2012) discusses the increasing financial burden on state and local governments posed by escalating public pension liabilities.
- Annual required pension contributions have increased for state and local governments as benefits expanded, longevity rose, and investment returns declined. Numerous assumptions are used in the calculation of a defined benefit pension liability, with significant variation on a plan-by-plan basis.
- While new accounting standards seek to enhance comparability across pension plans, one assumption - the discount rate - has received much attention. As most state and local governments continue to apply a high discount rate to their employee pension plans, the forecast rate of return on investments has become increasingly unrealistic in today's markets, potentially understating the size of outstanding liabilities.
- Pension reform is underway across the US but progress has been slow and many of the hardest decisions have been deferred.

"People only accept change in necessity and see necessity only in crisis."
Jean Monnet (1888-1979)

The financial burden created by escalating public pension liabilities in an era of diminishing resources has received widespread media attention since we published our last report on the subject (*Exchange*, 2 May 2011). We concluded then that unfunded pension liabilities represented a serious financial challenge. We also expressed optimism regarding the willingness of state and local governments to undertake necessary reforms.

Since then, while some governments have modified their plans over the strenuous objections of public employee unions, progress has been slower than anticipated. The Pew Center on the States recently updated its analysis of each state government's unfunded pension liability and the results were discouraging. With few exceptions, state and local governments have lost ground in terms of setting aside sufficient assets to cover long-term liabilities, which have escalated in the wake of economic recession and deteriorating investment returns.

This report has been prepared by UBS Financial Services Inc. (UBS FS). Please see important disclaimers and disclosures that begin on page 10.

Escalating pension liabilities

The degree to which an unfunded pension liability contributes to a financial crisis will vary from city to city. In most cases, the liability is increasingly burdensome but still manageable. In others, economic recession has exposed structural budget deficits that threaten to undermine the willingness and ability of general-purpose local governments to satisfy their legal obligations.

Pension funding is problematic enough for most state and local governments. Very few can make the annually required contribution towards pension obligations while simultaneously reserving cash for future post-employment medical benefits. According to the Pew Center on the States, 17 state governments have set aside no money whatsoever for the payment of post-employment health care coverage. These states have already resorted to a pay-as-you-go model, a policy that will become increasingly untenable over time. Only seven states have funded at least 25% of the estimated long-term liability associated with post employment benefits other than pensions.[1]

However, unlike pension obligations, which are protected against diminution to one degree or another, the provision of other post-employment benefits may be adjusted in response to budget constraints. Such adjustments are often politically difficult for elected officials to implement but there are fewer legal impediments to do so.[2] We therefore will focus our attention in this report on pension liabilities, a sufficiently complex subject to warrant individual attention.

Last bastion of defined benefit plans

According to the Government Accountability Office, there are over 3,400 state and local pension systems in the US with 27 million active and retired participants. The vast majority of these individuals – 24 million - participate in a state-administered plan even though a local government may be the employer of record. When a local government employee participates in a state administered plan, the local government (rather than the state) is the party responsible for making the employer's share of

Defined benefit plans guarantee public employees a permanent monthly income upon retirement. The amount of the benefit depends on a variety of factors but the most common are the number of years of service and the highest salary received by that person while employed. Most defined benefit plans provide substantially better retirement benefits after certain milestones are reached (such as 20 or 25 years of service). The sponsoring government or the public employee retirement system administrator makes the investment decisions and diffuses the risk of specific investments across a large group of individuals. Once common to private industry, these types of retirement programs have largely given way to defined contribution plans.

Defined contribution plans, by contrast, provide a benefit wholly dependent on the amount of assets accumulated by the employee over time. The employee's contribution is made from salary deductions, usually on a pre-tax basis. Matching contributions made by the employer are subject to a prescribed limit. These types of plans are similar to the plans currently offered by most large private sector employers. The individual employee is most often responsible for the investment decisions and the monthly benefit in retirement depends on the amount of the original contribution and resulting investment performance.

SOURCE: UBS WMR

contributions to the retirement program. These annually required contributions have increased over time as employee retirement benefits have expanded and longevity has risen. Declining investment returns have also contributed to a rise in the amount of the contribution due to the pension fund from the state or local government employer.

