

Measuring Government Bond Turnover in Australia Using Austraclear Data

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Photo: Busakorn Pongparnit – Getty Images

Abstract

This article provides new estimates using Austraclear data for monthly turnover ratios for Australian Government Securities (AGS) and semi-government bonds (semis). Previous Reserve Bank estimates used Austraclear data that included repo transactions, as acknowledged at the time. In November 2021 Austraclear implemented a change to reporting standards that excluded repo transactions more effectively. This change allows for more accurate estimates of turnover for AGS and semis. The new turnover estimates are considerably lower, suggesting repo activity was a significant part of the previous estimates. The new estimates, with repo transactions excluded, better align with survey data on turnover published by the Australian Office of Financial Management.

Introduction

There are around \$1.3 trillion of government bonds outstanding in Australia issued by the Australian Government and the states and territories, which is equivalent to around 60 per cent of GDP. Government bonds play a pivotal role in the Australian financial system. Apart from their role of funding governments, their yields are reference rates that help to anchor yields on other securities. Government bonds are considered safe and liquid assets and are held by a variety of investors.

Liquidity is a difficult concept to measure. One indicator of liquidity is turnover – the amount bought or sold over a given time period. The Reserve Bank receives daily transaction-level data from Austraclear, the settlement system for Australian dollar fixed income securities in Australia, and turnover can be calculated using these data. Previous analysis using Austraclear data estimated a monthly turnover ratio for Australian Government Securities (AGS) of around 110 per cent and around

40 per cent for state and local government bonds (semis) (Guo and Zhang 2020).

However, as acknowledged in Guo and Zhang (2020), these estimates included some repurchase (repo) transactions, which had been recorded in Austraclear as outright trades. A repo involves one party selling a security to another party, with an agreement to buy back the security on a predetermined date and at a specified price. These transactions are akin to a collateralised loan, and so do not represent genuine secondary market trading. Government securities are frequently used in private repo transactions, and so the previous analysis overstated the secondary market turnover of these securities.

This article looks at the effects of a change in November 2021 to Austraclear reporting standards, resulting in repo transactions being excluded more accurately. This change coincided with an appreciable drop in measured turnover, suggesting repo activity was a significant part of previously estimated turnover. This is supported by an algorithm, designed to identify repo transactions, that suggests much of the turnover prior to November 2021 was accounted for by repo transactions.

This article also shows that the new estimates align with survey data on turnover published by the Australian Office of Financial Management (AOFM).

Data and methodology

We use Austraclear settlement data to measure turnover. Security settlements are lodged in Austraclear when counterparties exchange a security registered in Austraclear for cash.^[1] The Bank began receiving daily data from Austraclear in November 2020.

The data do not represent all trades in the wholesale debt market – they only include trades settled between counterparties that use separate Austraclear accounts.^[2] Moreover, transactions of Australian dollar denominated securities may be settled through clearing systems other than Austraclear, such as Euroclear or Clearstream.

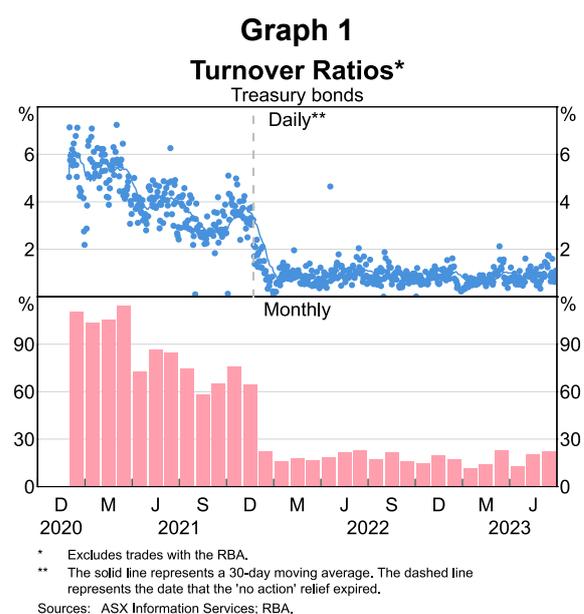
Our focus is on the longer term fixed income market, so we only consider securities with an

original maturity of over one year. We also exclude trades associated with monetary policy; between 2020 and 2022 the Bank was an active participant in government bond markets due to some of the policies introduced during the COVID-19 pandemic, but these interventions were temporary and do not represent typical activity in the market.

