TBAC Charge

November 2021 Treasury
Refunding Meeting

TBAC Charge: T-bills Supply

In November 2020, the Committee recommended that Treasury, over the medium to longer term, strive to maintain T-bills in a range of 15 to 20 percent of outstanding debt. How should Treasury consider this recommended range within the context of future adjustments to coupon auction sizes and the evolving fiscal outlook, including in the short-term? What other metrics could complement Treasury's understanding of the appropriate size of the bill market?

Outline and Executive Summary

- T-bill Supply on the Current Path of Issuance in the Short-Term
  - Given TBAC's previous recommendation for coupon cuts, we consider how T-bills as a % of debt would evolve under a range of fiscal outcomes highlighting sensitivity to both coupon cuts and infrastructure.
  - If there are no coupon cuts, T-bills will fall below 15% of total debt stock before the end of 2022 and continue to fall further by the end of 2023.
  - Even with sizeable coupon cuts, T-bills as a percentage of outstanding stock is likely to dip below the 15-20% range in an effort to maintain stable and predictable coupon issuance.

- Determining the Appropriate T-bill Share over the Intermediate Term
  - Holdings of T-bills are increasingly concentrated in MMFs, though foreign investors still make up 25% of the market.
  - As T-bill supply has been declining, usage of RRP has increased indicating MMFs have no better alternatives for their investments given agency debt supply and CP supply are also low versus history.
  - Pricing indicates that T-bills are modestly rich to other parts of the curve, though this richness may be understated given RRP usage alleviates price dislocations. T-bills are not particularly rich to other front-end substitutes, but again, this is more due to the fact that supply of other front-end assets is also limited.
  - As a result, it seems that the market can easily digest a larger fraction of outstanding debt stock in T-bills, at least based on experience in recent years. As such, 15-20% may modestly undershoot what the market can absorb.
  - Market changes including balance sheet normalization and MMF reform should be considered as they could impact demand for T-bills.

- Conclusion
  - There is flexibility in the TBAC's recommended range for T-Bills to either fall below 15% of outstanding stock (in which case excess cash will likely get absorbed by the RRP facility) or for T-bills to rise modestly above 20% while still maintaining financing flexibility for Treasury.

T-bill Supply on the Current Path of Issuance in the Short-Term

We consider several issuance scenarios to address the first part of the charge:

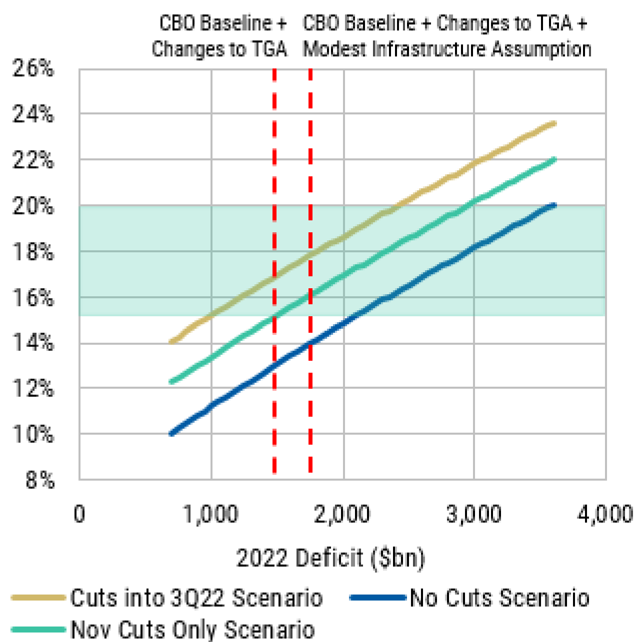
How should Treasury consider this recommended range within the context of future adjustments to coupon auction sizes and the evolving fiscal outlook, including in the short-term?

Conclusion: Even if coupon cuts are introduced in November, T-bills as a % of UST debt outstanding would likely fall below 15%. Coupon cuts would need to occur over the next several quarters in order to maintain T-bills in the 15-20% range. Given this 15-20% target is an intermediate-term objective, it is acceptable to move towards the lower edge of the range insofar as doing so helps to maintain stable and predictable coupon issuance.

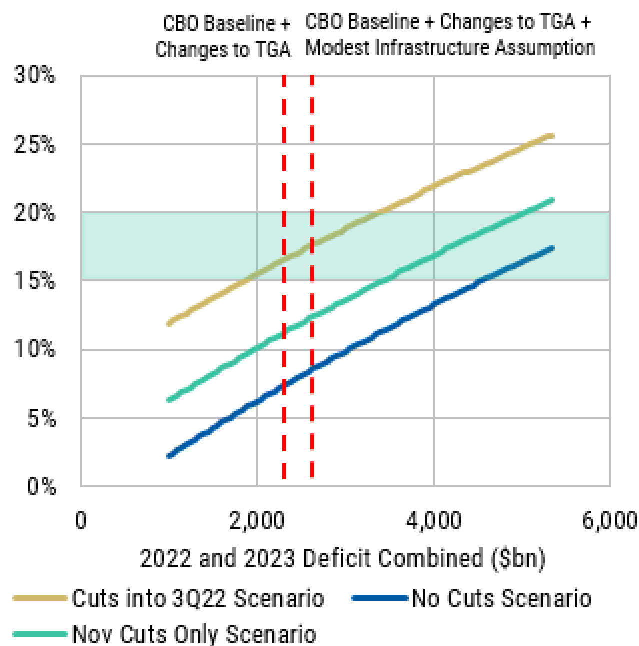
T-bill Supply on the Current Path of Issuance in the Short-Term

- We consider three scenarios: (1) there are no coupon cuts, (2) there are coupon cuts only in November consistent with the TBAC sizes indicated in August refunding, and (3) there are cuts in into the 3rd quarter of 2022.
- If there are no coupon cuts and CBO deficit estimates are realized, T-bills will be below the recommended 15-20% range both at the end of 2022 and 2023. Even if there are coupon cuts in November, T-bills will be at 15% by the end of 2022 and below 15% by the end of 2023 if (1) CBO deficits are realized and (2) the TGA was raised to $800bn before YE2022 and remains stable.

