Quarterly Refunding Discussion Charts
August 2, 2005
30-Year Bond Issuance
Three Fundamental Issues

• Financing Needs
• Flexibility
• Cost Considerations
Financing Needs

• Existing securities can finance projected needs

• Bond issuance is not projected to crowd out other securities
Debt Portfolio Flexibility

• Average maturity has declined in recent years; modest 30-year issuance would not adversely impact flexibility

• Roll-over is within the historical range; 30-year issuance would reduce short-term funding needs while maintaining short bias in financing

• Reintroduction of the 30-year diversifies funding

• The reintroduction of 30’s increases the investor base
Costs

• Term premium partially offset by reduced event and operation risk, improved cash management, and broader customer base

• Market consultation indicates potential structural demand from real money accounts, pension funds, and asset-liability managers

• Previous presence in market eases market acceptance
DEBT MATURITY MEASURES

Average Maturity of Issuance

As of June 30, 2005

Assumptions: Current CBO budget estimates through FY2015 (except internal Treasury estimate used for FY2005). Future residual financing needs are spread equally across auctioned securities to maintain constant maturity of issuance.

(Depicted) Dashed lines represent measures with semi-annual 30-year issuance.

Average Maturity

As of June 30, 2005
Distribution of Marketable Debt Outstanding by Security

Projected

Projections are based on current CBO budget estimates through FY2015 (except internal Treasury estimate for FY2005). Future residual financing needs are spread equally across auctioned securities to maintain constant maturity of issuance. Approximately $25-$30B of bonds are included starting FY2006.

Dotted line: with Bonds
Projections are based on current CBO budget estimates through FY2015 (except internal Treasury estimate for FY2005). Future residual financing needs are spread equally across auctioned securities to maintain constant maturity of issuance. Approximately $25-$30B of bonds are included starting FY2006.
## Security Characteristics of Treasury Debt Portfolio

### Attributes of Different Treasury Security Offerings, Jan 1959-May 2005

<table>
<thead>
<tr>
<th>Security</th>
<th>Average Spread to 3-month</th>
<th>SD of spread to 3-month</th>
<th>Correlation to 3-month nominal yield</th>
<th>Correlation to 3-month real cost</th>
<th>Average modified duration for change in nominal rates</th>
<th>Average convexity for 100 bps change in nominal rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-month</td>
<td>0.19</td>
<td>0.20</td>
<td>0.997</td>
<td>0.71</td>
<td>0.47</td>
<td>0.00</td>
</tr>
<tr>
<td>2-year</td>
<td>0.75</td>
<td>0.56</td>
<td>0.977</td>
<td>0.70</td>
<td>1.85</td>
<td>0.04</td>
</tr>
<tr>
<td>3-year</td>
<td>0.90</td>
<td>0.72</td>
<td>0.963</td>
<td>0.71</td>
<td>2.69</td>
<td>0.09</td>
</tr>
<tr>
<td>5-year</td>
<td>1.10</td>
<td>0.91</td>
<td>0.940</td>
<td>0.65</td>
<td>4.20</td>
<td>0.23</td>
</tr>
<tr>
<td>10-year</td>
<td>1.36</td>
<td>1.21</td>
<td>0.904</td>
<td>0.69</td>
<td>7.18</td>
<td>0.65</td>
</tr>
<tr>
<td>30-year</td>
<td>1.42</td>
<td>1.39</td>
<td>0.858</td>
<td>*</td>
<td>12.90</td>
<td>2.71</td>
</tr>
<tr>
<td>5-year TIP</td>
<td>2.01</td>
<td>2.71</td>
<td>0.425</td>
<td>-0.18</td>
<td>4.67</td>
<td>0.25</td>
</tr>
<tr>
<td>10-year TIP</td>
<td>1.43</td>
<td>2.93</td>
<td>0.242</td>
<td>-0.26</td>
<td>8.71</td>
<td>0.87</td>
</tr>
<tr>
<td>20-year TIP</td>
<td>1.57</td>
<td>3.42</td>
<td>-0.081</td>
<td>-0.35</td>
<td>15.10</td>
<td>2.80</td>
</tr>
</tbody>
</table>

