Fed’s Confusion Increases Risk of Policy Error

The prevailing economic environment has shaken the Fed’s faith in conventional interpretations of the response of economic variables to monetary policy. Fundamental questions, such as how inflation expectations impact investment and spending activity, are being re-examined in light of the prevailing sentiment of verwechslung at the Fed. The current loss of confidence increases the risk of a monetary policy mistake.

By Chris Mier, CFA | Strategist

There is a growing perception by some Fed governors that monetary policy is facing an increasingly limited range of alternatives. Should the US economy falter, the burden of macroeconomic stimulus in the future must begin to fall increasingly on fiscal policy. This emerging view is the product of the Fed’s observations that key variables monetary policy seeks to directly influence have failed to perform in ways consistent with standard models. The unemployment rate is close to, or at, the natural rate of unemployment, and yet wage inflation is only beginning to respond. Interest rates are incredibly low, and yet business investment in plant and equipment is limited. Productivity is extremely low regardless of where we are in the business cycle, potentially supporting the view that the Fed will have to contend with secular stagnation and interest rates that hover only slightly above the zero bound.

In briefly reflecting on the current limitations of monetary policy, Fed Vice Chairman Fischer recently remarked, ¹ “...the Fed has been close to being “the only game in town,” as Mohamed El-Erian and others have described it.” The Fed has indeed been the only game in town, and the sense that you get from Fischer’s speech is that the Fed has grown tired of it. The Fed has overestimated the strength of the economy, the timing and magnitude of increases in the fed funds rate, and the progress on boosting inflation for about 4 years now. Perhaps, quoting El-Erian was an acknowledgement that financial markets have had a better grip on how events would unfold than the Fed.

The very low level of productivity, reflected in three quarters of negative productivity in a row, has replaced Brexit as the new locus of angst. If these low levels of productivity are sustained, then GDP growth would be slow well into the foreseeable future. The economy would be more vulnerable to an unanticipated shock that would send growth into negative territory and require a strong monetary response. This is where the Fed gets nervous. Most of the Fed’s available tools have become shopworn. The funds rate is only one small step above zero. Forward guidance is becoming a little like your over-talkative neighbor—something that becomes more

¹ Remarks on the U.S. Economy, by Stanley Fischer, Vice Chairman of the Board of Governors of the Federal Reserve System, August 21, 2016.
Fed’s Confusion Increases Risk of Policy Error

Easily ignored with the passage of time. The three quantitative easing programs have succeeded, but one assumes that there is a limit on the Fed’s balance sheet. With more than $4.5 trillion already on the Fed’s balance sheet, how big can it get? Furthermore, the Fed has engineered a boost in auto sales, the housing market, and the stock market with the lower interest rates they have conjured from their policy initiatives, and yet the economy continues to find a way to remain stuck at around 2% growth.

These are the concerns that will keep economists from sleeping at the Jackson Hole Policy symposium, the annual Lollapalooza for Fed economists, and a select group of ultra heavyweight economists. Topics will cover whether or not maintenance of low inflation expectations in perpetuity results in behavioral indifference to small changes in inflation. In other words, in a world of apparent perpetual low-inflation, has the influence of inflation expectations on spending and investment lost its mojo? Structural stagnation should rank highly on the hit parade of topics, being given new life by the ongoing unexciting GDP data and low-productivity figures. Offloading the problem to the executive branch of government and the use of fiscal policy will gain traction. The fun has gone out of monetary policy implementation and it’s fiscal policy’s turn, anyway.

In this vein, Vice Chairman Fischer tossed out an endorsement of “some combination” of federal government unspecified activities promoting infrastructure, investment in education, coaxing out more private investment, and “more-effective” regulation as starting points for increased fiscal policy. As an aside, Fischer does not appear concerned about the amount of regulation, just its effectiveness—interesting. In addition to being less fun, monetary policy has also suffered from a loss of conviction: “Are we doomed to slow productivity growth for the foreseeable future? We don’t know.” Fischer asked and then answered. The Fed should probably figure it out though, or else more people may begin to believe that Jill Stein is right in wanting to place the Federal Reserve under the control of the Treasury.

This is an inconvenient time for the Fed to be undergoing a crisis of confidence. While the Fed is always standing at an apparent fork in the road, the current environment involves a considerable lack of progress in decreasing policy accommodation at a time when the economy is reaching something proximate to full employment. The fly in the ointment is the failure to make more progress towards the inflation target. Having the achievement of the dual mandate so out of sync presents special problems with GDP growth chronically below expectations, and with productivity in the tank for reasons Stanley Fischer is clearly uncertain of. Yet, the Fed must sort out this conundrum along with the ever-present concern that something could come along and topple the economy, leaving the Fed little room for monetary policy initiatives.