T-bills as a % of total UST debt outstanding, YE2022



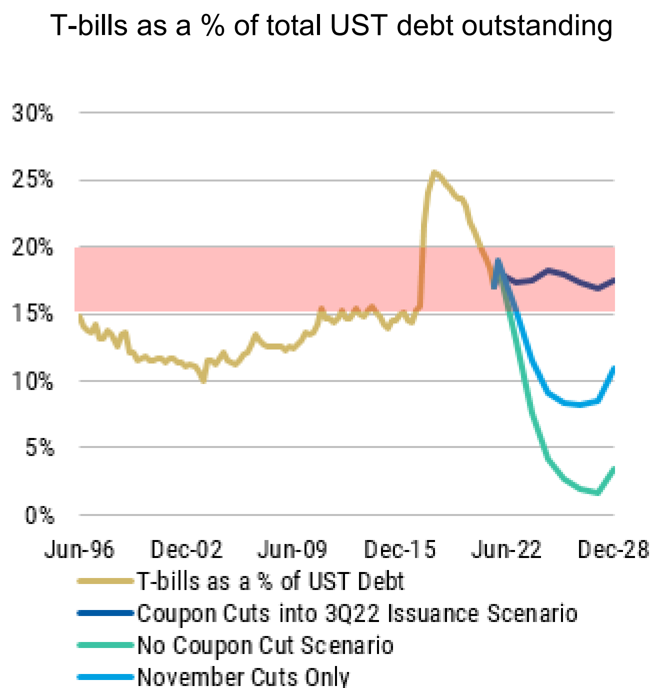
T-bills as a % of total UST debt outstanding, YE2023

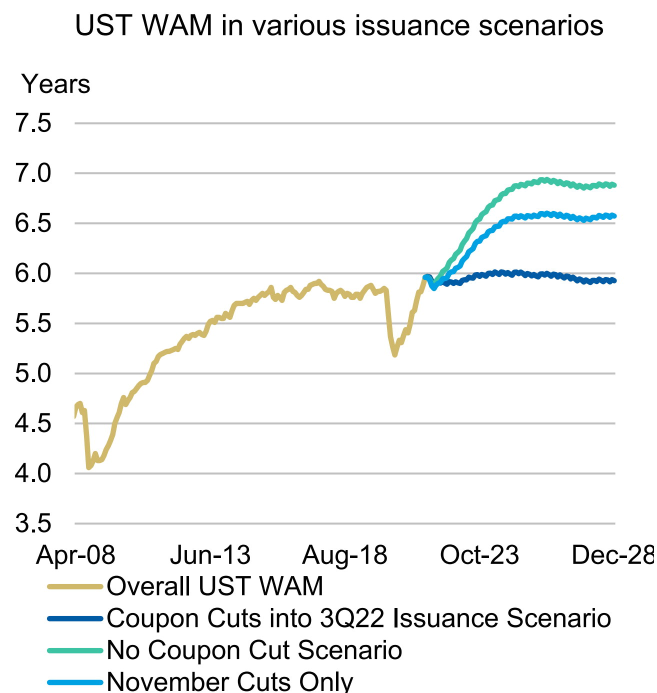


Source: US Treasury, CBO

T-bill Supply on the Current Path of Issuance

- Using the same three scenarios, we model out how T-bills as a % of outstanding debt and UST WAM would evolve.
- Only under a scenario in which there are sizeable coupon cuts for the next several quarters will T-bills as a % of debt be stable within the recommended 15-20% range. In this case, UST WAM remains stable at just under 6 years.
- If there are no coupon cuts or only coupon cuts in November, T-bills will fall sharply below the recommended 15-20% range and UST WAM will grow to 6.5-7 years by the end of 2023.





Source: US Treasury, CBO

Determining the Appropriate T-bill Share over the Intermediate Term

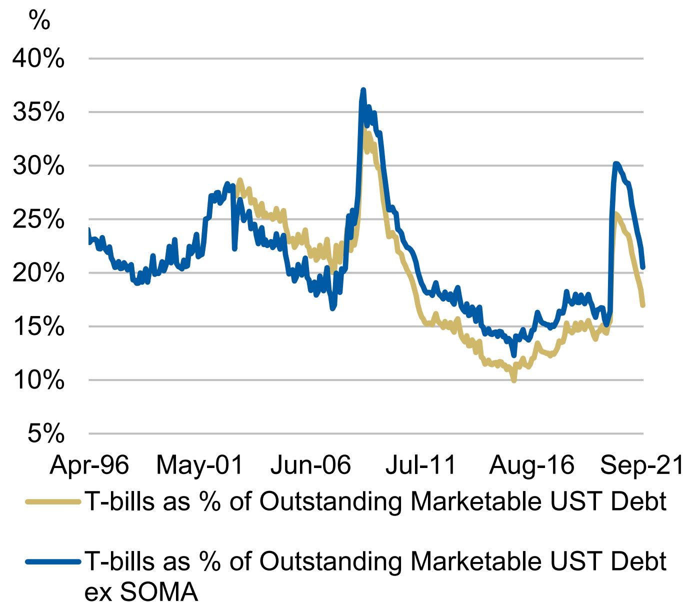
Next, we turn to the second part of the charge, which focuses on T-bill supply in the longer run:

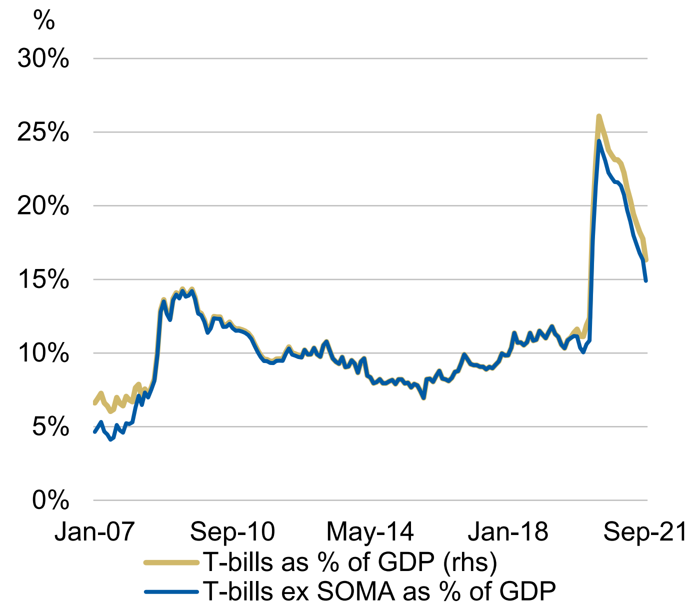
What other metrics could complement Treasury's understanding of the appropriate size of the bill market?

Conclusion: Given there is (1) an increasing amount of demand for T-bills coming from MMFs coupled with (2) an excess amount of cash sitting in the RRP waiting to earn yields greater than 5bp and (3) lack of other front-end assets, the share of T-bills in outstanding debt could likely increase above 20% without dislocating the T-bill market.

Supply in the T-bills Market

- On the supply side, T-bills outstanding has fallen notably over the course of 2021 after rising rapidly in 2020. As a % of total outstanding debt, T-bills currently take up around 17%, right within the 15-20% recommended range. Presently, T-bills as a % of UST debt ex SOMA is slightly higher at just over 20%.
- Part of the decline in T-bills in 2021 has been constraints driven by the debt ceiling. Treasury had to pay down T-bills in order to avoid exceeding the debt limit imposed on August 1, 2021. This debt limit was increased by $480bn, but until there is a more long-lasting solution to the debt ceiling, T-bill supply is likely to be constrained by this debt limit once again in late November/December.
- T-bills as a % of UST debt is essentially back to pre-COVID levels, whereas T-bills as a % of UST debt ex SOMA is still elevated compared to pre-COVID levels. This discrepancy can be explained by the fact that from September 2019 – March 2020, the Fed had been buying T-bills and reducing the stock of privately held T-bills relative to other UST securities. However, since Fed LSAPs began in March 2020, the reverse has been true, and the Fed is reducing the stock of non-T-bill privately held UST securities relative to that of T-bills.

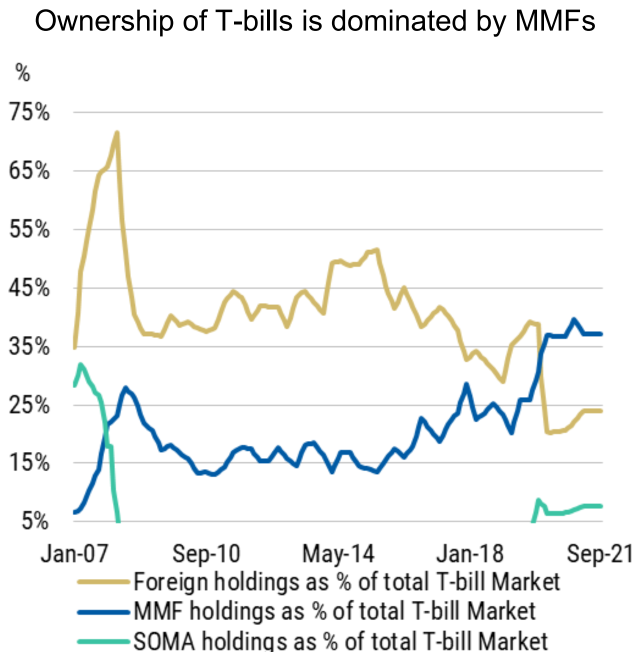


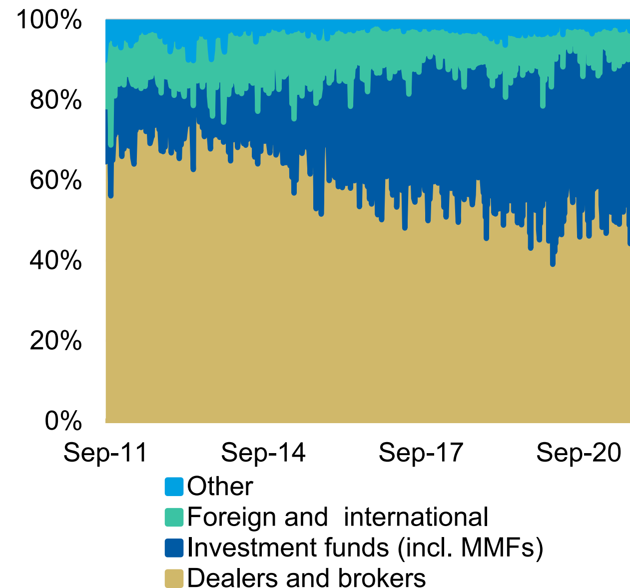


Source: US Treasury, Federal Reserve, Bloomberg

Demand Structure in the T-bills Market

- Foreign investment and MMFs continue to make up over 60% of T-bill ownership.
- However, over the last several years, and particularly in early 2020, MMFs have become a more dominant owner of T-bills. MMF ownership now exceeds 35% of the total market, whereas foreign holders have fallen to just under 25%.
- In auctions, investment funds (including MMFs) represent a growing portion of T-bill takedowns. This increase in takedowns from MMFs has eroded broker/dealer and foreign share. However, dealers still take down roughly half of new issues.