Notes: Historical data for TIPS are simulated assuming real yields are equivalent to the difference between the yield of a nominal security of comparable maturity and inflation expectations. Inflation expectations are derived using a simple adaptive expectations model that weights last month CPI-U NSA, current month CPI-U NSA and next month CPI-U NSA at 25%, 50% and 25%, respectively. OMB's inflation forecast of 2.4% is assumed for realized CPI-U NSA post-May 2005. Simulated TIPS' historical real yield is used to calculate TIPS' duration and convexity. * Insufficient data.
# The Impact of Various Securities on Portfolio Costs and Flexibility

## Different Securities' Impact on Flexibility and Cost of a Steady-State Portfolio

<table>
<thead>
<tr>
<th>Security</th>
<th>Annual Auction Frequency</th>
<th>Contribution of debt stock maturity to steady-state portfolio's average maturity (in months) /1</th>
<th>Historical average spreads to 3-month bill rate</th>
<th>Steady-state Debt Stock incl SOMA ($ billions)</th>
<th>Additional Debt That Can Be Raised For $1 Billion Increase in Auction Size In a Fiscal Year ($ billions) /1</th>
<th>Contribution of $1 billion to steady-state portfolio's average maturity (in months)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-month</td>
<td>52</td>
<td>0.0</td>
<td>0</td>
<td>53</td>
<td>4</td>
<td>0.000</td>
</tr>
<tr>
<td>3-month</td>
<td>52</td>
<td>0.1</td>
<td>0</td>
<td>283</td>
<td>13</td>
<td>0.000</td>
</tr>
<tr>
<td>6-month</td>
<td>52</td>
<td>0.3</td>
<td>0.19</td>
<td>551</td>
<td>26</td>
<td>0.000</td>
</tr>
<tr>
<td>2-year</td>
<td>12</td>
<td>1.3</td>
<td>0.75</td>
<td>646</td>
<td>12</td>
<td>0.002</td>
</tr>
<tr>
<td>3-year</td>
<td>4</td>
<td>0.8</td>
<td>0.90</td>
<td>264</td>
<td>4</td>
<td>0.003</td>
</tr>
<tr>
<td>5-year</td>
<td>12</td>
<td>6.0</td>
<td>1.10</td>
<td>1236</td>
<td>12</td>
<td>0.005</td>
</tr>
<tr>
<td>10-year</td>
<td>8</td>
<td>13.3</td>
<td>1.36</td>
<td>1368</td>
<td>8</td>
<td>0.010</td>
</tr>
<tr>
<td>30-year *</td>
<td>2</td>
<td>23.6</td>
<td>1.42</td>
<td>810</td>
<td>2</td>
<td>0.029</td>
</tr>
<tr>
<td>5-year TIP</td>
<td>2</td>
<td>1</td>
<td>2.01</td>
<td>115</td>
<td>2</td>
<td>0.005</td>
</tr>
<tr>
<td>10-year TIP</td>
<td>4</td>
<td>4</td>
<td>1.43</td>
<td>420</td>
<td>4</td>
<td>0.010</td>
</tr>
<tr>
<td>20-year TIP</td>
<td>2</td>
<td>8</td>
<td>1.57</td>
<td>420</td>
<td>2</td>
<td>0.019</td>
</tr>
<tr>
<td>Totals</td>
<td>202</td>
<td>58</td>
<td>6166</td>
<td>89</td>
<td>89</td>
<td>0.084</td>
</tr>
</tbody>
</table>

Notes: /1 Average nominal historical rates are based on data from 1959 to present. A synthetic series to estimate historical nominal rates for TIPS is used -- per the prior table.

* Hypothetical

# A steady state portfolio illustrates the implications for Treasury's debt stock if Treasury's current issuance pattern and offering sizes were maintained in perpetuity. Assumes no growth in SOMA.
Impact of a new 30 year on Debt Portfolio