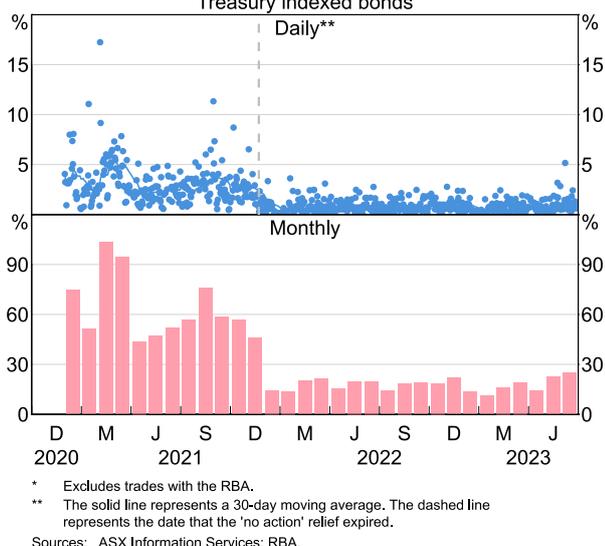
To identify repos prior to November 2021, we revise the detection algorithm described in Garvin (2018). The intuition behind the algorithm is to identify groups of cash movements that resemble a loan followed by a repayment with interest. Relative to Garvin (2018), our detection algorithm uses some revised conditions, specified in Appendix A.

Excluding repo from turnover

Raw turnover data show that prior to November 2021, turnover in the AGS market averaged between 60 and 120 per cent per month (Graph 1). Turnover for inflation indexed bonds was a bit lower, while for semis it was around 30 to 40 per cent per month (Graph 2; Graph 3). A steep drop in turnover occurred on 22 November 2021 in response to Austraclear's change in reporting standards (see below). After that point, the monthly turnover ratio for AGS has been around 15 to 20 per cent and for semis it has been around 10 per cent.



Graph 2
Turnover Ratios*
Treasury indexed bonds



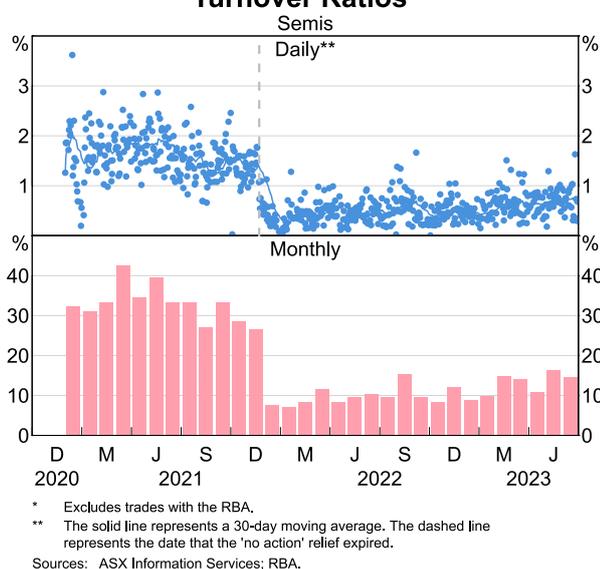
On 22 November 2021 a ‘no action’ relief expired that applied to Austraclear’s regulations. After that point, repo transactions could no longer be booked as outright trades without sanction.^[3] The fall in turnover after that date can therefore be used to estimate the amount of repo transactions that were previously recorded as outright trades.

This conclusion is supported using the algorithm from Garvin (2018) to identify repo trades. The decline in turnover is accounted for mostly by the decline in trades identified by the algorithm as repo transactions (Graph 4). After the change, there are

very few transactions left that the algorithm identifies as repos – those remaining are either repos conducted as outright trades in contravention of Austraclear’s regulations, or false positives from the algorithm.

Trades not identified as repo still decline after November 2021, which is most clearly seen when trades are aggregated at the monthly level (Graph 5). The most likely explanation for this is that prior to November 2021 the algorithm is failing to identify some repo transactions. Therefore, in what follows, we focus on the post-November 2021 sample. Given that the algorithm identifies a trivial number of repo transactions after that point, we use the raw data.

