

Secondary Market Liquidity in Bonds and Asset-backed Securities

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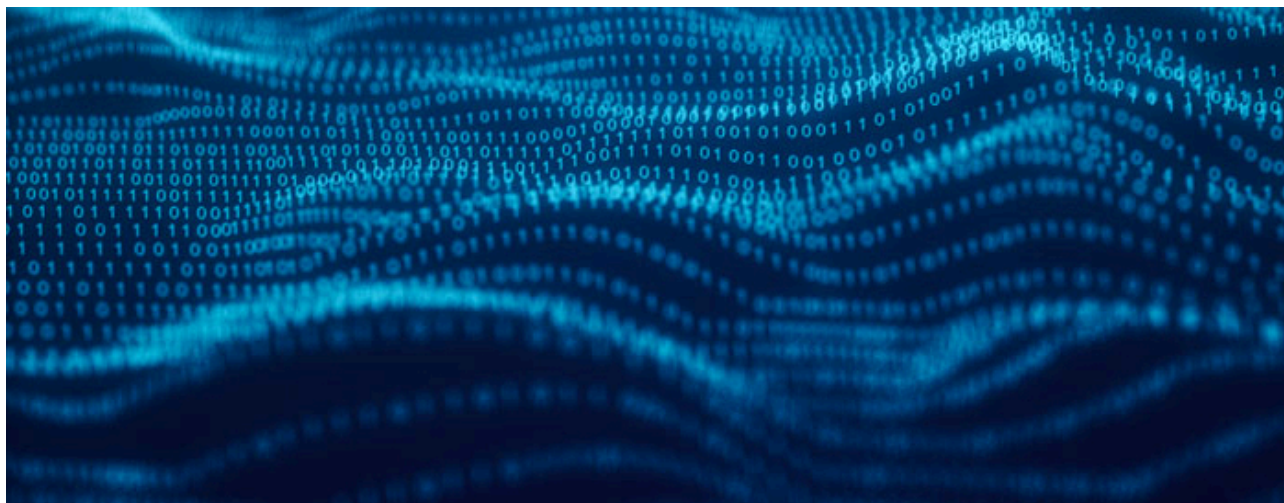


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Abstract

Liquidity is an important measure of health and stability in financial markets. This article assesses liquidity in markets that trade Australian fixed income securities by analysing market turnover using data for the period 2015–17, which was one of relative calm. We find heterogeneity across these markets. Australian and State Government bonds have higher turnover than other securities. Turnover was generally higher for larger bond lines, but not universally so. In particular, there is relatively high turnover in a number of small asset-backed security lines.

Introduction

Market liquidity, which is defined as the ability to trade securities with ease and at low transaction costs, is an important measure of health and stability in financial markets. Illiquidity in markets hampers efficient price discovery and access to funding from those markets by issuers. Low liquidity can also amplify disturbances in the financial system. These effects can be particularly extreme in times of financial distress, representing a major risk for issuers, investors and regulators. This was illustrated most recently during the outbreak of COVID-19.

In the weeks following late February 2020, concerns over the global spread of the virus and the associated economic costs escalated. This saw widespread falls in the value of risky assets, such as shares, and led to a sharp increase in volatility in financial markets as a range of investors needed to raise cash to reduce leverage, meet margin calls, and meet redemptions. These factors contributed to a deterioration in the functioning of financial markets all over the world, as liquidity in these markets dried up. Government securities, which are commonly considered safe assets, also experienced sell-offs and market dysfunction, resulting in sharp increases in yields. This flowed through to other financial markets, given the role government

securities play as benchmarks for other securities. In particular, illiquidity in the key benchmark market for US Treasuries further contributed to increased market stress.^[1]

In Australia, liquidity for government bonds also deteriorated as measured by a number of metrics (Finlay, Seibold and Xiang 2020). In addition, non-government bond markets became stressed, with bid-ask spreads increasing significantly through early to mid March.^[2] By late March and early April, liquidity conditions in fixed income markets began to gradually recover, both in Australia and internationally. These recoveries were supported by central bank policies, which included asset purchases and expanded liquidity operations, in many jurisdictions, including Australia.

In this article, we look at turnover ratios in secondary Australian fixed income markets under more normal conditions, using a unique settlement dataset.^[3] Historically, transactions in the Australian bond market have been relatively opaque, partly because most secondary market trading is transacted outside of electronic platforms, making it difficult to access a central source of transaction records.^[4] We measure turnover using data from Austraclear, the settlement system for Australian dollar fixed income securities in Australia. This dataset covers the period from 2015–17, so our data do not cover the most recent period of market turmoil, but they do give us a baseline against which to assess the recent episode when more data become available. The data from 2015–17 reveal structural differences in turnover across Australian fixed income markets. These differences are relevant to understanding the behaviour of fixed income markets, under both normal and stressed conditions.