<table>
<thead>
<tr>
<th></th>
<th>2005</th>
<th>2010</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maturity (years)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current issuance schedule 1/</td>
<td>4.50</td>
<td>3.92</td>
<td>3.50</td>
</tr>
<tr>
<td>With 30-year bonds 2/</td>
<td>4.50</td>
<td>4.58</td>
<td>4.58</td>
</tr>
<tr>
<td>Duration (years)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current issuance schedule</td>
<td>3.93</td>
<td>3.58</td>
<td>3.33</td>
</tr>
<tr>
<td>With 30-year bonds</td>
<td>3.93</td>
<td>3.91</td>
<td>3.84</td>
</tr>
<tr>
<td>Nominal Interest Cost ($B)</td>
<td>152.6</td>
<td>248.9</td>
<td>338.7</td>
</tr>
<tr>
<td>Current issuance schedule</td>
<td>152.6</td>
<td>249.4</td>
<td>339.8</td>
</tr>
<tr>
<td>With 30-year bonds</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nominal Interest Cost Sensitivity ($B) 3/</td>
<td>--</td>
<td>389.0</td>
<td>389.4</td>
</tr>
<tr>
<td>Current issuance schedule</td>
<td>--</td>
<td>400.9</td>
<td>401.7</td>
</tr>
<tr>
<td>With 30-year bonds</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Financing Flexibility ($B) /4</td>
<td>--</td>
<td>5.37%</td>
<td>4.54%</td>
</tr>
<tr>
<td>Current issuance schedule</td>
<td>--</td>
<td>4.39%</td>
<td>4.04%</td>
</tr>
<tr>
<td>With 30-year bonds</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

Notes: Projections are based on current CBO budget estimates through FY2015 (except internal Treasury estimate for FY2005), and on current OMB estimates for interest rates and inflation. 1/ Under current issuance schedule, auction sizes as percents of total marketable borrowing needs are held constant. 2/ Approximately $25B to $30B of 30-year bonds are included starting in 2006; subsequent auction sizes as percents of total marketable borrowing needs are held constant. 3/ Nominal interest cost sensitivity is the change in the debt portfolio's interest expense given a positive shock of 100bps to real and inflation rates. 4/ Average percentage change in auction size over 2006-2010 or 2006-2015.
Treasury Backstop Securities Lending Facility
Trading volumes are growing compared to supply

- Cash Market
- Futures Market
- RP Market
Turnover Ratios
Average Daily Trading Volume/ Marketable Debt Outstanding
Annual Data

Average Annual Growth Rates
1981-2004
Outstandings 8%
Average Daily Trading Volume 16%
1990-2004
Outstandings 5%
Average Daily Trading Volume 11%
2000-2004
Outstandings 4%
Average Daily Trading Volume 22%

Turnover Ratios have doubled since 1999.

Sources: FRBNY, MSPD, BMA
Peak Open Interest in Front 10-yr Futures Contract vs. Issuance of Cheapest Deliverable Security ($bn)

- Peak open interest for front contract
- Original issuance of cheapest-to-deliver security

CBOT data through 7/15/2005
Imbalances Cropping Up More Frequently

Examples:

- **Fall 2001:** High levels of settlement fails in the August 5-year and 10-year notes after 9/11
- **Second half of 2003:** Chronic settlement fails in the May 2013 10-year note
- **2005:** High levels of open interest in futures contracts led to market dislocations

Outcome: Increasing Fails
Average Daily Treasury Settlement Fails*

* Fails to Receive
Source: FRBNY
Risks

• Large and Persistent Fails
• Impaired Liquidity in Cash Market
• Loss of Price Convergence in Futures Market
• Operational Cost of Resolving Fails
• Ultimately Higher Borrowing Costs for Treasury
Imbalances could be mitigated or alleviated through a temporary increase in the supply of Treasuries.
Possible Sources of Additional Supply

• FRBNY securities lending facility
  – Additional supply limited to 65% of SOMA holdings
  – Holdings of some securities are small
  – No auction participation beyond rollovers
  – Primary mission of portfolio not securities lending

• Large holders
  – Most securities are already made available
  – Individually rational reductions in lending during episodes of chronic fails

• Development of a backstop Treasury securities lending facility
  – Design to provide additional supply, while not impeding normal market functioning
Specials Financing

1. Demand for Borrowing Securities Increases
2. Cost of Borrowing Increases
3. Zero Bound on RPs Limits Cost of Borrowing
4. Spillover into Fails
5. Buy-in Rule Triggered
6. BUT
7. Unable to Enforce Buy-in Rule Because of Supply Constraints
Desirable Outcomes

- Facilitate settlement of cash market transactions
- Improve functioning of the specials market
  - Do not want to damage specials market
  - Promote market pricing through zero RP rate
  - Do not want to distort risk/reward trade-offs
- Strengthen futures market
  - Promote price convergence

Treasury Constraints

- Continue to provide certainty of supply
- Supplier of last resort
  - Encourage market-driven solutions to supply-demand imbalances
  - Stay out of market unless risk of systemic problems
  - Do not want to be perceived as rewarding shorts
Effects of a Treasury Securities Lending Facility