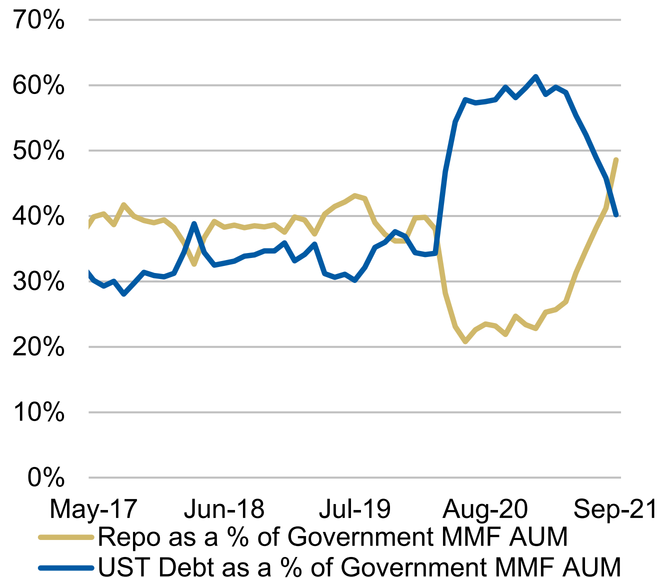


Source: US Treasury, Federal Reserve

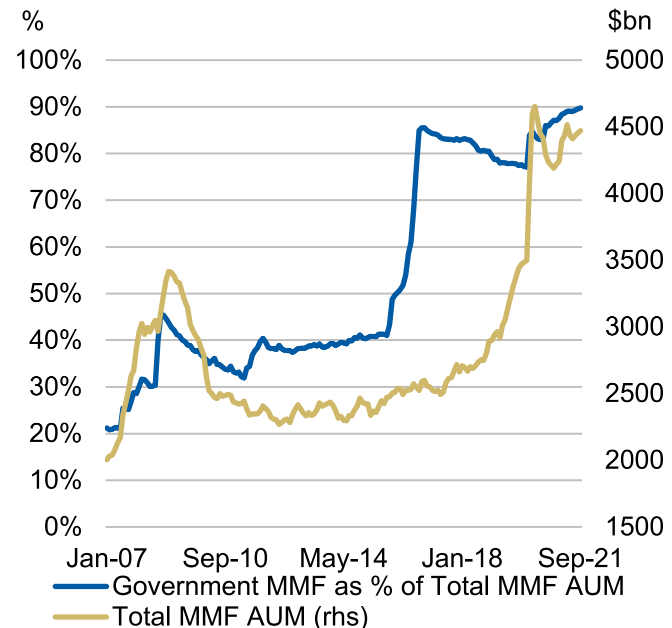
Zooming in on MMF Demand

- Though MMFs have become increasingly large players in the T-bills market, their holdings of UST securities as a % of MMF AUM has actually declined. This decline in UST holdings as a % of AUM is likely because:
  - Overall MMF AUM has grown substantially in the last year alongside Fed's LSAP. Most of this AUM growth has been experienced by Government MMFs, which now represent nearly 90% of the MMF industry.
  - The debt ceiling has recently constrained T-bill supply. Once there is a more long-lasting solution to the debt ceiling and the Treasury can resume normal T-bill issuance, some of this decline in UST holdings as a percentage of MMF AUM will naturally reverse.
- This growth in Government MMFs is coming from (1) banks encouraging large clients to deposit with MMFs instead of the bank directly and (2) continued transition of Prime MMFs into Government MMFs.
- UST debt holdings as a percentage of MMF AUM have declined though MMFs represent a growing portion of T-bill holdings. This suggests that the market could absorb more supply.

Repo holdings as a % of Government MMF AUM is at multi-year highs



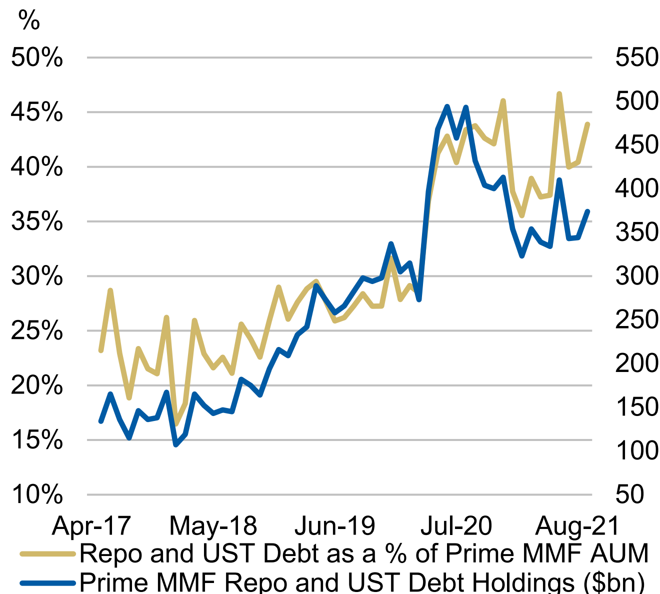
Overall MMF AUM growing, but driven by growth in Government MMF

