Revisiting Treasury Buybacks

TBAC Charge

Treasury last conducted "non-test" buyback operations between March 2000 and April 2002 to support its debt management goals during a period of budget surpluses. In the last several years, Treasury has conducted regular test buyback operations to maintain operational capabilities. Some have suggested that Treasury conduct buybacks to achieve various objectives, including promoting liquidity of on-the-run securities, improving cash management, and reducing variations in auction sizes (for example, see Garbade and Rutherford, 2007).

Should Treasury consider regular buyback operations? If regular buyback operations were conducted, what considerations should inform their design? How might regular buyback operations help Treasury achieve its objectives? What are the key limitations of buyback operations, in particular during periods of market stress?

Agenda

- Summary of prior TBAC work on buybacks
- Market developments since 2015
- Buybacks as a tool to improve liquidity and cost of funding
- Design and potential limitations of buybacks
- Conclusion

Summary of Prior TBAC Work on Buybacks

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- The 2015 TBAC Charge examined the pros and cons for Treasury buybacks. On the potential benefits, the Charge suggested that buybacks could:
 - Enhance the liquidity of Treasury securities through buybacks of off-the-runs and issuing larger on-the-runs
 - Span temporary periods of overfunding
 - Dampen swings in bills issuance / cash balances
 - Reduce maturity peaks in outstanding debt
 - Allow more efficient changes to debt profile
- However, buybacks could have costs:
 - To create the cash needed to fund buybacks, Treasury would need to increase issuance of either bills or coupons, which would need to factor in quarterly refunding needs. Raising issue sizes could also be costly; for example, by increasing auction concession sizes and on-the-run yield levels
 - Buybacks that are too variable in size or timing might be at odd with Treasury's regular and predictable debt management strategy

US Treasury Outstanding Has Grown Materially since 2015

The growth of the US Treasury Market:

- Debt outstanding has doubled since 2015 and stands at historical highs
- Going forward, debt to GDP is projected to grow steadily
- The share of public debt held by the private sector will also have to increase as a consequence of Fed balance sheet runoff







Regulatory changes and increased volatility have reduced dealers' intermediation capacity

- Supplementary Leverage Ratio (final rule effective in 2018):
 - SLR acts as a constraint on the balance sheet growth of banks including holding and intermediating US Treasuries. SLRs have been particularly binding during a time of large and rapid monetary and fiscal stimulus
- GSIB capital surcharges (phased in from 2016):
 - Intermediation capacity is sensitive to size and complexity sub-scores
- SA-CCR Stress capital buffer (effective 2022):
 - Can increase risk capital sensitivity to balance sheet intensive businesses
- Broad adoption of Basel III banking regulation standards globally (finalized 2017 with adoption at various times thereafter)
- In addition to regulatory constraints, VAR constraints reduce risk appetite in moments of heighted volatility

The growth of the market and changes in regulation have impacted intermediation capacity

Various metrics suggest dealers face binding constraints resulting in low participation relative to the growth of the market

• US Treasury market growth has outpaced the growth in bank capital



Sources: U.S. Treasury, Federal Reserve, Haver Analytics

• Dealers' transaction volume falling as % of debt outstanding



Liquidity measures have worsened somewhat recently. Two suggestive metrics are Treasury curve deviations and Treasury market depth. The changes of these liquidity proxies could be related to changes in macroeconomic conditions but are likely to have been exacerbated by the market developments described previously



Sources: JPMorgan DataQuery



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Buybacks as a Tool to Improve Liquidity and Cost of Funding

Potential Benefits of Buybacks

This presentation builds on the work presented in the 2015 Charge and focuses on the following benefits

1. Buybacks could potentially lower the cost of funding *indirectly* by promoting Treasury market liquidity

2. Buybacks could potentially generate savings for the taxpayers *directly* by purchasing cheaper securities while Treasury issues richer securities, which also improves liquidity