The Fed’s desperation can always be roughly calibrated by the use of the term “helicopter money”. There have been a few notable references to the use of this policy vehicle of last resort by the Fed or its surrogates recently. Helicopter money, which refers to the use of “base” money to stimulate the economy through direct transfers to the private sector, generally bypassing financial institutions, is the doomsday tool of monetary authorities. So far, it has had more relevance as a measure similar to the atomic clock, which measures how close we are to nuclear war, than as a real barometer of the condition of the economy. If long-run growth continues on its current track with low inflation stuck below 2% and interest rates suppressed by excess global liquidity; helicopter money may move out of the realm of the theoretical to the world of practical alternatives.

In the meantime, financial markets don’t like to consider the possibility that the Fed may be confused by current macroeconomic conditions. Better for the Fed to be wrong then to wander in circles in a fugue state.

If the Fed can convince the people inside the beltway that pull the fiscal policy levers to come to their aid and share some of the load, the conditions are favorable. The US budget deficit is only about 3% of GDP. Even the CBO’s updated forecast has the ratio of Debt to GDP rising from 77% to only 86%. The increase draws groans from most precincts, but the increase appears wholly manageable to me, especially given the CBO’s tendency to use high levels of interest rates relative to their nominal GDP expectations, which inflates the debt calculation. In any case, a more engaged fiscal policy with an increased sovereign debt load appears to be a better alternative to me than helicopter money.

Let’s not forget there is a national election coming up as well. If market opportunity increases with uncertainty, it appears that the opportunities have increased measurably in recent weeks.
Economic and Interest Rate Forecast — August 2016

Factors Supportive of Lower Rates
Retail sales were unexpectedly flat in July vs. 0.4% forecast, as consumers cut back on purchases of clothing and other goods.
Business investments in new equipment and buildings have been negative on a YoY basis for 2 consecutive quarters.
Durable goods orders fell 4% in June, the biggest drop since August 2014, due to weak demand for machinery and other goods.
Construction spending fell for 3 consecutive months and hit one-year low.
PPI excluding volatile food and energy components unexpectedly declined from 1.3% to 0.7% YoY in July.
Productivity declined for 3 consecutive quarters, the longest streak since 1979.

Factors Supportive of Higher Rates
Nonfarm payrolls increased 255K in July and 547K in June and July, the best stretch this year. Broad-based job gains represent a welcome sign for U.S. economy, after sluggish H1 GDP growth reading.
Wage growth, as measured by average hourly earnings, has risen to a 2.6% annual rate, outpacing inflation, while employees are working slightly longer hours, which bodes well for consumer spending.
New home sales surged 12.4% in July to the highest level since October 2007, boosted by low mortgage rates and robust job market.
Light vehicles sold at 17.77 million annual rate in July, the highest level in 8 months, despite concerns that the growth spurt is over as pent-up demand built up during the last recession is satisfied.