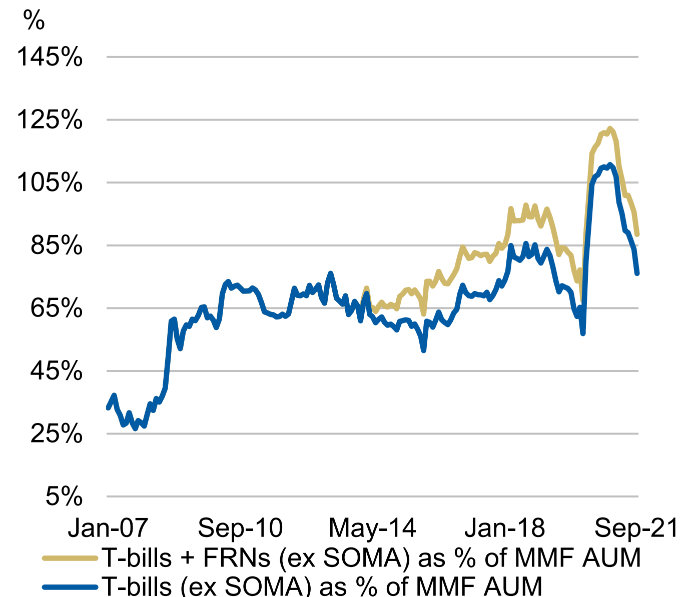


Source: US Treasury, Federal Reserve, Crane Data, ICI

Zooming in on MMF Demand

- Not only have Government MMFs been increasing holdings of UST debt and repo, but Prime MMFs have as well. Holdings of UST and repo are increasing both in dollar amounts and as a % of overall Prime MMF AUM.
- Total T-bills outstanding ex SOMA as a % of MMF AUM has been declining.
- These patterns suggest that T-bill supply may not be large enough to keep pace with the potential demand for T-bills from MMFs.



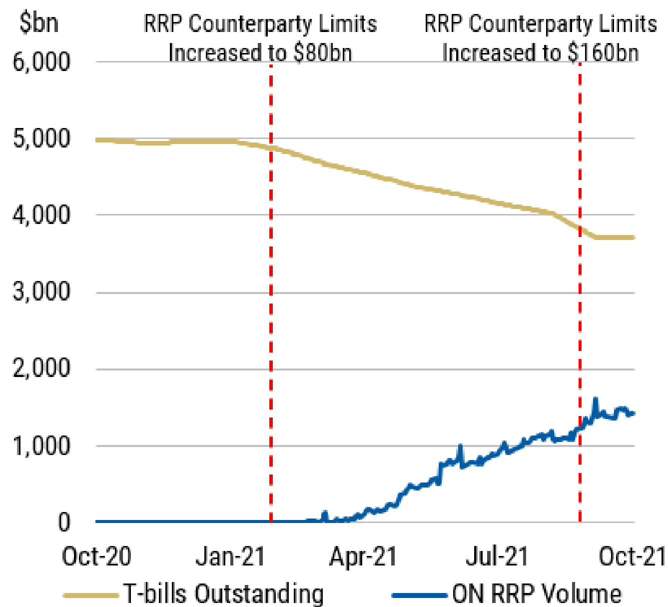


Source: US Treasury, Federal Reserve, Crane Data, ICI

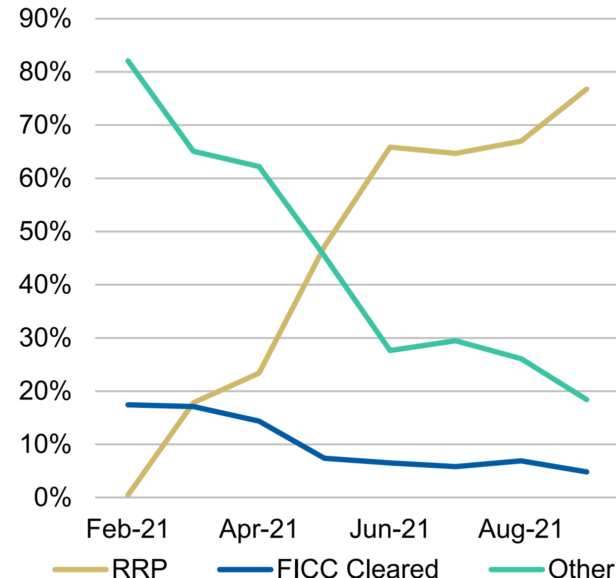
Considering RRP's Role in the Front-End

- Increased usage in the RRP facility indicates that there is excess cash sitting in the front-end as MMFs wait to earn market yields higher than 5bp. This growth in the RRP really began in March 2021, when large T-bill paydowns began. While tracking cash can be difficult, it is reasonable to assume that a lot of the cash generated from T-bill paydowns in 2021 has been invested in the RRP.
- As a result, the amount of RRP done with the Fed compared to overall MMF repo holdings has grown to nearly 80%. Even though the counterparty size limitations are conducive to large usage, it is unlikely the Fed wants to play such a central role in MMF functioning in the long-run.