While this article focusses on turnover, and we acknowledge that there is debate on whether it is a good proxy for liquidity, previous research has suggested that higher turnover is correlated with other aspects associated with liquidity, such as narrower bid-ask spreads.^[5] Therefore, although turnover ratios may not directly capture all aspects of liquidity, they can be used as an indicator of liquidity.

Data and methodology

We use Austraclear settlement data from December 2015 to August 2017. Security settlements are lodged in Austraclear when counterparties exchange a security registered in Austraclear for cash.^[6] We separate bonds into different asset classes or ‘markets’ based on their issuer type and analyse a broad range of markets. The markets we analyse include non-bank corporations (corporate bonds); banks; non-residents issuing in the Australian debt market (Kangaroo bonds, also known as Kangas); Australian State and Territory Governments (Semi-government securities or semis); and the Australian Government (AGS). Additionally, we also examine the asset-backed securities (ABS) market.

The data do not represent all trades in the wholesale debt market – they only include what is settled between counterparties that have an Austraclear account.^[7] 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. Trades within the first week of issuance are excluded, as these trades may represent activity associated with primary market issuance. We add to the Austraclear dataset the bonds that do not trade at all. These non-trading bonds were sourced from the Reserve Bank of Australia (RBA) databases of outstanding bonds. For ABS, we consider only marketed deals (as opposed to ABS that are retained on the issuer’s balance sheet). Where applicable, figures and graph data have been weighted by the face value of the bond.

This combined dataset was used to construct a number of trade-based liquidity metrics such as the turnover ratio, which is the value of a security traded over a period of time, divided by the total value outstanding of that security. For example, if \$100 million of a bond trades in a month and the bond had \$1 billion outstanding, then the monthly turnover ratio would be 10 per cent.

Table 1: Trades Frequency and Size

	Trades per Bond Monthly average	Average Trade Size (\$m) ^{(a)(b)}
AGS	211.0	49.7
Semis	28.0	26.6
Non-government		
Asset-backed	0.2	14.0
Banks	2.8	10.4
Corporates	2.2	2.9
Kangaroo bonds	4.4	7.0

(a) Face-value weighted

(b) Average size of trade, given that the bond has traded (i.e. excludes non-traded)

Sources: ASX DataSphere; RBA

The dataset contains private repos (or ‘repurchase agreements’), as they cannot be easily identified for exclusion, but excludes repos with the RBA for which there is a reliable flag in the data.^[8] A repo involves one party selling a security to another party, then buying back the security on a predetermined date in the future 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 regularly used in private repo transactions, hence the analysis may overstate the secondary market turnover of these securities.

The data exclude derivatives and related markets, where turnover is often higher than in the market of the underlying asset (Cheshire 2016). These derivatives offer an alternative source of exposure to the underlying security, and their liquidity is also contributing to the overall liquidity of Australian fixed income markets.

Aggregate turnover

Based on the Austraclear dataset, overall, the monthly average turnover ratio of Australian dollar fixed income securities was 50.3 per cent. That is, the volume of fixed income securities traded over a

month was, on average, around a half of the size of the Australian market. However, there was a significant amount of heterogeneity across markets. For example, non-government securities had an average monthly turnover ratio well below 10 per cent, significantly lower than that of government securities (Graph 1). Among these non-government bonds, ABS were the least liquid, with a turnover ratio of just 1 per cent. There was also a large degree of heterogeneity across markets in the proportion of bonds that did not trade at all. Nearly all AGS were traded, but 76 per cent of ABS in face value terms did not trade during the sample period (Graph 2).

Trade frequency (i.e. the number of bonds transacted over a period of time) followed the same pattern as the turnover ratio, with government securities having the highest number of trades. Traded AGS and semis also had the largest average trade size. This is indicative of higher liquidity in these markets, since participants do not need to split their trades into smaller packets to avoid price movements. Among other securities, there was little relationship between trade size and other measures of liquidity (Table 1).