Potential Additional Supply

Allows Enforcement of Buy-in Rule

Encourages Pricing Through Zero Bound

Encourages Availability of Existing Supply Already in the Market

Additional Supply Through Securities Lending Facility As Last Resort
Desired Attributes of a Backstop Securities Lending Facility

• Clarity and confidence of availability
  – Non-discretionary, standing facility
  – Unlimited supply, renewable terms

• Discourage use unless market severely stressed
  – Price set at a penalty rate

• Not designed to address transitory needs
  – Term greater than overnight needed
Example of How a Backstop Securities Lending Facility Could Work

• Treasury Stands Ready to Lend Any Security at Implied Negative RP Rate
• Quantity Unlimited
• Borrow for Fixed Term
• If Needed, Borrower Could Renew for Same Term
Specials Market

1. Normal Functioning

2. Current Fails Situation

3. Prompt Delivery / Desired Outcome

Negative RP rates encourage additional supply and curtail demand.

Supply may actually decline at near zero RP rates because of fear of not having the security returned.

 Buyers presently have no incentive to reverse in securities at negative RP rates.

4. Backstop Securities Lending Facility

If Demand continues to increase, Treasury stands ready to supply the market with additional securities at the implied floor.

Implied Floor / Securities Lending Facility Rate
Many Questions Would Need to be Answered

• Policy
  – Eligible participants
  – Pricing mechanism
  – Term of loan
• Statutory/Regulatory
  – Nature of transaction (loan, or sale and buyback)
  – Authority
    • Standing
    • During Budget Surpluses
    • Debt Ceiling
  – Interaction with buy-in rule
  – Clarification of tax regulations
  – Possible legislative changes
• Operational
  – Institutions to conduct transactions
  – Collateral arrangements
  – Accounting
    • Systems modifications
    • Treatment of interest accrual
    • Treatment of interest payments
    • Affect on amounts of debt outstanding
Presentation to the U.S. Treasury and the Treasury Borrowing Advisory Committee

August 2, 2005
**Presentation Question:**

Please discuss the impact of currency movements on the Treasury's cost of borrowing. Are foreign investors exerting significant downward pressures on the Treasury's financing costs or are other forces at work which have limited increases in yields?

**Main Points:**

- Currency movements can impact Treasury's cost of borrowing through a lower exchange rate creating more stimulative financial conditions.

- Foreign official investors exert downward pressure on Treasury's cost of borrowing through funding the current account deficit. Foreign private and official investors have exhibited a tendency recently of buying longer maturity instruments.

- These are just some of the factors limiting the increase in yields; others include:
  - A decrease in risk premiums
  - An increase in the global savings rate
  - Structural changes in the bond market

- However, the impact of some of these factors could wane.
*Source: A US Investment Bank.
Source: Department of Treasury.
US Net portfolio flows - monthly funding requirement (monthly c/a + monthly net FDI)

Source: Department of Treasury, Bureau of Economic Analytics.
Source: Department of Treasury.
Annual Net Private Foreign Purchases of US Bonds

Source: Department of Treasury.
Maturity Structure of Foreign Holdings of US Long-Term Debt

Total Debt

Source: Department of Treasury.
China Cumulative Holdings of Treasury Bonds (\$ Bil) May05
China Cumulative Holdings of Agency Bonds (\$ Bil) May05
China Cumulative Holdings of Corporate Bonds (\$ Bil) May05

Source: Department of Treasury.
US 10-year Bond Yield 29-Jul-05 4.28
US 10-Year Forward 1 Year Rate 29-Jul-05 5.12
Changes in Sectoral Financial Balances from 2000-2004

Source: A US Investment Bank.
Source: Federal Reserve Board. Derived from a three-factor arbitrage-free term structure model.
OECD Real GDP 10-year moving standard deviation  05:1  0.98
OECD Consumer Price Inflation 10-year moving standard deviation  05:1  1.13

Source: OECD
US 10-year Bond Yield     Jul 05     4.16
US 10-year Inflation Expectations*     Jun 05     2.50

*Source: Federal Reserve board for data from 1979 to date. History is derived from a fitted model.
Nonfarm Nonfinancial Corporate Business: Financing Gap (Adjusted for MSFT Dividend, SAAR, Bil.$)

Level

Source: Federal Reserve Board Flow of Funds
Pension Fund, Life Insurance Companies and Mutual Funds: Flows into Credit Market Instruments

Source: Federal Reserve Board Flow of Funds.