Public sector pension plans are notable for the high proportion of employees who enjoy a defined benefit payment upon retirement. Unlike most employers in the private sector, who have long since made the transition to defined contribution plans, public sector employers are much more likely to provide a guaranteed monthly check to their workers upon retirement. Approximately 78 percent of state and local employees participated in defined benefit plans in 2011, compared with only 18 percent of private sector employees.[3] Please refer to the sidebar on the previous page for definitions of defined benefit and defined contribution plans.

A **net pension liability** is the difference between the total pension liability (the present value of projected benefit payments to employees based on their past service) and the assets (mostly investments reported at fair value) set aside in a trust and restricted to paying benefits to current employees, retirees, and their beneficiaries.

Government Accounting Standards Board

Funding ratios rely upon assumptions

The calculation of a defined benefit pension liability relies upon numerous suppositions and is therefore inexact. These assumptions are approved by each pension plan's governing body and subsequently applied by a team of actuaries to estimate the amount of cash necessary to satisfy the pension plan's payment liabilities over time.

An **actuary** is a business professional who analyzes the financial consequences of risk. Actuaries use mathematics, statistics and financial theory to study uncertain future events, especially those of concern to insurance and pension programs.

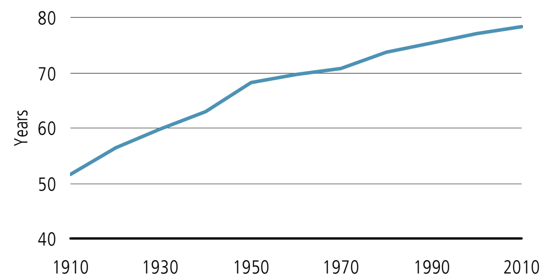
Society of Actuaries

Demographic assumptions begin with the projected life expectancy of the employee at retirement. All else being equal, the longer an individual lives after retiring from public service, the greater the liability to the government responsible for the pension payment. The actuary responsible for calculating a government's unfunded liability also must estimate the average duration of employment for government employees within a similar class or compensation level. An individual's monthly benefit upon retirement is tied to his or her annual compensation and generally increases commensurate with the number of years of service.

Economic assumptions are equally important to the calculation of a government's future pension liability. The first and arguably most important economic assumption is the "discount rate", or the rate used to discount projected

benefit payments to their present value. Public pension funds often profess to discount their future pension liabilities at the rate they expect to earn over time on invested assets. In other words, when a government uses a higher discount rate, they are explicitly forecasting higher returns on their invested assets, thereby reducing the amount of cash they must contribute today. All else being equal, the use of a higher discount rate will result in lower current contributions by the government employer. In an environment in which budgets are constrained, state and local governments have a vested short-term interest in assuming that their rate of return will remain high.

Fig. 1: US Historical Total Life Expectancy at Birth, 1910-2010



Source: US Census, National Center for Health Statistics & US Senate

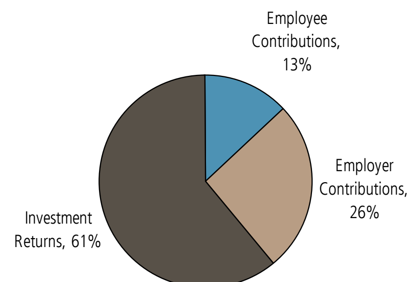
Higher pension costs down the road

1. *An aging population*

As Fig. 1 illustrates, life expectancy has increased markedly in the United States. According to the Centers for Disease Control, the average American life span increased by more than 30 years during the 20th century.[4] The aging of America inevitably leads to a situation where it is no longer uncommon for individuals to spend more years in retirement than they did "on the job." Life expectancy from birth in the US increased by another 4.5 years since 1980 alone - from 74.3 to 78.8.[5]

An increasing proportion of the US population is over 65 years of age due to higher life expectancies and a decline in the birth rate in the wake of the baby boom. According to the Urban Institute, the speed with which the baby dearth followed the baby boom will cause the ratio of workers to retirees to fall rapidly through 2030, from slightly over 3 to just 2.[6] The implications for defined benefit plans are self-evident. In the absence of outsized investment returns, pension plans will require higher contributions from fewer employees and from their employers. Net pension liabilities will increase while fewer workers pay into the system.

Fig. 2: Public Pension Sources of Revenue, 1982-2010



Source: U.S. Census Bureau, NASRA Issue Brief, Public Pension Plan Investment Returns, July 2012

2. *Insufficient employer contributions*

Public pension programs typically rely upon three source of revenue to generate income. (See Fig. 2.) The largest component is the investment return from existing assets. Weak performance by asset managers, or a secular decline across different markets, will have a direct impact on funding ratios. The impact can be smoothed to reflect market volatility, of course, but an extended period of

poor investment performance will trigger a call for revenue from the remaining two funding sources. These two sources of revenue, employer and employee contributions, have increased over time but not at a rate commensurate with liabilities.