RRP usage has been steadily growing as T-bills have been paid down through 2021



Nearly 80% of all MMF repo is RRP done with the Fed

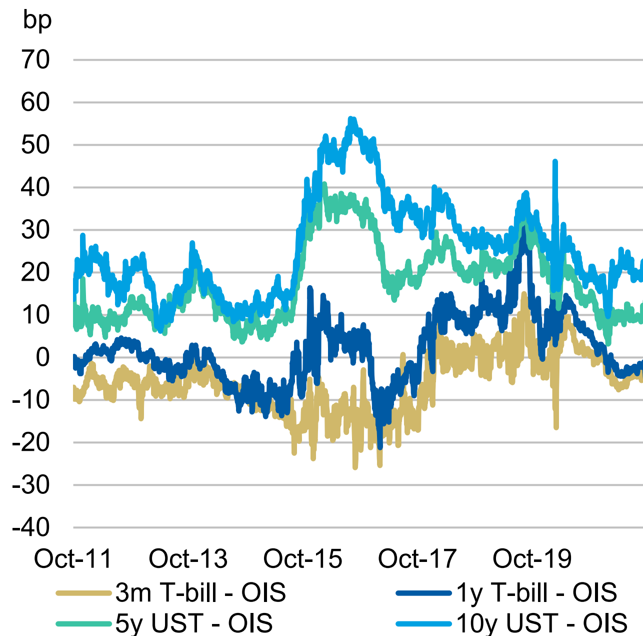


Source: US Treasury, Federal Reserve, Crane Data

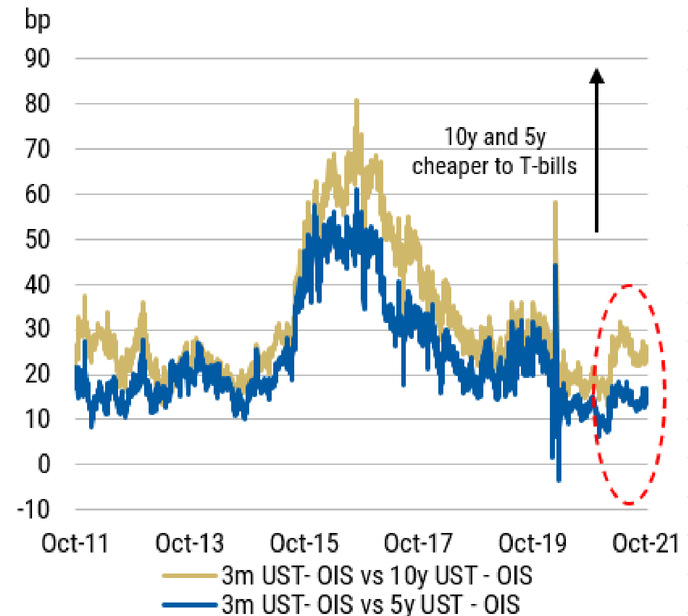
T-bill Valuations Relative to Other Parts of the UST Curve

- As a result of the shifting supply/demand dynamics, T-bills have richened modestly versus other points of the curve YTD.
- On a historical basis, T-bills are not trading particularly rich compared to other points on the curve.
- However, large availability of repo via the RRP is likely limiting demand for T-bills <5bps and thus understating richness of T-bills relative to other parts of the curve.

UST – OIS at various points on the curve, 10y history



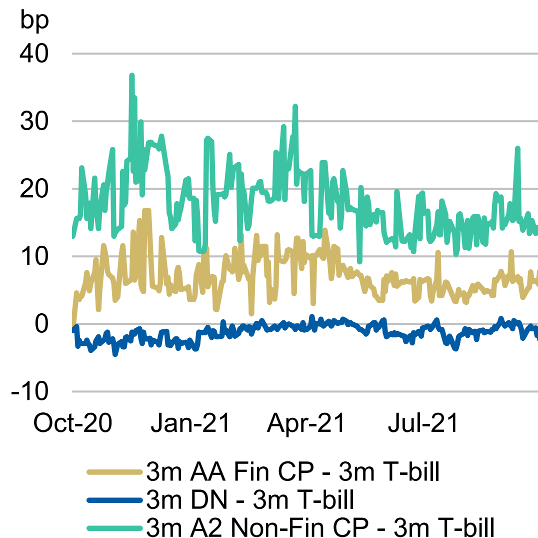
Spread of 3m T-bills – OIS vs other points on the UST curve, 10y history

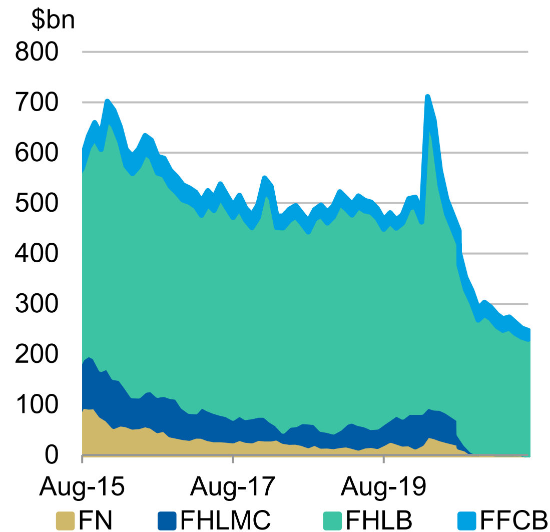


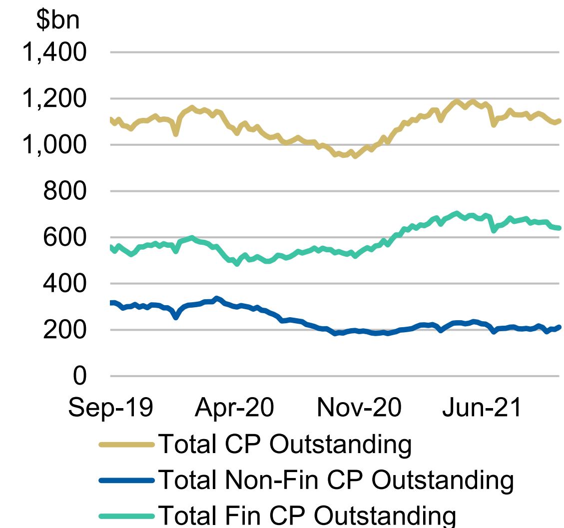
Source: US Treasury, Federal Reserve, Bloomberg

T-bill Valuations Relative to Other Front-End Substitutes

- Compared to other front-end substitutes, T-bills have been trading fairly in line.
- It is hard for T-bills to richen more from here given MMFs would rather earn 5bp placing their cash at the RRP facility.
- Other front-end assets, such as CP and agency debt, remain rich given a lack of supply. For example, non-financials corporates have become the largest *owners* of CP, whereas they used to be net issuers of CP. This is a result of increased cash that corporates have on hand.