Graph 3
Turnover Ratios*
Semis



Graph 4
Turnover Amount*
Daily

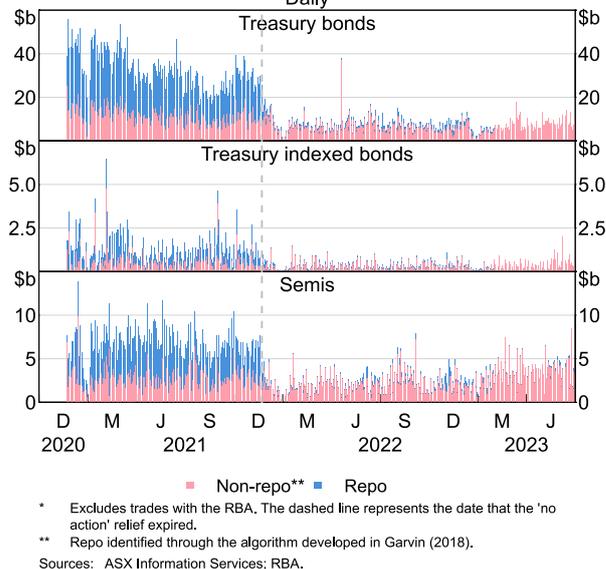
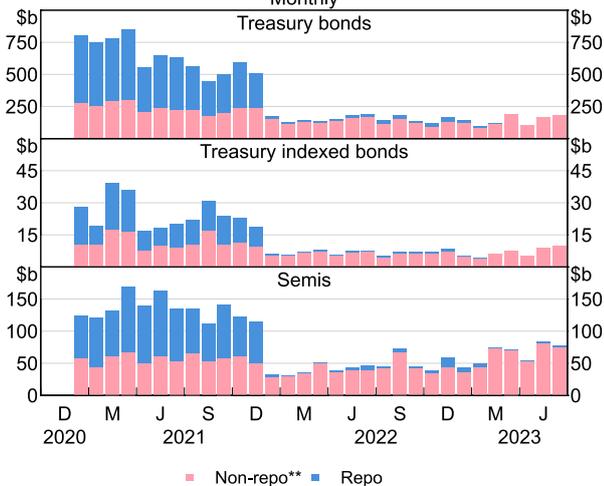


Table 1: Government Security Turnover Statistics
Post-November 2021

| | Trades per bond line Monthly average | Average trade size (\$m) |
|------------------------|---|-----------------------------|
| Treasury bonds | 358 | 14.7 |
| Treasury indexed bonds | 235 | 4.0 |
| Semis | 27 | 14.2 |

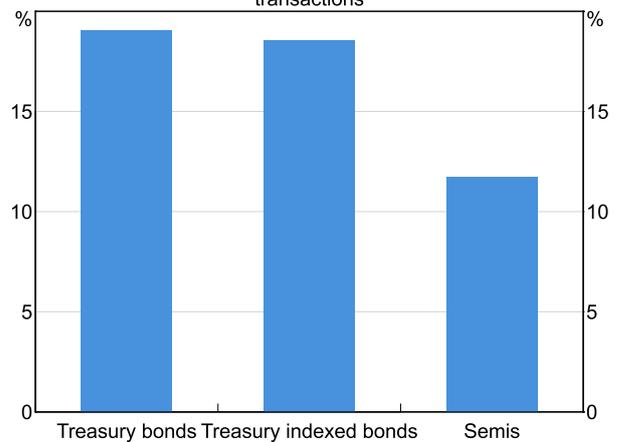
Sources: ASX Information Services; RBA.

Graph 5
Turnover Amount*
Monthly



* Excludes trades with the RBA.
** Repo identified through the algorithm developed in Garvin (2018).
Sources: ASX Information Services; RBA.

Graph 6
Average Turnover Ratio by Asset Class*
Monthly; weighted by outstanding value of bond line transactions



* For data starting post-November 2021. Excludes trades with the RBA.
Sources: ASX Information Services; RBA.

New turnover estimates

After November 2021, the average monthly turnover ratio for AGS is around 15 to 20 per cent, and for semis it is around 10 per cent (Graph 6). Trade frequency (i.e. for each bond line, the number of times that bond line is transacted over a period of time) is around 350 trades per month for Treasury bonds, about two-thirds that for Treasury indexed bonds, and 27 times per month for semis (Table 1). This is substantially less than estimated by Guo and Zhang (2020). The average trade size is also lower than estimated by Guo and Zhang (2020).