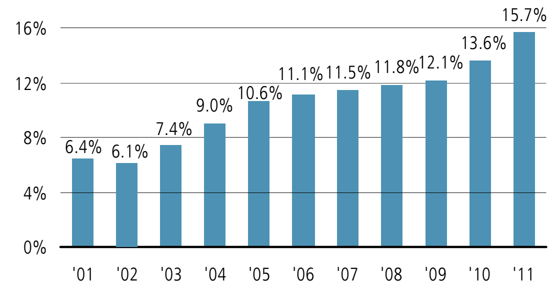
Public sector employers are obliged to make annually required contributions (ARCs) to defined benefit pension plans to satisfy their obligations under collective bargaining agreements. The ARC has increased significantly for most state and local governments in the wake of the economic recession and financial crisis. According to the Center for Retirement Research, the ARC as a percent of payroll for the largest pension systems has increased from 6.1% of payroll to an estimated 15.7% in 2011.[7] The ARC payment is also countercyclical, rising just as governmental tax revenues stagnate. (See Fig. 3.)

There are few penalties for delinquency. Not surprisingly, contribution deferrals increase during a recession. Failure to make timely contributions only compounds the problem by denying new assets to fund managers. (See Figs. 4 and 5.) The State of New Jersey had a fully-funded pension plan in 2002 but repeatedly deferred or reduced its contributions in subsequent years. According to the Pew Center on the States, the funding gap has grown to USD 46 billion after the Garden State failed to make 60 percent of its contributions in a timely manner.[8]

3. *Unrealistic investment assumptions*

State and local governments persist in forecasting very high investment returns for their employee pension plans. (See Fig. 6.) Proponents of high discount rates often defend their use by citing historical performance. Indeed, the average investment returns for the largest public pension plans have exceeded 8% over the past 25 years. Of course, the circumstances in which those returns were achieved were – to say the least – different than they are today. The median public pension annualized investment return over ten years is under 6%.(See Fig. 7.) We have borne witness to a secular decline in fixed income yields over the past three decades, increasing the total return on existing fixed income portfolios but presenting a conundrum for pension fund managers reinvesting their gains in the current market.

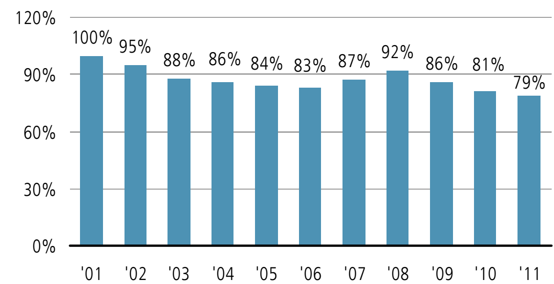
Fig. 3: ARC as a Percent of Payroll



Note: 2011 is an estimate.

Source: Public Plan Database, 2001-2010. Center for Retirement Research, Boston College

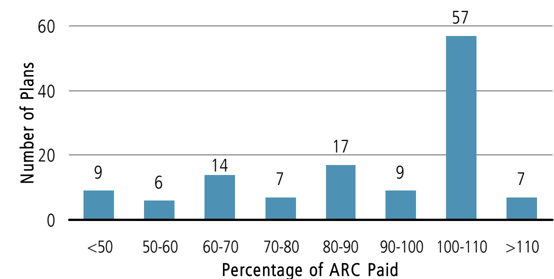
Fig. 4: Percent of ARC Paid



Note: 2011 is an estimate.

Source: Public Plan Database, 2001-2010. Center for Retirement Research, Boston College

Fig. 5: Distribution of Percentage of ARC Paid for Large Plans, Fiscal Yr 2010



Source: US Government Accountability Office. "State & Local Government Pension Plans- Economic Downturn Spurs Efforts to Address Costs & Sustainability," Figure 6, March 2012.

Proponents of higher discount rates also cite the need for stability and predictability in the annual pension funding costs for state and local governments. If discount rates were changed frequently to correspond with current market conditions, so the argument goes, the annually required contribution would be highly volatile from year to year. In low interest rate environments, the higher current contributions also would impose a disproportionate burden on current workers who may end up contributing more heavily than is necessary to satisfy future liability payments.