Academic Work on the Value of Liquidity

- Academic studies have shown that liquidity is valuable for the Treasury and ultimately saves taxpayers money:
 - A liquid market for Treasury securities provides financial services premia that can be captured by the Treasury (see Greenwood, Hanson, Rudolph and Summers 2016; and Brunnermeier, Merkel and Sannikov 2021)
 - The cost of illiquidity borne by taxpayers is directly observable via the liquidity premia embedded in higher yields of less liquid Treasury securities (see Amihud and Mendelson 1991; Warga 1992; Krishnamurthy 2002; and Krishnamurthy and Vissing-Jorgensen 2012)
 - Additional costs to illiquidity can emerge in periods of market stress if the market participants come to question the assumed liquidity of securities they hold, sparking liquidity events akin to a bank run (Logan 2020)

Empirical Evidence for the Value of Liquidity

Recent evidence suggests that better liquidity can lower the cost of funding:

- One narrow channel is that liquidity measured by Treasury curve dispersion appears to be correlated with auction tails
- As suggested by the academic literature, other channels likely exist by which greater liquidity lowers Treasury yields
- However, there may be an optimal issue size to maximize capturing liquidity premium. From 1998-2007, the average quarterly 10-year note issuance size was \$18bn, and the on-the-run premium was 19.4bps as measured by the Fed's off-the-run yield curve. From 2013-2022, however, the average issuance size rose to \$77bn and the premium fell to 3.8bps



Sources: US Treasury, JPMorgan DataQuery, author's calculations

Empirical Evidence for How Buybacks Could Improve Liquidity

Buybacks can potentially support market liquidity and in turn *indirectly* improve the cost of funding:

- The Fed conducts operations for monetary policy purposes as well as to support market function in times of stress. Treasury buybacks should not be considered a substitute to central bank policy
- However, the experience of the Federal Reserve suggests that market liquidity benefited from regular purchases of less liquid off-the-run securities
- Market liquidity measured by the on-the-run/offthe-run average spread across the US Treasury curve as well as Treasury curve price dispersion – deteriorated at times when Fed purchases diminished or were terminated

Sources: Author's own sources, Federal Reserve



Note: Red font indicates monetary policy decisions which contributed to the increase of market liquidity; e.g., Fed purchases, while blue font refers to events which had the opposite effects, e.g. tapering asset purchases and 15 termination of Fed purchases.

Academic Work on On-The-Run/Off-The-Run Spreads

- Academic studies have also explained why on-the-run bonds and bills tend to have lower yields than corresponding off-the-run securities:
 - On-the-run bonds benefit from greater liquidity as well as repo value since purchasers can lend these instruments to short sellers and earn additional income (Duffie 1996 and Garbade and Rutherford 2007)
 - Treasury bills also benefit from a liquidity premium. Furthermore, due partly to their short maturity, bill yields are further richened due to safety and moneyness of these securities (Cashin, Ferris, and Klee 2020; Gorton 2017; and Greenwood, Hanson, and Stein 2015)
 - Under these circumstances, buying cheaper off-the-runs while issuing more expensive on-the-runs and bills could reduce the cost of funding. If issuance sizes were increased large enough, however, the on-the-run liquidity premium could diminish

Empirical Evidence on On-The-Run/Off-The-Run Spreads

Treasury buybacks could potentially lower the cost of funding *directly* by purchasing higher-yielding securities while at the same time issuing lower-yielding securities. One concern is that greater buybacks coupled with greater issuance could erode the discount vs premium gap

 One example is buybacks of off-the-run securities that are discounted compared to on-the-runs that are issued with liquidity premia. However, this discount vs premium gap appears to be smaller in recent years, in part reflecting larger issuance sizes for on-the-runs.