Figure 1: Economic and Interest Rate Forecast — August 2016

<table>
<thead>
<tr>
<th>Economic Forecasts</th>
<th>1Q’15</th>
<th>2Q’15</th>
<th>3Q’15</th>
<th>4Q’15</th>
<th>1Q’16</th>
<th>2Q’16</th>
<th>3Q’16</th>
<th>4Q’16</th>
<th>1Q’17</th>
<th>2Q’17</th>
<th>3Q’17</th>
<th>4Q’17</th>
<th>Avg’15</th>
<th>Avg’16</th>
<th>Avg’17</th>
</tr>
</thead>
<tbody>
<tr>
<td>Real GDP</td>
<td>2.0</td>
<td>2.3</td>
<td>2.2</td>
<td>2.2</td>
<td>2.2</td>
<td>2.3</td>
<td>2.4</td>
<td>2.4</td>
<td>2.1</td>
<td>2.1</td>
<td>2.0</td>
<td>2.0</td>
<td>2.0</td>
<td>2.0</td>
<td>1.9</td>
</tr>
<tr>
<td>Core PCE Price*</td>
<td>1.3</td>
<td>1.4</td>
<td>1.4</td>
<td>1.4</td>
<td>1.6</td>
<td>1.6</td>
<td>1.7</td>
<td>1.7</td>
<td>1.8</td>
<td>1.9</td>
<td>2.0</td>
<td>2.0</td>
<td>2.0</td>
<td>1.4</td>
<td>1.6</td>
</tr>
<tr>
<td>Unemployment Rate*</td>
<td>5.6</td>
<td>5.4</td>
<td>5.2</td>
<td>5.0</td>
<td>4.9</td>
<td>4.8</td>
<td>4.8</td>
<td>4.7</td>
<td>4.6</td>
<td>4.6</td>
<td>4.6</td>
<td>4.5</td>
<td>5.3</td>
<td>4.8</td>
<td>4.6</td>
</tr>
<tr>
<td>Nonfarm Payrolls</td>
<td>570</td>
<td>752</td>
<td>576</td>
<td>846</td>
<td>587</td>
<td>460</td>
<td>550</td>
<td>540</td>
<td>530</td>
<td>520</td>
<td>525</td>
<td>500</td>
<td>2,744</td>
<td>2,137</td>
<td>2,075</td>
</tr>
<tr>
<td>S&amp;P 500</td>
<td>2,064</td>
<td>2,102</td>
<td>2,027</td>
<td>2,052</td>
<td>1,951</td>
<td>2,075</td>
<td>2,173</td>
<td>2,206</td>
<td>2,239</td>
<td>2,272</td>
<td>2,306</td>
<td>2,341</td>
<td>2,061</td>
<td>2,101</td>
<td>2,190</td>
</tr>
<tr>
<td>Short-Term Interest Rates*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fed Funds Target (%)</td>
<td>0.11</td>
<td>0.13</td>
<td>0.14</td>
<td>0.16</td>
<td>0.37</td>
<td>0.37</td>
<td>0.40</td>
<td>0.45</td>
<td>0.70</td>
<td>0.90</td>
<td>1.09</td>
<td>1.15</td>
<td>0.13</td>
<td>0.40</td>
<td>0.96</td>
</tr>
<tr>
<td>3-Month LIBOR (%)</td>
<td>0.26</td>
<td>0.28</td>
<td>0.31</td>
<td>0.41</td>
<td>0.62</td>
<td>0.64</td>
<td>0.78</td>
<td>0.79</td>
<td>1.01</td>
<td>1.17</td>
<td>1.33</td>
<td>1.35</td>
<td>0.32</td>
<td>0.71</td>
<td>1.21</td>
</tr>
<tr>
<td>7-Day SIFMA (%)</td>
<td>0.02</td>
<td>0.08</td>
<td>0.03</td>
<td>0.01</td>
<td>0.08</td>
<td>0.40</td>
<td>0.55</td>
<td>0.65</td>
<td>0.75</td>
<td>0.85</td>
<td>1.10</td>
<td>1.20</td>
<td>0.03</td>
<td>0.42</td>
<td>0.98</td>
</tr>
<tr>
<td>Treasury Interest Rates*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-Year Treasury (%)</td>
<td>0.59</td>
<td>0.60</td>
<td>0.68</td>
<td>0.82</td>
<td>0.83</td>
<td>0.77</td>
<td>0.71</td>
<td>0.76</td>
<td>1.01</td>
<td>1.20</td>
<td>1.39</td>
<td>1.44</td>
<td>0.67</td>
<td>0.77</td>
<td>1.26</td>
</tr>
<tr>
<td>3-Year Treasury (%)</td>
<td>0.96</td>
<td>0.96</td>
<td>1.01</td>
<td>1.13</td>
<td>1.02</td>
<td>0.91</td>
<td>0.83</td>
<td>0.90</td>
<td>1.13</td>
<td>1.31</td>
<td>1.49</td>
<td>1.54</td>
<td>1.02</td>
<td>0.92</td>
<td>1.37</td>
</tr>
<tr>
<td>5-Year Treasury (%)</td>
<td>1.45</td>
<td>1.52</td>
<td>1.55</td>
<td>1.58</td>
<td>1.36</td>
<td>1.24</td>
<td>1.11</td>
<td>1.13</td>
<td>1.35</td>
<td>1.51</td>
<td>1.68</td>
<td>1.72</td>
<td>1.53</td>
<td>1.21</td>
<td>1.57</td>
</tr>
<tr>
<td>7-Year Treasury (%)</td>
<td>1.77</td>
<td>1.91</td>
<td>1.94</td>
<td>1.94</td>
<td>1.68</td>
<td>1.53</td>
<td>1.37</td>
<td>1.35</td>
<td>1.53</td>
<td>1.68</td>
<td>1.83</td>
<td>1.88</td>
<td>1.89</td>
<td>1.48</td>
<td>1.73</td>
</tr>
<tr>
<td>10-Year Treasury (%)</td>
<td>1.96</td>
<td>2.16</td>
<td>2.22</td>
<td>2.18</td>
<td>1.91</td>
<td>1.74</td>
<td>1.53</td>
<td>1.57</td>
<td>1.75</td>
<td>1.89</td>
<td>2.03</td>
<td>2.07</td>
<td>2.13</td>
<td>1.69</td>
<td>1.94</td>
</tr>
<tr>
<td>30-Year Treasury (%)</td>
<td>2.55</td>
<td>2.89</td>
<td>2.96</td>
<td>2.96</td>
<td>2.72</td>
<td>2.57</td>
<td>2.24</td>
<td>2.27</td>
<td>2.42</td>
<td>2.53</td>
<td>2.64</td>
<td>2.67</td>
<td>2.84</td>
<td>2.45</td>
<td>2.56</td>
</tr>
<tr>
<td>Municipal Interest Rates*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30-Year MMD (%)</td>
<td>2.77</td>
<td>3.12</td>
<td>3.15</td>
<td>3.00</td>
<td>2.76</td>
<td>2.42</td>
<td>2.10</td>
<td>2.15</td>
<td>2.29</td>
<td>2.39</td>
<td>2.50</td>
<td>2.62</td>
<td>3.01</td>
<td>2.36</td>
<td>2.45</td>
</tr>
<tr>
<td>Muni Yield Curve Slope (%)</td>
<td>2.62</td>
<td>2.89</td>
<td>2.89</td>
<td>2.67</td>
<td>2.31</td>
<td>1.85</td>
<td>1.63</td>
<td>1.50</td>
<td>1.54</td>
<td>1.54</td>
<td>1.40</td>
<td>1.42</td>
<td>2.77</td>
<td>1.82</td>
<td>1.47</td>
</tr>
</tbody>
</table>