Turnover in government securities

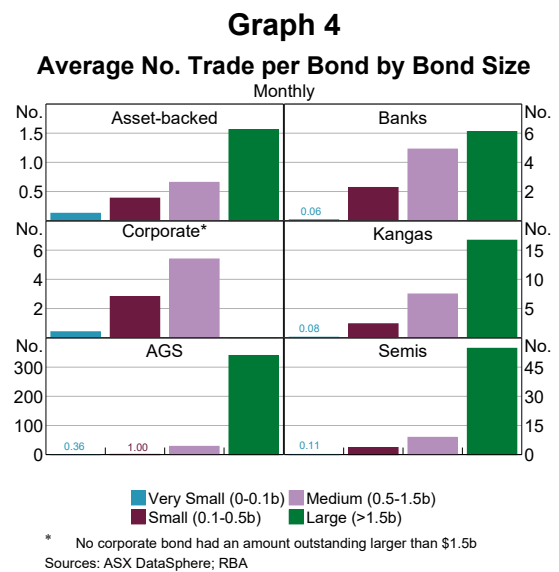
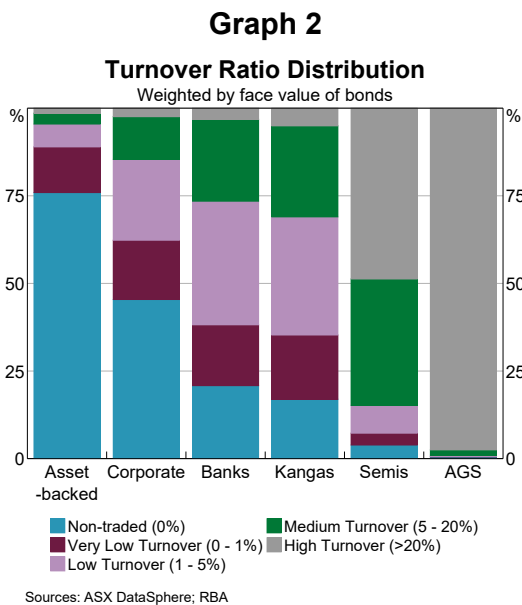
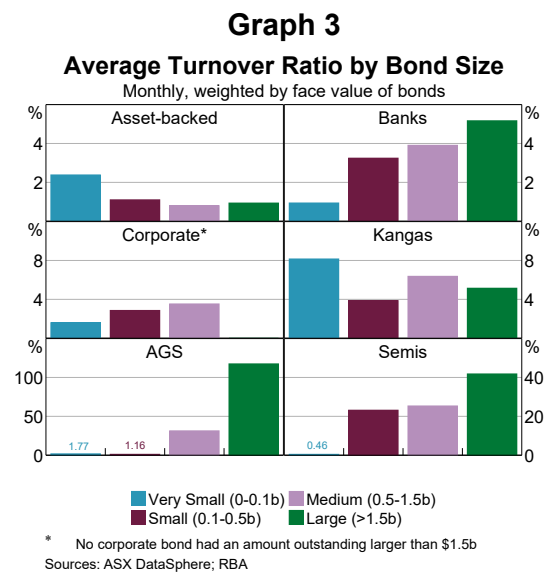
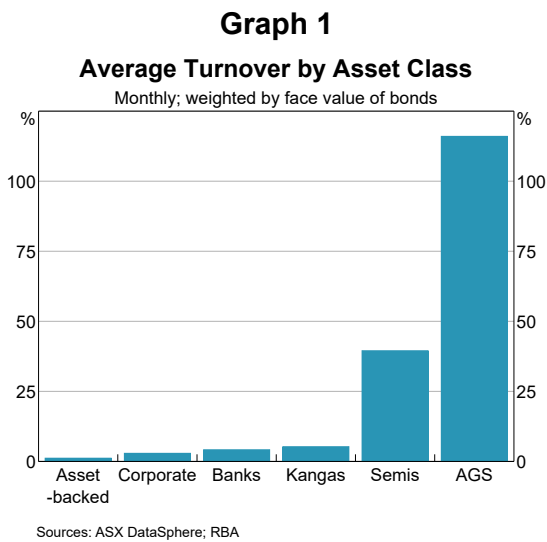
The average turnover ratio of AGS was 116 per cent. This was driven largely by non-indexed AGS, which had an average turnover ratio of 120 per cent and make up around 90 per cent of the AGS market, compared with the 50 per cent turnover of inflation-indexed AGS. That said, inflation-indexed AGS had notably higher turnover than both semis and non-government securities, despite their significantly smaller market size.

