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Bifurcating Treasury market structure: What the TRACE data reveal

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Despite the size and depth of the Treasury market, our understanding of traded activity, venues, and counterparties is somewhat limited. The Treasury and FINRA (Financial Industry Regulatory Authority) began collecting more detailed data in 2017 and will begin publishing these statistics this week.

We examine the structure of the Treasury market with a focus on what the TRACE (Trade Reporting and Compliance Engine) data reveal about the activity on electronic platforms and by principal trading firms (PTFs).

- **Daily trading volumes are concentrated in the most recently issued securities – particularly the 5y, 10y, and 2y.**
- **Nonetheless, activity in off-the-run issues is still significant at $175bn/day. Daily trading in bills is approximately $100bn/day.**
- **Treasuries trade in two roughly equally sized markets – interdealer and dealer-to-customer (DTC). The interdealer market is largely electronic, while the DTC market is traded via voice.**
- **Primary dealers still make up the bulk of Treasury trading across both platforms (51%), but PTFs account for 20% of daily trading activity.**
- **However, PTF activity is concentrated on electronic interdealer platforms where they account for 60% of activity. They mostly trade the on-the-run (OTR) or most recently issued coupons.**
- **About one-third of electronic trading on these platforms is between two PTFs. Another 55% involves trades between a PTF and a non-PTF.**
- **Bills and off-the-runs account for most DTC activity. Transaction sizes are typically larger than on the interdealer platform.**

The TRACE data reveal two different Treasury markets. Structural changes as well as differences in the behavior of dealers and PTFs may account for perceptions of reduced liquidity and heightened liquidity risk in periods of market stress.

Platforms and counterparties

Dealer Treasury trading activity can be split into two segments: activity with interdealer brokers and activity directly with customers (DTC). On either sector, trading can be done electronically/automated or by voice (over the telephone). Voice activity, however, is increasing electronic. "Request for quote" systems allow clients to solicit bids and offers on one platform to several dealers simultaneously. Principal trading firms (PTFs) have become important liquidity providers. These firms trade for their own account and frequently do not have clients. They typically employ algorithmic or high frequency trading strategies and generally end the day flat – that is they do not hold risk positions overnight.

Data collection

The Treasury and other regulators recognized that their understanding of the causes of the October 2014 "flash rally" was hampered by a lack of data. While the Federal Reserve has been collecting Treasury volume data for decades, the most detailed information is limited to trades in which one leg goes through a primary dealer. Counterparty activity is limited to interdealer activity and a residual "other" category meant to capture dealer-to-customer (DTC) activity. The Fed only began collecting data on activity on the on-the-run (OTR) or most recently issued securities in the past few years.

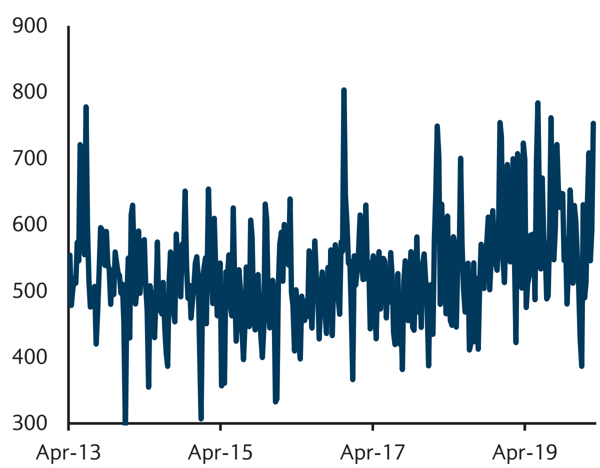
Federal Reserve data: What we know

According to the primary dealer statistics, average daily Treasury volume this year has been around $560bn/day. Activity has hovered near this level for several years – although it jumped to $750bn/day in the week ending February 26 (Figure 1). About 60% of the trading is on the OTR issues. Approximately two-thirds of daily average OTR volume occurs in just three issues: 5y, 10y, and 2y notes. Daily volume in the OTR 5y is about $70bn/day this year. Activity in the 10y and 2y is $65bn/day and $45bn/day, respectively. This year, daily average trading in bills is about $122bn/day or about 20% of overall primary dealer Treasury trading volumes. Daily activity in TIPs is around $20bn/day.

Roughly one-third of primary dealer trading occurs through interdealer brokers. The remainder is with "others," which includes customers, other dealers and the Federal Reserve. This interdealer share, however, is biased lower as we include bills, TIPs and FRNs in the total. Close to half of primary dealer trading in the OTR coupons occurs on interdealer platforms.