P: Preliminary Data
* 3-month average
Market Review *Data Diffusion | ADS Index*

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

The data diffusion index is at about the same level today as it was in December 2015, while the 10-yr Treasury yield declined 72 bps. This corroborates the view that Treasury yield movements are decoupled from economic fundamentals and influenced more by monetary policy, investment flows and political developments overseas.

**Data Diffusion Index**: We calculate the Data Diffusion Index based on 30 different weekly and monthly 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).

**Figure 3 Aruoba-Diebold-Scotti Business Conditions Index (12/31/2007—8/13/2016)**

Since bottoming at -0.72 in mid-March, the ADS index has staged a remarkable recovery and is currently at +0.36. 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.
New Jersey’s Dilemma

By Rachel Barkley | Vice President

New Jersey continues to grapple with managing its infrastructure, pension and budgetary needs. The State’s Transportation Trust Fund (TTF) was created in 1984 to provide a stable and predictable funding source for transportation improvements in the state. Ironically, given its original purpose, the TTF is now suffering from a lack of funding and requires reauthorization to continue beyond the already past deadline of June 30, 2016.

At the close of fiscal 2016, Governor Christie declared a State of Emergency, ordering the shutdown of TTF projects due to severely limited resources. At the time, the TTFA was shutdown of TTF projects due to severely declared a State of Emergency, ordering the already past deadline of June 30, 2016.

The state has been struggling to increase infrastructure funding, while not increasing its tax burden to the point of hurting its competitiveness. Leaders of the State Assembly and Senate have advocated for an increase in the Motor Fuel Tax and the Petroleum Products Gross Receipts Tax, along with a surcharge on diesel fuel and a seven percent tax on non-motor-fuel petroleum productions. This would be accompanied by tax cuts, including an increase in the Earned Income Tax Credit for low income residents and an elimination of the estate tax. Governor Christie has supported a funding plan calling for an increase in the motor fuel tax, partially offset by a decrease in the state sales tax. The Governor’s plan especially would harm the state’s fiscal position. Sales tax receipts are budgeted to account for $9.6 billion in revenue in fiscal 2017. Lowering the rate from 7% to 6%, as called for by Christie, would lead to $1.4 billion in lost revenue.

The TTF funding dilemma likely played a part in the state not moving forward with proposed pension reform earlier this month. A bill calling for a proposed constitutional amendment to be put to voters in November failed to be approved by the State Senate on August 8th, the deadline for the Senate to pass such a measure. The amendment would have required the state to contribute 50% of the actuarial required contribution (ARC) in fiscal 2018, equal to $2.4 billion, almost double the $1.3 billion contribution for fiscal 2016. State contributions would then increase annually until fiscal 2022, when the full ARC would be paid. Governor Christie had spoken out against the amendment, arguing that it would guarantee pension contributions ahead of other state spending needs, including debt service payments, and necessitate large tax increases to fund it. The proposed amendment had previously been passed by both houses in January. However, the likelihood of the bill passing declined in the weeks leading up to the vote deadline as state senators also debated TTF funding and the possible reduction in the sales tax rate, which would make the state less able to commit to a set pension funding schedule. According to GASB 68 standards, the state’s net pension liability stands at $90.8 billion, equal to over $10,000 per capita. The asset sufficiency level is 29.6%, by far the lowest among the 50 states, highlighting the need for the state to find a solution to its pension liability.