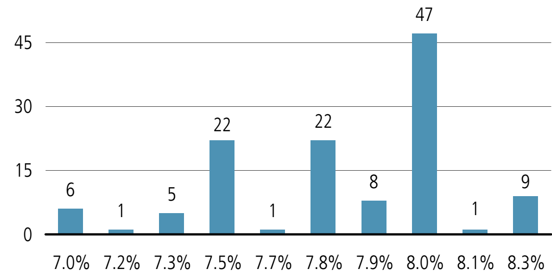
These arguments are not particularly persuasive. Pension obligations are legally binding obligations on all states and their local governments and may not be reduced because of poor investment performance. The ironclad guarantee provided to beneficiaries would reasonably require a correspondingly high degree of restraint in terms of investment assumptions. The use of a 7.50% discount rate in an environment where the 10-year US Treasury Note is yielding 1.70% fails that test. The use of a high discount rate also increases the likelihood that the next generation will shoulder a disproportionate share of the burden of paying benefits to retired workers. The inter-generational equity argument cuts both ways.

Of course, from a practical perspective, any reduction in the assumed investment return will have an immediate impact on size of the employer contribution. According to a study by the Center for Retirement Research, the aggregate actuarial liability for 126 of the largest pension plans in the country was approximately USD 3.6 trillion. To the extent the discount rate was reduced to 5% across all 126 plans, the liability would jump to USD 5.4 trillion.[9]

4. *Deferred recognition of benefit costs*

Governments typically amortize their contributions over time, and historically have done so over very long periods of time. Shorter amortization periods increase the size of the annually required contribution from the employer of record. Recent changes to accounting rules are expected to reduce the degree of discretion in this area. The Government Accounting Standards Board (GASB) has adopted a new rule that requires employers to use a technique called the "entry age actuarial cost method" to allocate the present value of liabilities for which they are

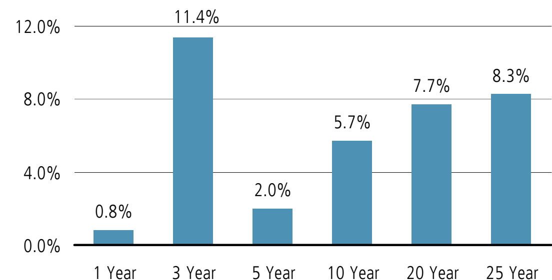
Fig. 6: Distribution of Investment Return Assumptions



Source: Public Fund Survey, as reported in NASRA Issue Brief, Public Pension Plan Investment Returns, July 2012

Fig. 7: U.S. Median Annualized Investment Return

For the period ending 31 December 2011



Source: Callan Associates, Inc., as reported in NASRA Issue Brief, Public Pension Plan Investment Returns, July 2012

"The actuary is supposedly going to lower the assumed reinvestment rate from an absolutely hysterical, laughable 8 percent to a totally indefensible 7 or 7.5 percent…"

NYC Mayor Michael Bloomberg
In *The New York Times,* 27 May 2012

responsible. In plain language, public sector employers must soon recognize their liabilities more promptly.[10]

As GASB noted in its release accompanying adoption of the new rules, the new format will "give the appearance that a government is financially weaker than it was previously" even though nothing fundamental has changed from year-to-year. For example, New York City disclosed in its comprehensive annual financial report that the funded status of its retirement plans at the end of Fiscal Year 2009 would be roughly 70% based on the entry age normal method – a striking reduction from the fully funded status reported under the current funding method. At a minimum, GASB's new standards will place pension liabilities in the same general category as long term debt. Ideally, this will also force more governments to recognize the cost of expanding employee benefits. In light of events in Stockton and San Bernardino, the transparency is welcome.

Reforms underway but progress is slow

According to Governor Pat Quinn of Illinois, the Prairie State's pension contributions will rise to over USD 6 billion in the next few years. Absent any reform, the state will spend more on pensions than on education by fiscal year 2016. While a dysfunctional Illinois legislature appears incapable of reaching a political consensus, many other states have initiated reforms. Even the California legislature, in another state seemingly unable to come to grips with its increasing liabilities, passed a pension reform bill at the end of August which the Governor subsequently enacted into law earlier this month. We suspect the need to ask voters for an income tax increase (on the November ballot) may have had something to do with the decision to advance a reform package.