FIGURE 1

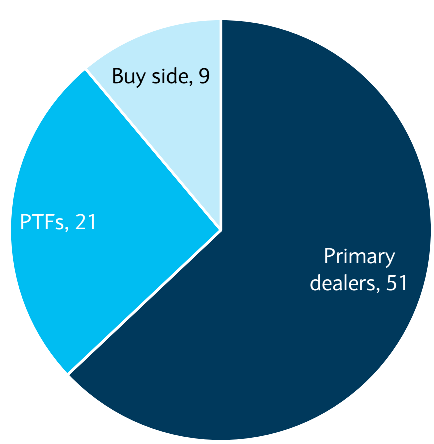
Primary dealer Treasury trading volume ($bn/day)



Source: Federal Reserve, Barclays Research

FIGURE 2

Treasury trading activity (%)



Note: Using TRACE data. Source: Federal Reserve, Barclays Research

How useful is the Fed's data?

Primary dealers account for about 50% of daily trading across both the interdealer and DTC segments of the Treasury market. However, if primary dealers are making markets and providing liquidity in roughly half of the daily Treasury market activity, who (and how) is intermediating in the other half?

Dealer concentration

Primary dealer Treasury trading is concentrated. Of the 24 primary dealers, the top five (by activity) generally have a market share exceeding 50%. In coupons, the highest concentration is in the bond sector where these dealers account for nearly 60% of trading in securities with maturities longer than 11y. In the bill market, their market share is about 52%. Primary dealer concentrations are even higher in the less actively traded securities such as FRNs and TIPs. There the top five dealers account for between 60 and 68% of daily trading depending on the maturity of the security.

Within the top five, we suspect activity is also concentrated, although this is harder to show. In coupons, the smallest of the top five dealers has a market share of between 7 and 8%. The remaining four dealers split up the remaining 40% of the daily market activity. By comparison, the Treasury tri-party repo market appears to be somewhat less concentrated. There, the top three dealers (by volume) share about 25% of the activity.

TRACE data collection

Since July 2017, FINRA member firms have been required to report their Treasury transactions through the TRACE (Trade Reporting and Compliance Engine) system. TRACE reporting requirements apply to bills, coupons, FRNs, TIPs, and STRIPs. It does not apply to repo or to securities purchased at a Treasury auction. TRACE data, however, include all when-issued transactions. Trades between FINRA members are reported by both counterparties. Last April, FINRA began collecting counterparty data on trades executed by interdealer brokers together with more information on PTF activity.

Weekly TRACE data will be released this month

The Treasury and FINRA will begin releasing weekly aggregated Treasury TRACE data this week. The volume data will be divided across maturity buckets by OTR and off-the-run issues. Keep in mind that all the data that Treasury and FINRA will be releasing is aggregated – they will not be releasing activity in individual CUSIPs. Volume statistics will be split further into interdealer and DTC activity. Data on PTF activity, however, is for official use only.

What we are learning

The Treasury released a few preliminary statistics last fall and the Federal Reserve Bank of New York has done some analysis of the data as well.[1]

Daily activity is concentrated in OTRs…

The TRACE data corroborate some of the details in the primary dealer statistics. Overall trading volume was around $575bn/day over the period between August 2017 and July 2018.[2] This is somewhat (12%) higher than the corresponding primary dealer statistics from the Federal Reserve. However, trading volumes in the TRACE data are also skewed to the OTR issues – about 70% of daily TRACE activity is in the most recently issued coupons (compared to 60% in the Fed data). Among the OTRs, most activity is in the 5y ($115bn/day), followed by the 10y ($93bn/day), and 2y notes ($52bn/day).[3]

[1] See, "Remarks of Deputy Secretary Justin Muzinich at the 2019 US Treasury Market Structure Conference", September 23, 2019, Federal Reserve Bank of New York. See also, "Unlocking the Treasury Market through TRACE", September 28, 2018 and "Breaking Down TRACE Volumes Down Further", November 29, 2018, both by D. Bain, M. De Pooter, D. Dobrev, M. Fleming, P. Johansson, C. Jones, F. Keane, M. Puglia, L. Reiderman, T. Rodrigues, and O. Shachar, Federal Reserve Bank of New York.
[2] "Unlocking the Treasury Market through TRACE", September 28, 2018
[3] Ibid.

…but there is still significant activity in vintage issues

Although trading is tilted to the OTR issues, activity in vintage issues is still significant. On average, $175bn/day in these issues changes hands. Unlike the OTRs, trading is roughly evenly distributed across maturities. There appears to be a "novelty" dimension to trading in the off-the-runs – activity in issues further from their original issue date is lighter. That said, vintage securities more than three issues away from the OTR still account for an average of $64bn/day in trading – roughly 14% of coupon activity.[4]

Two different markets

PTFs are 21% of overall daily Treasury trading…

Just over half of daily Treasury trading volume is done through primary dealers. PTFs and buy side firms such as insurance companies account for the rest (Figure 2). This distribution of daily trading volume has been fairly steady – at least since August 2017. Within the two segments, trading volumes in the interdealer and DTC markets are roughly equal and each accounts for about half of the reported $575bn/day that trades in the Treasury market.