Bond size and liquidity

For most markets, turnover increased with the size of the bond's outstanding value (Graph 3). This relationship was most apparent within AGS. Large-

sized AGS (with over \$1.5 billion outstanding) had a turnover ratio of around 120 per cent, over 3 times higher than medium-sized bonds (between \$0.5 and \$1.5 billion outstanding). Although, this may reflect the larger size of non-indexed AGS relative to indexed AGS. However, in the ABS market, smaller bond lines had higher turnover ratios due to their larger trade size as a share of outstanding. There was little relationship between size and turnover ratios in the Kangaroo bond market. Bonds with higher outstanding values traded more often across all markets (Graph 4).

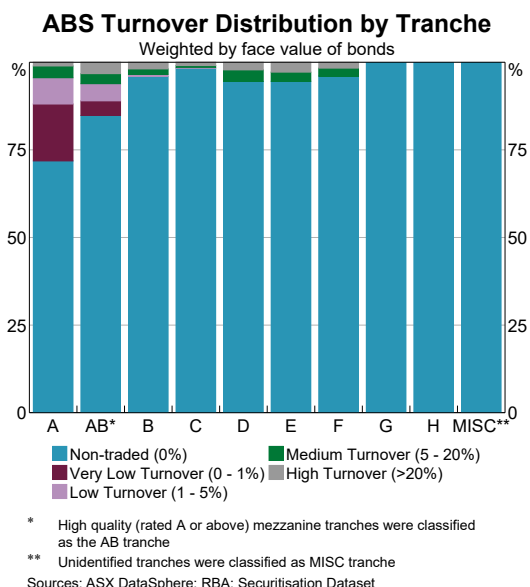
For ABS, the highest-rated tranches were most likely to have traded at least once. High turnover ratios were more likely to be observed in tranches with



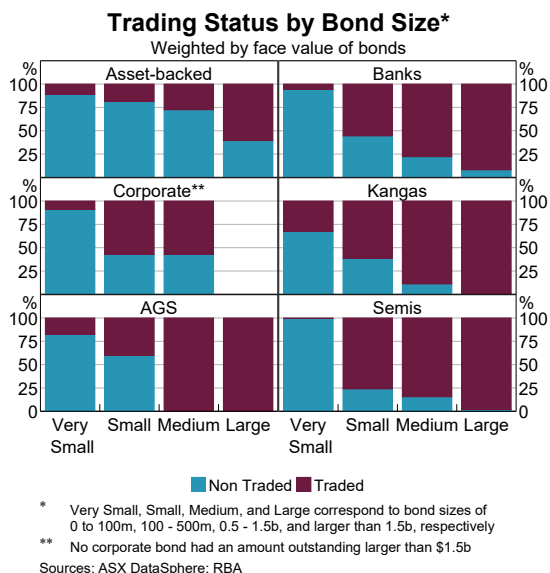
higher ratings and some level of subordination (although the differences were small) (Graph 5).

A consistent relationship was also seen between size and likelihood of trading across all bond markets, where smaller bonds were much more likely to have never traded in the sample period (Graph 6). This may be because increased information flow associated with larger bonds may make them easier to find and trade (Gündüz *et al* 2018). This result was particularly noticeable for semis. Most semis under \$100 million never traded; in contrast, 98 per cent of semis larger than \$1.5 billion traded.^[9]

Graph 5



Graph 6



Committed Liquidity Facility eligibility and turnover

The Basel III regulations require banks to hold a sufficiently large value of high-quality liquid assets (i.e. AGS and semis in Australia) to meet a minimum liquidity coverage ratio (LCR). These assets – which can be easily sold by banks to meet liquidity needs – act as buffers against adverse financial events, enhancing the overall banking system’s resilience. Given the historically insufficient supply of AGS and semis in the domestic market, the Reserve Bank’s Committed Liquidity Facility (CLF) enables certain authorised deposit-taking institutions (ADIs) to use a contractual liquidity commitment from the RBA towards meeting their LCR. Under this arrangement, the RBA commits to provide funds to these ADIs, up to a specified amount and if certain conditions are met, to support them through periods of liquidity stress. These CLF funds are provided by a repo secured by eligible securities. During 2015–17 – the period covered by our dataset – CLF-eligible securities included higher-quality bank bonds, ABS (AAA rated), and AAA rated Kangaroo bonds, as well as AGS and semis.

On average, turnover ratios for CLF-eligible non-government securities were higher than their non-eligible counterparts. However, there was considerable variation across markets. CLF-eligible Kangaroo bonds and bank bonds had turnover ratios that were double those of ineligible securities, while there was no significant difference in turnover between eligible and ineligible ABS (Graph 7). These relationships should not be viewed as causal – there may be other features of the bonds such as credit ratings and collateral quality that influence liquidity.

