Win Smith and Win Analytics LLC

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  – Former CFO of $7B Education Finance Company
  – Oxford MSc in Mathematical Finance

• Win Analytics LLC
  – Financial Advice
  – Financial Research
  – Portfolio Valuation
  – Financial Modeling
  – Litigation Support

• Websites
  – www.winanalytics.com
  – Blog: The Well-Tempered Spreadsheet
Presentation Overview

• The Treasury is not “Going Long”
• Don’t Underestimate the Fed
• Symbiosis in the Bond Market
• The Future of the Fed Portfolio
• Interest Rate Scenarios
The Treasury is not “Going Long”
The weighted average maturity of Treasury securities is at its longest level in a decade.

Weighted average maturity of marketable U.S. Treasury securities outstanding

Source: Bureau of Labor Statistics

Dec. 2012
64.8 months
+34% from trough

AVERAGE 1980 - 2010: 58.1 MONTHS

Oct. 2008
48.5 months
Average Maturity of Outstanding Debt and New Issuance
Fiscal Years 2009-2012

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>All Marketable Debt Outstanding</th>
<th>New Debt Issuance</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY 2009</td>
<td>4.39 Months</td>
<td>2.87 Months</td>
</tr>
<tr>
<td>FY 2010</td>
<td>4.88 Months</td>
<td>3.69 Months</td>
</tr>
<tr>
<td>FY 2011</td>
<td>5.21 Months</td>
<td>4.03 Months</td>
</tr>
<tr>
<td>FY 2012</td>
<td>5.39 Months</td>
<td>3.94 Months</td>
</tr>
</tbody>
</table>

Data Source: U.S. Treasury
Marketable U.S. Treasury Securities
Securities Issued in FY 2012, as of 9/30/12

Principal Issued
$3T

$2T

$1T

$0T

0-1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

Years to Maturity

FY 2012 (3.94 year Avg Maturity)

Data Source: U.S. Treasury
# Marketable U.S. Treasury Securities Outstanding at 2011 Fiscal Year End (9/30/2011)

<table>
<thead>
<tr>
<th>Maturity (Fiscal Year)</th>
<th>Principal</th>
<th>Average Maturity</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-1 Years to Maturity</td>
<td>$2.67T</td>
<td>Feb-2012 0.39</td>
</tr>
<tr>
<td>1-30 Years to Maturity</td>
<td>6.94T</td>
<td>Oct-2018 7.06</td>
</tr>
<tr>
<td>Combined</td>
<td>$9.62T</td>
<td>Dec-2016 5.21</td>
</tr>
</tbody>
</table>

Data Source: U.S. Treasury
### Marketable U.S. Treasury Securities Outstanding at 2012 Fiscal Year End (9/30/2012)

<table>
<thead>
<tr>
<th>Principal</th>
<th>Average Maturity</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>$3T</td>
<td>FY 2012 Issues</td>
<td>$3.67T</td>
<td>Sep-2015</td>
</tr>
<tr>
<td></td>
<td>Older Issues/Original</td>
<td>6.94T</td>
<td>Oct-2018</td>
</tr>
<tr>
<td></td>
<td>Older Issues/Adjustments</td>
<td>0.08T</td>
<td>Jan-2026</td>
</tr>
<tr>
<td></td>
<td>Combined</td>
<td>$10.69T</td>
<td>Feb-2017</td>
</tr>
</tbody>
</table>

Data Source: U.S. Treasury
## Explaining Changes in Weighted Average Life

<table>
<thead>
<tr>
<th>Group</th>
<th>FY 2011</th>
<th>FY 2012</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY13-41, Issued by FY11</td>
<td>7.06</td>
<td>6.06</td>
<td>-1.00</td>
</tr>
<tr>
<td>FY12, Issued by FY11</td>
<td>-1.85</td>
<td>1.85</td>
<td></td>
</tr>
<tr>
<td>FY12 New Issues</td>
<td>-0.73</td>
<td>-0.73</td>
<td></td>
</tr>
<tr>
<td>FY12 Adjustments</td>
<td>0.06</td>
<td>0.06</td>
<td></td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>5.21</strong></td>
<td><strong>5.39</strong></td>
<td><strong>0.18</strong></td>
</tr>
</tbody>
</table>
U.S. Treasury Marketable Securities
All Outstanding Securities
as of September 30, 2012

Data Source: U.S. Treasury
U.S. Treasury Marketable Securities
Securities Issued in Fiscal Year 2012
as of September 30, 2012

Principal ($Billions)

Maturity

Data Source: U.S. Treasury
Don’t Underestimate the Fed
Fed Actions in the Treasury Market

• Quantitative Easing and Operation Twist

• Reduce **Duration** Held by Private Investors:
  
  *By reducing the supply of duration in the market, this action should put downward pressure on longer-term interest rates relative to levels that would otherwise prevail.*

• Fed measures impact in terms of “10-Year Equivalents”
“Spectrum” of Marketable Treasurys as of March 2013
by Par Amount

Data Source: U.S. Treasury
Marketable Treasurys as of September 2010
9% Fed Share
by Par Amount

Data Sources: U.S. Treasury, Federal Reserve
Marketable Treasuries
Outstanding as of March 2013
by Ten-Year Equivalents

Data Source: U.S. Treasury
Marketable Treasurys as of March 2013
30% Fed Share
by Ten-Year Equivalents

Data Sources: U.S. Treasury, Federal Reserve
Marketable Treasurys as of September 2010
13% Fed Share
by Ten-Year Equivalents

Data Sources: U.S. Treasury, Federal Reserve
The Fed’s Impact on the Treasury Market
in “Ten-Year Equivalents”

Chart Source: Stone & McCarthy Research Associates
Marketable Treasurys
Annual Changes in Par Amount
Fed Holdings Compared to All Outstanding

Data Sources: U.S. Treasury, Federal Reserve
Marketable Treasurys
Annual Changes in Ten-Year Equivalents
Fed Holdings Compared to All Outstanding

Data Sources: U.S. Treasury, Federal Reserve
Symbiosis in the Bond Market

• The Fed helps the Treasury:
  – Low rates keep interest costs low
  – Front-loaded debt exacerbates Treasury’s need for low rates
  – Fed remits net interest income to the Treasury
  – If Fed stimulus succeeds, more revenue to the Treasury

• The Treasury helps the Fed:
  – Limited flow of long debt supports the Fed’s efforts to reduce duration held by private investors
The Future of the Fed Portfolio

• Observations
  – In a sense, Treasurys held by Fed have not yet been issued or priced
  – Effective pricing to Treasury will be set when Fed sells
  – Fed could become a second issuer of Treasurys

• Questions
  – When will portfolio stop growing?
  – When and how will it be sold?
  – How will sales impact interest rates?
Implications for Interest Rates

Three Scenarios:

• Rates rise gradually as economy improves
  – Symbiosis dissolves

• Rates remain at low levels for extended period
  – Symbiosis locks in place

• Rates spike
  – Symbiosis breaks under pressure