Transportation and pensions are left fighting over a relatively finite pot of money, with one inevitably crowding out the other. Timely and adequate funding of both is necessary to prevent increased future costs. Any attempt to increase the tax rate without some offset is a non-starter until Governor Christie leaves office in 2018, or until the Legislature begins overriding his veto. The state’s tax burden is already high, limiting the state’s ability to increase taxes.
and remain competitive for residents and businesses once a new Governor takes office.

Christie is firm in favoring funding transportation needs over pensions. However, not only would Christie’s proposed transportation plan likely lead to continued underfunding of pensions, but it would also necessitate a reduction in general government spending. New Jersey is not a state with a large reserve fund it could rely on for several years to offset lost revenue, while maintaining service levels. At the close of fiscal 2015, the General Fund reserve totaled $4.5 billion. This would be depleted in just over three years all else equal, assuming $1.4 billion of lost annual sales tax revenue, forcing the state to trim spending in other areas to offset this budget gap.

The state is left with no easy choices and is not going to please all parties regardless of which outcome it chooses. Transportation needs and pension liabilities will both need to be funded going forward in order for the state to remain viable for both residents and investors. However, this will either require a tax increase or crowding out of other governmental services. The government’s choices regarding these issues in upcoming months will play a part in the state’s credit quality for the foreseeable future.
California Court’s Pension Ruling May Have Far Wider Implications

By Rachel Barkley | Vice President

California has typically been regarded as having one of the strongest pension protections among states. The basis of these protections is usually referred to as the “California rule,” a series of California state court decisions that have stated pension benefits offered on the date of hire are a vested right protected by contract law that cannot be reduced without offering a new benefit of comparable value. The California rule has been in place for over 60 years, tracing back to a 1955 ruling by the California Supreme Court in Allen v. City of Long Beach.

The strength of these protections has shaped pension reform efforts in the state. The Santa Clara County Superior Court ruled in 2013 that the City of San Jose could not make employees either increase their pension contribution rate or switch to a plan with less generous benefits, claiming it violated employees’ vested rights without providing a comparable alternative.

There have been occasional rumblings of these protections being tested. In the case of Stockton’s bankruptcy, the federal Bankruptcy Court ruled California’s pensions were able to be modified in the case of bankruptcy. While this finding was significant, its precedent would apply to only a modicum of cases. However, a ruling this month by a state appeals court, if upheld, would have wide-ranging implications, limiting the applicability of the California rule.

The Marin Association of Public Employees sued the Marin County Employees’ Retirement Association (MCERA) and the State of California in response to Marin County implementing the state’s 2012 pension reform measures. One of the adopted provisions sought to eliminate pension spiking by excluding specified items such as unused sick leave from pension benefit calculations. The plaintiffs declared this was an unconstitutional impairment of their contracts. The Court upheld the lower trial court’s ruling, siding with the MCERA and the State. In the Court’s written opinion, it wrote that “while a public employee does have a “vested right” to a pension, that right is only to a “reasonable” pension—not an immutable entitlement to the most optimal formula of calculating the pension. And the Legislature may, prior to the employee’s retirement, alter the formula, thereby reducing the anticipated pension. So long as the Legislature’s modifications do not deprive the employee of a “reasonable” pension, there is no constitutional violation.” The plaintiffs now have 40 days from the decision date, Aug. 17th, to submit a request to the California Supreme Court to take up the case.

Assuming the current decision stands, this would pave the way for other California entities to continue to implement the 2012 pension spiking reforms. More importantly, governments may have expanded latitude in enacting pension reforms going forward. The Court stated in its opinion that “short of actual abolition, a radical reduction of benefits, or a fiscally unjustifiable increase in employee contributions, the guiding principle is still the one identified by Miller in 1977: ‘the governing body may make reasonable modifications and changes before the pension becomes payable and that until that time the employee does not have a right to any fixed or definite benefits but only to a substantial or reasonable pension.’”