…but over 60% of electronic interdealer activity

In the interdealer market, trading is roughly equally divided between primary dealers and PTFs. Buy-side firms account for the remaining 10%. Interdealer trading is both electronic (or automated) and voice. As PTFs' trading strategies are skewed toward algorithmic and high frequency transactions, it is not surprising that they account for over 60% of the electronic or automated interdealer market. About one-third of the trading on automated interdealer platforms is between two PTFs. Another 55% of interdealer trades is between PTFs and non-PTFs.

By contrast, primary dealers perform most of their interdealer trading by voice. They account for approximately 80% of all interdealer voice trading. Buy-side firms also tend to do more of their trading in the voice interdealer market.

PTF activity is concentrated in OTRs – they do very little trading in the off-the-run issues. By contrast, primary dealers trade a wider mix of securities. They are the principal market makers in off-the-runs, bills, FRNs, and TIPs. The frequency of their trades is lower than for PTFs, but their transaction sizes tend to be significantly larger.

Has market structure caused changes in liquidity?

The TRACE data reveal two key points. First, there is significantly more activity in the off-the-runs than was initially feared following the introduction of the leverage ratio in 2015. Primary dealers make markets in these securities – as well as bills, FRNs, and TIPs – often in large lots and as agents for customers as well as themselves. Moreover, market making is not limited to recently issued securities – even very old vintages trade and account for about 14% of daily activity.

Second, liquidity provision in the Treasury market is bifurcated: OTRs trade in a separate market with a different set of market makers than other Treasuries. PTFs play a significant intermediating role in the OTR market – but elsewhere their activity is non-existent. This reflects the nature of their trading activity as well as their structure. Without clients and typically less capital than primary dealers, the PTFs have very little ability to sit on inventories of unsold Treasuries. As a result, they limit their activity to trading only the most liquid issues (the OTRs) in the deepest (electronic) venues. By contrast, primary dealers can act as agents for their clients as well as take proprietary positions like the PTFs. Because they can hold inventories and do not need to end the evening flat, they have more capacity to wait out market swings and slowly distribute their holdings.

Have changes in market structure affected liquidity in the Treasury market?

This raises questions about how the behavior of dealers and PTFs may be different in response to a sudden shock. If PTFs have little capacity to hold onto issues – until calmer markets return, say the next day – is the liquidity they provide from market making less

[4] "Breaking Down TRACE Volumes Further," November 29, 2018

resilient than that provided by dealers? In particular, while a primary dealer might widen its bid-ask spreads as a precaution, a PTF might pull all its bids and offers.

A number of studies have focussed on the “flash rally” in October 2014 for clues about market behavior and liquidity provision.[5] Bouveret et al. found that dealers reduced liquidity provision by widening bid-ask spreads and pulling offers while PTFs reduced the quantities offered.[6] However, some have noted that liquidity in the OTRs – where PTFs are most active – has not declined.[7] Others, however, argue that changes in market structure beyond just the activity of PTFs have contributed to a reduction in liquidity. For example, since the financial crisis, dealers have less tolerance for market risk and more activity has shifted to electronic platforms where there is greater price transparency.[8] Still others suggest that overall liquidity in the Treasury market for both OTR and off the runs has not changed, rather liquidity has become more flighty, that is, less resilient. In turn, this has increased liquidity risk – at least in OTRs.[9]

In any event, the TRACE data and the recent dramatic rally in Treasuries will provide more information about how the structure of the Treasury market is evolving.

[5] See Joint Staff Report, “The US Treasury Market on October 15, 2014,” US Treasury, Federal Reserve, Securities and Exchange Commission, and Commodity Futures Trading Commission, July 13, 2015

[6] See, “Fragilities in the US Treasury Market: Lessons from the ‘Flash Rally’ of October 15, 2014”, A. Bouveret, P. Breuer, Y. Chen, D. Jones, and T. Sasaki, IMF, October 2015.

[7] See “A Deeper Look at Liquidity Conditions in the Treasury Market”, J. Clark and G. Mann, US Treasury, May, 6, 2016

[8] Bouveret, op. cit.

[9] See “Has Liquidity Risk in the Treasury and Equity Markets Increased?” T. Adrian, M. Fleming, D. Stackman, and E. Vogt, Federal Reserve Bank of New York, Liberty Street Economics, October 6, 2015.

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