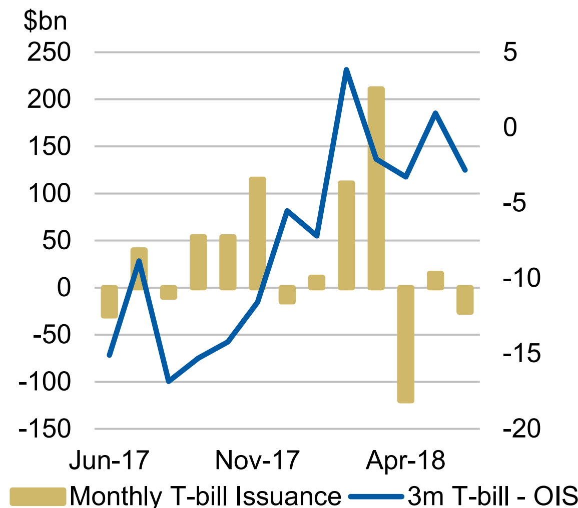


Source: US Treasury, Federal Reserve, Bloomberg, Fannie Mae, Freddie Mac, FFCB, FHLB

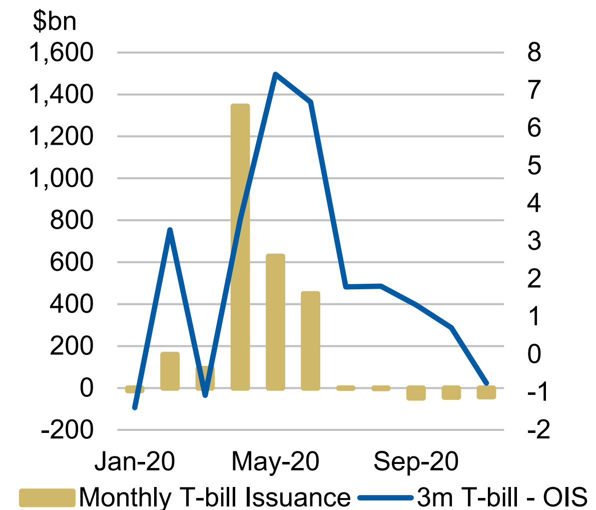
Other Considerations: Does Flow of Issuance Matter in Addition to Stock?

- In 2020, T-bills were able to grow by nearly $3tn without any substantial dislocation of the T-bills market. The most cheapening seen was in April 2020 when the pacing of T-bill issuance far outweighed the speed at which new MMF AUM was created. There was nearly $1.5tn new T-bills issued that month alone. Yet, T-bills cheapened only 7bp relative to OIS.
- However, in other instances, T-bill issuance picking up led to substantial cheapening of T-bills vs OIS. For example, in late 2017 to early 2018, an increase in T-bill issuance, albeit smaller than in 2020, led to almost 20bp of cheapening over the course of several months.
- So, perhaps it is worth considering if not only stock of T-bill outstanding, but also flow of issuance matters for T-bill sizing. As with overall stock of T-bills, as the supply of broad money grows and the deficit continues to grow over time, the amount the market can absorb in any given month is likely not a static number either.

T-bills cheapen in late 2017-early 2018 amidst larger issuance



T-bill cheapening was more muted in 2020

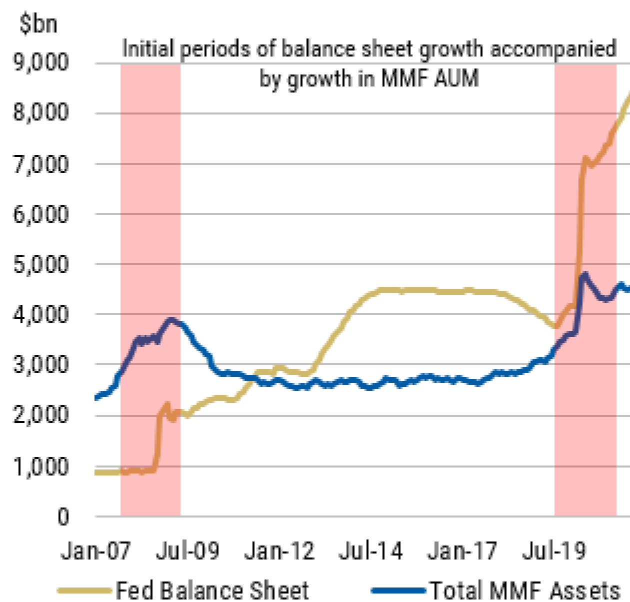


Source: US Treasury, Federal Reserve, Bloomberg

Other Considerations:
Does the Fed Balance Sheet Matter for T-bill Sizing?