A wider array of potential pension reforms would give the state and its underlying governments a critical tool in managing their liabilities. This would have greater significance for local governments, which tend to contribute a high proportion of their budget to pensions than the state. As noted in Loop’s 14th Annual Pension Report, released earlier this month, California accounts for 13 of the largest 70 cities. California cities pay, on average, a higher proportion of their budget at 17%, compared to the national average of 13%. California accounts for three of the five cities nationally that contribute more than 20% of their budget to pensions: Oakland (21.5%), San Diego (22.3%) and San Jose (29%). San Jose contributes the largest percentage of spending to pensions of any of the 70 cities and 50 states identified in the report.

---

3 Superior Court of California County of Santa Clara. San Jose Police Officers’ Association v. City of San Jose et al. Case 1-12-CV-225526
4 United States Bankruptcy Court Eastern District of California. Association Retired Employees of the City of Stockton v. City of Stockton. Case No. 12-23118-C-9
A high proportion of spending dedicated to pensions lowers overall financial flexibility and can lead to crowding out of other services. This can be seen in the case of San Jose, which increased pension spending over the last ten years to the detriment of capital outlay.

Similar trends will likely be exacerbated in future years as CALPERS, which the state and the majority of local governments participate in, has reported returns far short of their assumed investment rate returns for the past two years, at 2.4% for fiscal 2015 and 0.61% for fiscal 2016, leading to increasing contribution levels. Government’s ability to enact pension reform affecting current employees could go a long way to balancing pension liabilities while also avoiding crowding out of services or additional revenue increases.

### San Jose Fiscal 2006-2015 Spending Comparison

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>General Fund Spending</td>
<td>626,518</td>
<td>843,382</td>
<td>34.6%</td>
</tr>
<tr>
<td>Pensions</td>
<td>84,740</td>
<td>244,261</td>
<td>188.2%</td>
</tr>
<tr>
<td>General Gov</td>
<td>78,505</td>
<td>71,792</td>
<td>-8.6%</td>
</tr>
<tr>
<td>Community Services</td>
<td>124,057</td>
<td>122,614</td>
<td>-1.2%</td>
</tr>
<tr>
<td>Capital Outlay</td>
<td>27,288</td>
<td>21,766</td>
<td>-20.2%</td>
</tr>
</tbody>
</table>
Comparing Bullet and Barbell Portfolios

By Ivan Gulich | Senior Vice President

We analyze the front end of the MMD curve to compare expected performance of two duration-neutral portfolios over the next 12 months. One portfolio consists of 5-yr bonds (bullet), while the other is a combination of 2-yr and 10-yr bonds (barbell).

The 5-yr bond portfolio offers a higher 1-yr expected return than the corresponding duration-neutral portfolio consisting of 2-yr and 10-yr bonds by about 0.12%.

Barbell portfolio would outperform the bullet if the yield curve flattened a year from now, as in Scenario 1 (25 bps 2 to 10-yr flattening). Conversely, steepening of the curve by the same amount would cause barbell to underperform the bullet by 43 bps (Scenario 2).

For parallel shifts of the yield curve the duration-neutral barbell portfolio would underperform the bullet by approximately the same amount (0.12%) as if the curve didn’t change.

Advance Refunding Update

By Ivan Gulich | Senior Vice President

We have evaluated advance refundability of outstanding new money bonds rated AA and AAA using Loop’s proprietary model.

The yields have declined maybe 200-250 bps since many of these bonds were issued. The present value of remaining cash flows, discounted at today’s low muni rates, sometimes translate into 20%+ potential savings, especially for bonds with large coupons. Due to relatively low short term Treasury rates, escrows earn less than refunding issue muni yield, which is why savings are highest for short calls.

The largest potential savings are for bonds with calls through mid-2019, coupons 5.00%+ and maturity dates through 2029. These bonds were issued mostly in 2008 and 2009 with a 10-yr call, but also in 2011 and 2012 with shorter calls.

Longer calls and maturities are less desirable from refunding perspective due to negative arbitrage.

While potential savings from advance refunding are significant, issuers will realize these savings (and more) when they currently refund bonds in let’s say 18 months or so, assuming interest rates remain low at that time. This may dampen their enthusiasm for advance refunding somewhat.

Issuers might give some thought to advance refunding of select issues with 4 year calls and moderate potential savings, due to the uncertainty related to potential (higher rates) in 2020.

Not surprisingly, high coupons have largest savings. Savings are also affected by the maturity of outstanding issue—the shorter, the better. Since the cost of issuing the new, let’s say 6-yr bond is about 1.25%, even advance refunding bonds with low 3% coupons may generate decent savings—but only for shorter maturities.

It should be noted that many considerations other than potential savings influence issuers’ decision to refund bonds.
Market Review

Historical Monthly Bond Price Changes

The chart shows historical bond price changes for each point on the muni benchmark callable curve during the month of August for the last 15 years.