"If we do nothing, these (pension) funds are headed towards insolvency…"

Chicago CFO Lois Scott
Speech to the City Club of Chicago
The Bond Buyer, 27 June 2012

The Civic Federation of Chicago added its voice to the chorus clamoring for pension reform when it released its own report on the status of ten local government employee pension funds in Cook County. Federation President Laurence Msall cited the deteriorating financial position of Chicago area pension funds as a threat to both the "retirement security of public employees and the financial viability of local governments."[11] The degree of concern evinced by the Civic Federation is not unique.

State and local governments are implementing reforms, albeit at a slower pace than is warranted. (See Fig. 8) The Center for Retirement Research (CRR) suggests that four reforms have been widely adopted. First, many governments have suspended cost of living adjustments (COLAs) for both current and future beneficiaries. Based on trial court decisions in both Colorado and Minnesota, COLAs appear to be less well-protected than basic pension benefits. These increases often are based on independent indices such as the consumer price index, but just as frequently are granted in an ad hoc manner.

Second, employees are being asked to increase their own contributions to the retirement plan. Twenty states have raised the contribution requirement for both current and future beneficiaries.[12] Third, 31 states have changed the rules for new hires. New employees by and large are accruing fewer benefits and must complete more years of service. The use of new benefit "tiers" is reasonably common. New York State, for example, has six tiers of benefits depending upon when the beneficiary was hired.

Finally, a handful of states have adopted a hybrid plan that modifies the existing pension by introducing a defined contribution component. Utah and Georgia introduced such a plan for new employees. The introduction of such a program is a positive step but one where the most significant financial benefits will be recognized only in future years. Rhode Island adopted a more comprehensive plan last year for state employees but its applicability to existing pension plan participants triggered litigation that is likely to be time consuming.

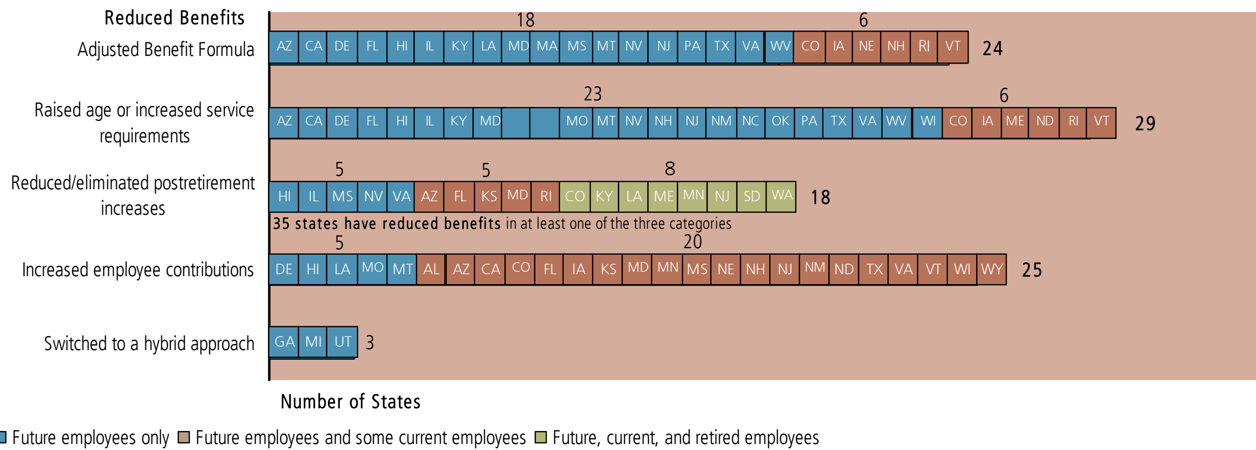
The rating agencies are examining pension liabilities much more closely than in the past. For example, Moody's began using consolidated debt and pension metrics in their state government credit analysis in 2011.[13] The rating agency has subsequently alerted investors that its proposed adjustments to pension data that are expected to be forthcoming later this year may trigger rating actions for local governments with unfunded pension liabilities incompatible with their rating category. We expect more local government rating revisions on this basis in the year ahead, further increasing municipal rating volatility.

… and one budget "solution" that isn't…

State and local governments often rely upon early retirement incentives to reduce public sector payroll costs. Between 1983 and 2002, for example, the New York State Legislature approved 10 early retirement bills for state employees.[13] The practice, though widespread, often provides short-term payroll relief at the expense of a higher longer-term pension liability. The prospect of an early retirement package acts a powerful incentive for employees to delay plans to leave public service in the hope of a more generous monthly income once the package receives legislative approval.