Guo and Zhang (2020) considered turnover ratios by size of the bond lines, concluding that turnover ratios increased by size. That does not seem to be the case for the post-November 2021 sample, where there is no strong relationship between size and turnover (Graph 7).^[4] However, turnover in dollar terms is higher for larger bond lines. This is driven by a higher number of trades, with trade size again not varying much by the size of the bond line (Graph 8; Graph 9).

Relationship to Australian Office of Financial Management estimates

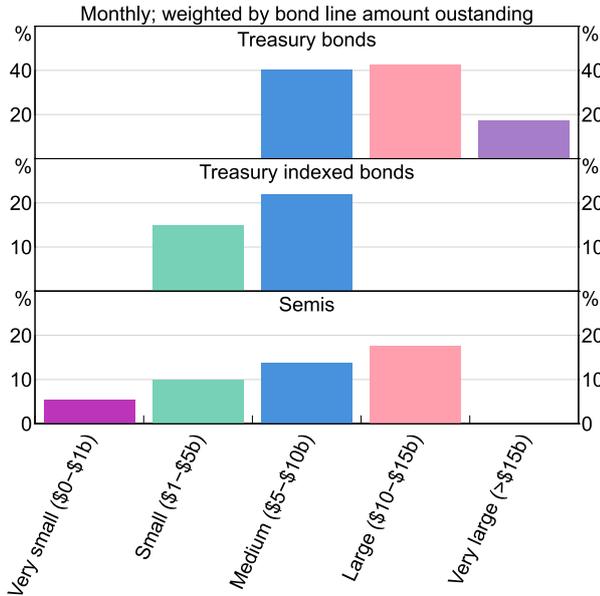
The AOFM conduct a survey of market intermediaries detailing their turnover in AGS every month. While the scope of the AOFM survey is a little different to that of the Austraclear data, the new estimates presented in this article are in line with the AOFM survey (Graph 10).^[5]

Conclusion

New estimates using Austraclear data for monthly turnover ratios for AGS and semis are considerably lower than estimates published previously. This is

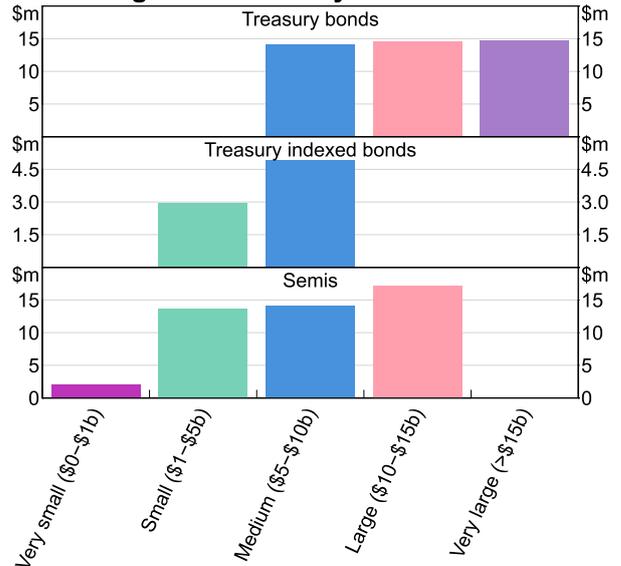
due to the earlier estimates being based on Austraclear data that included repo transactions at the time. A change to Austraclear reporting standards in November 2021 has resulted in repo transactions being excluded more accurately. A detection algorithm used to identify repo transactions from the Austraclear data supports the new turnover estimates, which also better align with turnover data from the AOFM. ↘

Graph 7
Average Turnover Ratio by Bond Line Size*



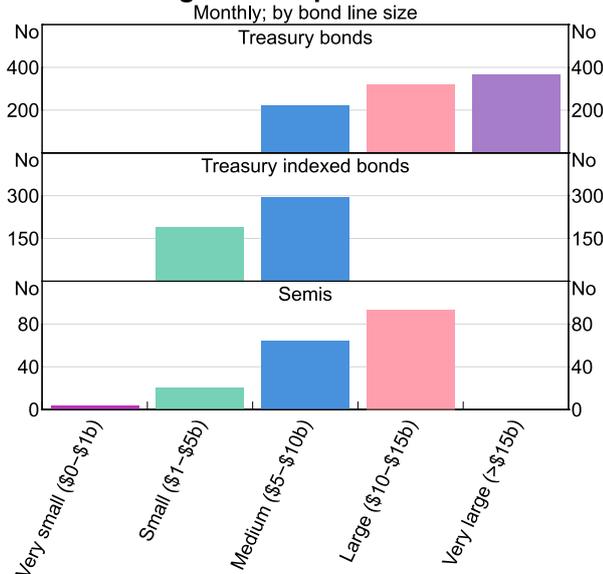
* For data starting post-November 2021. Excludes trades with the RBA.
Sources: ASX Information Services; RBA.