Note: The spread is calculated as the difference between the on-the-run yield and the Fed's offthe-run yield curve. A more positive spread indicates higher off-the-run versus on-the-run yields

Another example: When bills are more expensive than old notes and bonds, buybacks of coupons paired with issuance of bills may save taxpayers money. Treasury could calibrate the magnitudes of purchases and issuance based on the relative pricing of bills and old coupons



Sources: Federal Reserve, Haver Analytics, JPMorgan DataQuery, author's own sources and calculations

Key parameters to consider for buyback design: size, frequency, composition, market impact, and funding

1. Size

- Over time, buybacks would likely result in greater issuance. It's difficult to determine the point at which the cost savings
 of purchases alluded to earlier could be outweighed by the reduction in on-the-run premia that would result in costlier
 issuance (Garbade and Rutherford 2007)
- Illustrative examples for sizing buybacks:
 - 2000-2002 buybacks amounted to \$67.5bn
 - 2015 TBAC Charge estimated conservatively that Treasury could buy at least \$100bn per year. Scaling for change in market size today, the equivalent purchase amount would be \$200bn
- \$100-200bn per year could be meaningful in the context of the evolution of primary dealers inventories between 2018 and 2022. Such a size may improve intermediation capacity and market liquidity and, in turn, lower the cost of funding

2. Frequency

- There is a trade-off between increased flexibility of buybacks and Treasury's long-standing regular and predictable debt management strategy
- Ways in which buybacks could be made flexible include the timing and magnitude of purchases. For example, buybacks could be more attractive when there is a greater discount of off-the-run coupons versus on-the-run bonds as well as bills
- Flexibility can be introduced via the Treasury refunding process bringing it in line with the existing issuance strategy while providing Treasury with an additional lever to use to achieve its debt management goals
- There are a number of debt management goals that flexible buybacks could help Treasury achieve. For example, managing the Treasury General Account (TGA) to enable a more efficient operating balance relative to target. And reducing the maturity peaks in outstanding debt, which has become more notable as the size of debt has increased
- One limit to how flexible Treasury buybacks can be is that, unlike Federal Reserve purchases, a Treasury program would be more limited in scope and would not be intended to support market functioning in periods of acute market stress

3. Composition

 The composition of purchases may greatly affect the economic impact. For example, if Treasury issues more 10-year notes and systematically buys them back one year later, Treasury is paying the 10-year rate and roll down for effectively 1 year of funding

4. Market impact

- Buybacks would need to be monitored for market impact with implementation calibrated accordingly
- Adverse market impact could reduce the ability of buybacks to lower the cost of funding or, in a more extreme scenario, increase the cost of funding
- For example, market concessions around buybacks and auctions could erode the benefits of a buyback program. A
 potential design to lower the impact of concessions is to institute exchange auctions whereby Treasury simultaneously
 purchases off-the-runs while issuing on-the-runs. Such an exchange program, however, would likely be more operationally
 intensive

5. Funding

- As discussed previously, buybacks would, over time, result in greater issuance. Treasury would need to consider various factors to determine how this issuance takes place; for example, the relative pricing of auctions versus purchases
- WAM (weighted-average maturity) of the debt is also a factor to consider. How operations impact the WAM requires further analysis, and this Charge has highlighted WAM-neutral implementations such as purchasing off-the-runs versus matched-maturity on-the-runs
- A final, potentially complicating factor is the debt ceiling; for example, if there is a timing mismatch between greater issuance that precedes buybacks

Conclusion

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- Prior work including the 2015 TBAC Charge has discussed the pros and cons of buybacks
- Lower market liquidity likely raises Treasury yields and hence is a cost to taxpayers. One potential benefit of buybacks is to bolster market function and, in doing so, *indirectly* lower the cost of Treasury financing
- Buybacks could also *directly* save taxpayers money if, for example, operations were conducted to purchase higher-yielding off-the-run securities while Treasury issues lower-yielding on-the-run bonds and bills
- The case for buybacks may have increased recently as debt outstanding has increased and market liquidity has deteriorated coincident with regulatory changes that have impacted dealers' intermediation capacity
- Buybacks may allow Treasury to achieve other goals in its debt management strategy including the optimization of debt WAM, the management of the TGA, and the reduction of debt maturity peaks
- Further study is warranted. In particular on the cost of larger auction sizes to the on-the-run liquidity premium. More analysis is also needed on how a program could be designed to provide Treasury flexibility while still operating within the well-established regular and predictable framework

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