The early retirement incentive also provides additional service credits to employees with long service tenures where an extra year or two of employment can make an appreciable difference in the subsequent defined monthly benefit. The Empire Center for New York State Policy estimates that New York's 2002 incentive alone attracted more than 5,500 participants and added USD 249 million in pension costs. In theory, payroll savings might offset the longer-term liabilities associated with an early retirement program, provided that staffing levels were reduced substantially during the period in which the higher pension costs were completely amortized. There is little evidence that this has occurred over a long enough period to matter.

Fig. 8: Notable Changes to State-Sponsored Pension Plans, January 2008- June 2011



Source: Government Accountability Office analysis of annual NCSL reports. "State & Local Government Pension Plans," Page 19, March 2012.

---

[1] The Widening Gap Update, Pew Center on the States, June 2012.
[2] The California Supreme Court may have thrown this supposition into question on 21 November 2011 when it responded to a request from the US Court of Appeals for the Ninth Circuit. The federal appellate court asked the state Supreme Court whether "as a matter of California law, a county government and its employees can form an implied contract that confers vested rights to health benefits on retired county employees." The California Supreme Court unanimously concluded that a county may be bound by an implied contract. For more information, please refer to UBS WMR's *Municipal Chart Book*, 19 December 2011.
[3] State and Local Government Pension Plans, Economic Downturn Spurs Efforts to Address Costs and Sustainability, Government Accountability Office, March 2012.
[4] George Passantino and Adam Summers, The Gathering Storm: How Government Pension Plans are Breaking the Bank and Strategies for Reform, Reason, June 2005. The authors cite the CDC Morbidity and Mortality Weekly Report.
[5] Robert Pear, "Gap in Life Expectancy Widens for the Nation," The New York Times. 23 March 2008.
[6] Rudolph Penner, Pamela Perun and Eugene Steuerle, *Legal and Institutional Impediments to Partial Retirement and Part-Time Work by Older Workers*, The Urban Institute, 20 November 2002, pg. 7. According to research produced by the Mercatus Center at George Mason University (GMU), the ratio of workers to Social Security beneficiaries declined from 41 to 4 between 1945 and 1965. The ratio is 2.9 today according to de Rugy. See Veronique de Rugy, "How Many Workers Support One Social Security Retiree?", 22 May 2012.
[7] Center for Retirement Research, "The Funding of State and Local Pensions: 2011-2015", Boston College, Number 24, May 2012.
[8] The Widening Gap: The Great Recession's Impact on State Pension and Retiree Health Care Costs, Pew Center on the States, April 2011.
[9] Center for Retirement Research, "The Funding of State and Local Pensions: 2011-2015", Boston College, Number 24, May 2012.
[10] New GASB Pension Statements to Bring about Major Improvements in Financial Reporting, Government Accounting Standard Board, June 2012.
[11] Yvette Shields, "Everyone's Talking Pensions", The Bond Buyer, 27 June 2012.
[12] Center for Retirement Research, "The Funding of State and Local Pensions: 2011-2015", Boston College, Number 24, May 2012. The GAO cites 25 states; the discrepancy is attributable to a difference in the time period covered.
[13] Adjustments to US State and Local Government Reported Pension Data, Moody's Investors Service, 2 July 2012.

Appendix

Statement of Risk

Municipal bonds: Although historical default rates are very low, all municipal bonds carry credit risk, with the degree of risk largely following the particular bond's sector. Additionally, all municipal bonds feature valuation, return, and liquidity risk. Valuation tends to follow internal and external factors, including the level of interest rates, bond ratings, supply factors, and media reporting. These can be difficult or impossible to project accurately. Also, most municipal bonds are callable and/or subject to earlier than expected redemption, which can reduce an investor's total return. Because of the large number of municipal issuers and credit structures, not all bonds can be easily or quickly sold on the open market.