The returns in August were positive on the long end of the curve in 12 out of 15 years, with bond prices increasing, on average, 0.84% across the curve.

Through the first 3 weeks, August has posted flat returns.

The 25-yr point was most volatile, with standard deviation of bond price changes of 1.85%. The long end of the curve has returned less, on average, than 10 to 15-yr area, despite higher volatility.

<table>
<thead>
<tr>
<th>Maturity</th>
<th>5</th>
<th>10</th>
<th>15</th>
<th>20</th>
<th>25</th>
<th>30</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aug-01</td>
<td>1.15%</td>
<td>1.57%</td>
<td>1.48%</td>
<td>0.85%</td>
<td>0.85%</td>
<td>0.85%</td>
</tr>
<tr>
<td>Aug-02</td>
<td>0.75%</td>
<td>1.34%</td>
<td>1.02%</td>
<td>0.93%</td>
<td>0.77%</td>
<td>0.93%</td>
</tr>
<tr>
<td>Aug-03</td>
<td>0.36%</td>
<td>0.72%</td>
<td>0.71%</td>
<td>0.47%</td>
<td>0.47%</td>
<td>0.39%</td>
</tr>
<tr>
<td>Aug-04</td>
<td>1.57%</td>
<td>2.34%</td>
<td>2.08%</td>
<td>1.74%</td>
<td>1.82%</td>
<td>1.66%</td>
</tr>
<tr>
<td>Aug-05</td>
<td>0.31%</td>
<td>1.28%</td>
<td>1.20%</td>
<td>1.27%</td>
<td>1.11%</td>
<td>1.03%</td>
</tr>
<tr>
<td>Aug-06</td>
<td>0.84%</td>
<td>1.92%</td>
<td>1.84%</td>
<td>1.91%</td>
<td>1.91%</td>
<td>1.75%</td>
</tr>
<tr>
<td>Aug-07</td>
<td>0.58%</td>
<td>0.08%</td>
<td>-1.10%</td>
<td>-1.64%</td>
<td>-1.95%</td>
<td>-1.95%</td>
</tr>
<tr>
<td>Aug-08</td>
<td>1.16%</td>
<td>1.52%</td>
<td>1.03%</td>
<td>1.11%</td>
<td>0.47%</td>
<td>0.31%</td>
</tr>
<tr>
<td>Aug-09</td>
<td>-0.27%</td>
<td>0.48%</td>
<td>1.28%</td>
<td>1.76%</td>
<td>1.99%</td>
<td>2.22%</td>
</tr>
<tr>
<td>Aug-10</td>
<td>1.00%</td>
<td>3.14%</td>
<td>3.61%</td>
<td>3.00%</td>
<td>2.33%</td>
<td>2.25%</td>
</tr>
<tr>
<td>Aug-11</td>
<td>1.23%</td>
<td>3.47%</td>
<td>2.68%</td>
<td>2.42%</td>
<td>3.46%</td>
<td>3.70%</td>
</tr>
<tr>
<td>Aug-12</td>
<td>-0.18%</td>
<td>-0.65%</td>
<td>-0.24%</td>
<td>0.16%</td>
<td>-0.32%</td>
<td>-0.40%</td>
</tr>
<tr>
<td>Aug-13</td>
<td>-1.12%</td>
<td>-2.16%</td>
<td>-1.74%</td>
<td>-2.11%</td>
<td>-2.19%</td>
<td>-1.95%</td>
</tr>
<tr>
<td>Aug-14</td>
<td>0.63%</td>
<td>1.56%</td>
<td>1.88%</td>
<td>2.12%</td>
<td>2.19%</td>
<td>2.19%</td>
</tr>
<tr>
<td>Aug-15</td>
<td>-0.14%</td>
<td>0.24%</td>
<td>0.08%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.16%</td>
</tr>
</tbody>
</table>

Mean  
0.53%  1.12%  1.05%  0.93%  0.86%  0.88%
St Dev  
0.71%  1.43%  1.39%  1.41%  1.55%  1.55%

Source: Loop Capital Markets
Market Review \textit{The Yield Curve}

\textit{Figure 6} 1-Year Forward Roll-down—Muni Benchmark Curve* (August 23, 2016)

We show rich (3 to 5-yr, 7 to 10-yr, 22+ yr) and cheap (6-yr, 12 to 20-yr) points on the AAA MMD curve, based on one year holding period returns and assuming no change in the yield curve. 19-yr maturity offers the highest expected total return.