- While the Fed and Treasury are independent entities, the balance sheet policy the Fed employs could have implications for the right amount of T-bills that the Treasury should issue.
- While the Fed is expanding their balance sheet, this is often initially met with an increase in MMF AUM. This also tends to coincide with a fiscal impulse which leads to more T-bill issuance, so T-bills are readily absorbed by the growth in MMF AUM. After the recovery takes foot, MMF AUM growth tends to taper off, even if balance sheet keeps increasing, as investors put cash to work in other risk assets.

Early stages of balance sheet growth tend to coincide with growth in MMF AUM

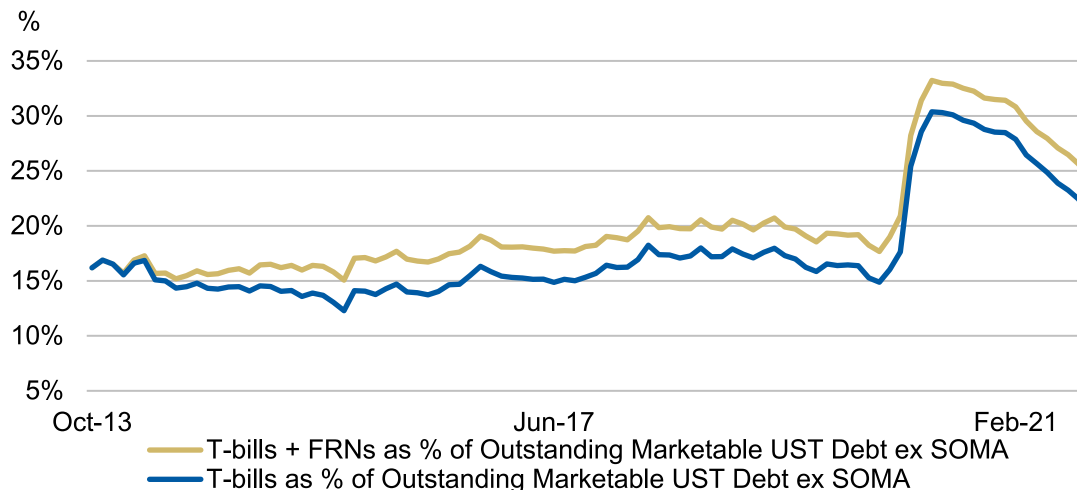


- But is the converse true when the Fed is shrinking their balance sheet? In 2018-2019, MMF AUM grew despite a shrinking Fed balance sheet.
- It is difficult to quantify the impact on T-bills as on one hand, (1) a shrinking balance sheet means fewer reserves which in theory means less cash available to absorb T-bill supply, but (2) the portfolio balance channel effect of LSAPs tends to have a larger impact on rates further out the curve, which could lead to further cheapening of coupons relative to T-bills.

Source: US Treasury, Federal Reserve, Bloomberg

Other Considerations: Should FRNs be Included in this Metric?

- Rather than looking at T-bills as a % of UST debt, should TBAC consider T-bills + FRNs as a % of UST debt? FRNs make up a small portion of UST debt outstanding, roughly 4% currently, so this shift doesn't make a massive difference presently.
- Given their similar demand base, it may be worthwhile considering the two in conjunction with one another. This may be especially true should the Treasury pursue issuance of a SOFR FRN.
- Right now, T-bill + FRNs take up around 20% share of total marketable debt and just under 25% ex SOMA. Given the Fed has not been purchasing T-bills or FRNs under LSAPs, the spread between T-bill + FRN share of total outstanding debt and that of outstanding debt ex SOMA has been driven wider.



Source: US Treasury, Federal Reserve

Other Considerations:
Financial Stability and MMF Reform

- In prior TBAC charges, as well as academic research*, it has been suggested that increased supply of public sector short-term, liquid assets may reduce attractiveness of other short-term liabilities, namely those of the private sector. This could help to enhance stability in the financial system.
  - It is also worth considering whether banks have a preference for T-bills vs other UST securities. Though the two forms of HQLA are treated similarly under capital requirements, the difference in maturity could have different implications for internal liquidity metrics. The decision on what proportion of T-bills to hold vs coupons is also not likely the same bank to bank, but pinpointing individual bank's preferences can be difficult.
- Given the large outflows that the Prime MMFs experienced in March 2020, there are ongoing discussions regarding future MMF reform. Many of the proposals considered in the President's Working Group Report** from December 2020 are likely to lead to further outflows from Prime MMFs and into Government MMFs. In this case, on margin, there would likely be even more demand for T-bills given Prime MMFs invest in a broader universe of front-end assets compared to Government MMFs.

Source:
TBAC Charge, November 2017
* "The Demand for Short-Term, Safe Assets and Financial Stability" by Carlson, Duygan-Bump, Natalucci, Nelson, Ochoa, Stein, and den Heuvela
**"Report of the President's Working Group on Financial Markets Overview of Recent Events and Potential Reform Options for Money Market Funds", President's Working Group

Conclusion

- In the short-run, even if coupon cuts are introduced in November, T-bills as a % of UST debt outstanding would likely fall below 15%. Coupon cuts would need to occur over the next several quarters in order to maintain T-bills in the 15-20% range. Given this 15-20% target is an intermediate-term objective, it is acceptable to move towards the lower edge of the range to help maintain stable and predictable coupon issuance.
- Given there is (1) increasing demand for T-bills from MMFs coupled with (2) a large amount of cash at the RRP earning 5bps and (3) a lack of other front-end assets, there is likely scope for T-bill issuance to increase above 20% without creating pressure on T-bill valuations.
- As such, there is flexibility in the TBAC's recommended range for T-bills to either fall below 15% of outstanding stock in which case excess cash will likely get absorbed by the RRP facility or for T-bills to rise modestly above 20% while still maintaining financing flexibility for the Treasury.