	Rating Agencies			Credit Ratings
	S&P	Moody's	Fitch/IBCA	Definition
Investment Grade	AAA	Aaa	AAA	Issuers have exceptionally strong credit quality. AAA is the best credit quality.
	AA+ AA AA-	Aa1 Aa2 Aa3	AA+ AA AA-	Issuers have very strong credit quality.
	A+ A A-	A1 A2 A3	A+ A A-	Issuers have high credit quality.
	BBB+ BBB BBB-	Baa1 Baa2 Baa3	BBB+ BBB BBB-	Issuers have adequate credit quality. This is the lowest Investment Grade category.
Non-Investment Grade	BB+ BB BB-	Ba1 Ba2 Ba3	BB+ BB BB-	Issuers have weak credit quality. This is the highest Speculative Grade category.
	B+ B B-	B1 B2 B3	B+ B B-	Issuers have very weak credit quality.
	CCC+ CCC CCC-	Caa1 Caa2 Caa3	CCC+ CCC CCC-	Issuers have extremely weak credit quality.
	CC C	Ca	CC+ CC CC-	Issuers have very high risk of default.
	D	C	DDD	Obligor failed to make payment on one or more of its financial commitments. this is the lowest quality of the Speculative Grade category.

Terms and Abbreviations

Term / Abbreviation	Description / Definition	Term / Abbreviation	Description / Definition
GO	General Obligation Bond	TEY	Taxable Equivalent Yield (tax free yield divided by 100 minus the marginal tax rate)
MMD	Municipal Market Data		

Appendix

Global Disclaimer

Wealth Management Research is published by Wealth Management & Swiss Bank and Wealth Management Americas, Business Divisions of UBS AG (UBS) or an affiliate thereof. Wealth Management & Swiss Bank brands its publications as Chief Investment Office, Wealth Management Research outside the US. In certain countries UBS AG is referred to as UBS SA. This publication is for your information only and is not intended as an offer, or a solicitation of an offer, to buy or sell any investment or other specific product. The analysis contained herein does not constitute a personal recommendation or take into account the particular investment objectives, investment strategies, financial situation and needs of any specific recipient. It is based on numerous assumptions. Different assumptions could result in materially different results. We recommend that you obtain financial and/or tax advice as to the implications (including tax) of investing in the manner described or in any of the products mentioned herein. Certain services and products are subject to legal restrictions and cannot be offered worldwide on an unrestricted basis and/or may not be eligible for sale to all investors. All information and opinions expressed in this document were obtained from sources believed to be reliable and in good faith, but no representation or warranty, express or implied, is made as to its accuracy or completeness (other than disclosures relating to UBS and its affiliates). All information and opinions as well as any prices indicated are currently only as of the date of this report, and are subject to change without notice. Opinions expressed herein may differ or be contrary to those expressed by other business areas or divisions of UBS as a result of using different assumptions and/or criteria. At any time UBS AG and other companies in the UBS group (or employees thereof) may have a long or short position, or deal as principal or agent, in relevant securities or provide advisory or other services to the issuer of relevant securities or to a company connected with an issuer. Some investments may not be readily realizable since the market in the securities is illiquid and therefore valuing the investment and identifying the risk to which you are exposed may be difficult to quantify. UBS relies on information barriers to control the flow of information contained in one or more areas within UBS, into other areas, units, divisions or affiliates of UBS. Futures and options trading is considered risky. Past performance of an investment is no guarantee for its future performance. Some investments may be subject to sudden and large falls in value and on realization you may receive back less than you invested or may be required to pay more. Changes in FX rates may have an adverse effect on the price, value or income of an investment. This document may not be reproduced or copies circulated without prior authority of UBS or a subsidiary of UBS. UBS expressly prohibits the distribution and transfer of this document to third parties for any reason. UBS will not be liable for any claims or lawsuits from any third parties arising from the use or distribution of this document. This report is for distribution only under such circumstances as may be permitted by applicable law. In developing the WMR economic forecasts, WMR economists worked in collaboration with economists employed by UBS Investment Research. Forecasts and estimates are current only as of the date of this publication and may change without notice.
Distributed to US persons by UBS Financial Services Inc., a subsidiary of UBS AG. UBS Securities LLC is a subsidiary of UBS AG and an affiliate of UBS Financial Services Inc. UBS Financial Services Inc. accepts responsibility for the content of a report prepared by a non-US affiliate when it distributes reports to US persons. All transactions by a US person in the securities mentioned in this report should be effected through a US-registered broker dealer affiliated with UBS, and not through a non-US affiliate. The contents of this report have not been and will not be approved by any securities or investment authority in the United States or elsewhere.
Version as per October 2011.
© 2012. The key symbol and UBS are among the registered and unregistered trademarks of UBS. All rights reserved.