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

\textit{Figure 7} Monthly Price Change — AAA GO Bonds* (7/2/16 — 8/22/16)

Yields in the 11 to 12-yr range declined 2 extra basis points, which is why these bonds outperformed neighboring maturities by about 20 bps last month.

\textit{Figure 8} Implied Municipal Volatilities

Implied volatilities rose across the curve last month, by 1.60% on average.
Yields on the long end of the curve are close to multi-decade lows and between 90 and 100 bps lower than 1 and 2 years ago.

This effect, along with rising rates on the front end in anticipation of additional Fed tightening flattened the curve significantly.

The yields are below their 3-month averages, but 18 bps higher on the long end of the curve compared to multi-decade lows reached in early July.

When muni rates plunged in early July, 10-yr ratio was 4 points higher than 30-yr ratio. This anomaly has since disappeared, but the ratio curve has not yet assumed a familiar upward sloping shape.
Market Conditions

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

After falling in early July to the flattest level since January 2008, the slope of the curve rose 25 bps to 159 bps. The curve is unlikely to get flatter absent an imminent Fed tightening.

Figure 13  Declining Inflation Expectations

Fed’s five-year forward breakeven inflation rate, derived from TIPS and regular Treasury yields, is currently 1.44%, vs. the low of 1.30% on July 5.

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

As yields have fallen, muni bond funds have experienced 46 consecutive weekly inflows since Q3 2015, totaling $33.8 billion. YTD net inflow is $27.0 billion.

Regression analysis indicates that 57% of weekly variation in mutual fund flows can be attributed to MMD yield levels. Per each basis point decline in AAA MMD, weekly flows rise by about $17 million.
Loop Capital Markets Upcoming Negotiated Calendar

<table>
<thead>
<tr>
<th>Date</th>
<th>Par Amount ($ mil)</th>
<th>Issue</th>
<th>Loop Capital’s Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>8/30/16</td>
<td>500.0</td>
<td>Illinois Finance Authority, State of Illinois Clean Water Revenue Bonds</td>
<td>Co-Manager</td>
</tr>
<tr>
<td>8/30/16</td>
<td>100.9</td>
<td>New York State Environmental Facility Corporation SRF (Green Bonds)</td>
<td>Co-Manager</td>
</tr>
<tr>
<td>8/30/16</td>
<td>29.3</td>
<td>New York State Environmental Facility Corporation SRF (Green Bonds) - Taxable</td>
<td>Co-Manager</td>
</tr>
<tr>
<td>8/30/16</td>
<td>2,707.2</td>
<td>State of California, General Obligation Bonds</td>
<td>Co-Manager</td>
</tr>
<tr>
<td>9/5/16</td>
<td>1,000.0</td>
<td>State of Connecticut Special Tax Obligation Bonds</td>
<td>Co-Manager</td>
</tr>
<tr>
<td>9/6/16</td>
<td>35.0</td>
<td>City of Grand Rapids, County of Kent Water Supply System Revenue Bonds</td>
<td>Co-Manager</td>
</tr>
<tr>
<td>Week of Sep 12</td>
<td>1,057.4</td>
<td>MTA Hudson Rail Yards Trust Obligations, Series 2016A</td>
<td>Co-Manager</td>
</tr>
</tbody>
</table>

Muni Analysts Playing Charades

“Additional bonds test!? Louisana Flooding? No, wait! Debt service coverage ratio!!!”

Analytical Services Division

Loop Capital Markets’ Analytical Services Division (ASD), established in 2002, publishes a variety of reports that provide clients with relevant and timely information about the bond market and investor demand. The ASD is one of the largest analytics groups dedicated to investment banking, providing analytics and commentary on the economy, monetary policy, and a variety of public finance issues.

Chris Mier, CFA, Managing Director  
312.356.5840 | christopher.mier@loopcapital.com

Rachel Barkley, Vice President  
312.933.2297 | rachel.barkley@loopcapital.com

Eliana Yun, Junior Analyst  
312.933.2226 | eliana.yun@loopcapital.com

Ivan Gulich, CFA, Senior Vice President  
312.913.2224 | ivan.gulich@loopcapital.com

Vania Petkova, Analyst  
312.913.2229 | vania.petkova@loopcapital.com

Loop Capital, founded in 1997, is a highly client-focused investment bank, brokerage and advisory firm that provides capital solutions for corporate, governmental and institutional entities across the globe.

Loop Capital Markets and its affiliates serve clients in corporate and public finance, financial advisory services, taxable, tax-exempt and global equity sales and trading, analytical services, and financial consulting services.

Headquartered in Chicago, the firm has over 170 professionals in 23 offices across the country.

Find more information at www.loopcapital.com.