Graph 9
Average Trade Size by Bond Line Size*



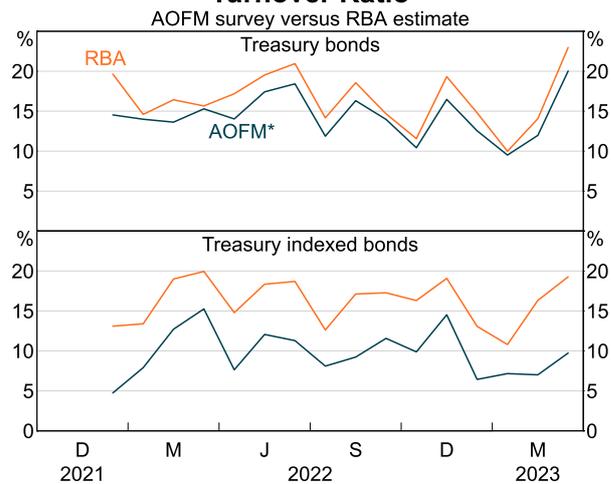
* For data starting post-November 2021. Excludes trades with the RBA.
Sources: ASX Information Services; RBA.

Graph 8
Average Trades per Bond Line Line*



* For data starting post-November 2021. Excludes trades with the RBA.
Source: ASX Information Services; RBA.

Graph 10
Turnover Ratio



* Includes trades made by the RBA. Excluding RBA trades is possible using the AOFM's quarterly survey. However, doing so does not materially impact the measure of turnover during this period.
Sources: AOFM; ASX Information Services; RBA.

Appendix A

Our detection algorithm uses the following conditions to detect repo transactions executed as two offsetting outright trades:

1. Transactions take place between the same two accounts.
2. Transactions involve movement of the same securities.
3. Intraday transactions are excluded.
4. Transactions involve a similar (as opposed to net-zero) transfer of securities; that is, the future value of securities provided as collateral is within ± 10 per cent of the future value returned.
5. The implied simple interest rate from all cash movements in a transaction falls within a ± 3 percentage point range of the exchange settlement remuneration rate.
6. If there exist overlapping potential repos satisfying Conditions 1 to 5 above, the repo with fewer transactions is selected.

Several of these conditions are slightly modified from those used by Garvin (2018).

Endnotes

- [*] The authors undertook this work while in Domestic Markets Department. They would like to thank Maureen Rocas for assistance in implementing the algorithm from Garvin (2018). security may remain in the custodian's account. In this case, no transaction would appear in Austraclear. These missing transactions will tend to add a downward bias to our turnover estimates.
- [1] The data only include securities traded for cash (i.e. 'delivery versus payment' transactions). Austraclear also allows 'free of cash' transactions and 'delivery versus delivery' transactions but these are not included in the dataset used here. These transactions are used when pledging collateral or for securities lending. [3] See ASX (2020).
- [2] For example, if a counterparty does not have an Austraclear account, then their securities are registered in a custodial Austraclear account (e.g. Commonwealth Bank Nominee Account). If this counterparty were to transact with another counterparty using the same custodian, the [4] Guo and Zhang (2020) also looked at different sized buckets than we do here, given their analysis also featured other bonds where the lines were not so large.
- [5] One difference between the two sources is that the Austraclear data cover more than the 18 dealers covered in the AOFM survey. However, the AOFM data captures transactions by the surveyed dealers even if they do not involve a transfer of bonds between two Austraclear accounts.

References

- ASX (2020), 'Settlement of Market Repo Transactions in Austraclear – Extension of "No-action" Relief', Notice 0338.20.04, 17 April.
- Garvin N (2018), 'Identifying Repo Market Microstructure from Securities Transactions Data', RBA Research Discussion Paper No 2018-09.
- Guo J and Z Zhang (2020), 'Secondary Market Liquidity in Bonds and Asset-backed Securities', RBA *Bulletin*, December.