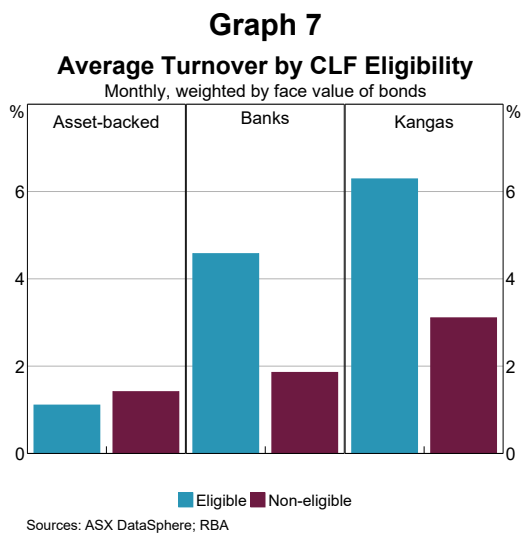
Comparisons to international markets^[10]

The turnover ratio for the US Treasury market fell significantly in 2007, and was broadly unchanged between 2009 and 2013 (100 to 125 per cent per month) (US Treasury 2013). Quantity-based liquidity metrics (e.g. turnover) suggested market depth declined for US Treasury Bonds from 2013 to 2016, even though price-based metrics (e.g. bid-ask spreads) remained relatively unchanged during this period (Committee on the Global Financial System 2016). German Government bonds had

substantially lower turnover ratios of around 28 to 38 per cent between 2009 and 2017, while turnover ratios of UK Government bonds were around 30 to 45 per cent for the same period (Association for Financial Markets in Europe 2018). Turnover decreased in both of these European markets between 2013 and 2016, before reversing some of the decline in 2017. These trends are generally consistent with developments in the Australian Government bond market (Cheshire 2016). European market participants listed constrained balance sheets, reduction of the numbers of market makers participating in the market and regulatory factors as likely drivers of lower liquidity (European Systemic Risk Board 2016). Furthermore, Elliott (2015) attributes the decline in market liquidity in recent years to a reversal of high liquidity conditions

prior to the GFC and regulatory constraints (such as the Basel III capital accords).

As in Australia, turnover ratios for non-government securities were significantly lower than for government securities in international markets. Similar to the Australian fixed income market, the average monthly turnover in the UK corporate bond market ranged from 1.7 per cent to 5 per cent between 2009 and 2013 (Aquilina and Suntheim 2016). US corporate bonds had turnover ratios of around 4 to 8 per cent between 2009 and 2013, slightly higher than turnovers observed in the Australian corporate bond market. Nonetheless, it should be noted that the relatively low corporate bond turnovers in some international markets were affected by the strong growth in the primary markets that led to a larger stock of outstanding bonds (Committee on the Global Financial System 2016).



Conclusion

In the Australian fixed income market, government-issued securities had substantially higher turnovers than their non-government counterparts. There was also a significant proportion of securities which rarely or never traded through Austraclear. For private sector investors, this likely limits their investment universe while also having implications on the liquidity risks of their portfolios. The RBA also considers these liquidity risks as many of these securities are held as collateral for the purpose of repo agreements. ❖

Footnotes

- [*] The authors were in Domestic Markets Department at the time of writing. The authors would also like to thank Alice Lam and Richard Finlay, as well as Fereshta Nawabi, Irene Guimatsia and Kate Watterson from the Australian Securities and Investments Commission for their helpful comments and suggestions.
- [1] See RBA (2020).
- [2] Bond market makers aim to make money by selling bonds for a little more than they bought them for, while minimising their exposure to changes in bond yields. This difference in selling versus buying price is captured by the bid-ask spread. If market makers are confident that they can quickly sell a bond that they have purchased, they can offer a relatively narrow bid-ask spread with confidence, whereas if they might have to hold the bond for a substantial period of time they need to quote a wider bid-ask spread to cover the costs of holding the bond and to insure themselves against adverse price movements.
- [3] A transaction is considered ‘settled’ when the legal ownership of the security is transferred to the buyer. The turnover ratio is defined as the value of a security traded over a given period divided by the total value outstanding for that security.
- [4] See Debelle (2016). Primary markets are markets where securities are issued for the first time. Once issued, securities are traded between investors on the secondary market.
- [5] See McCauley and Remolona (2000). Also, Lien and Zurawski (2012) notes that trade- and order-based measures (e.g. bid-ask spread) mostly provide similar conclusions, but can indicate inconsistent results during periods of market stress.
- [6] 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.
- [7] 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 security may remain in the custodian’s account. In this case, no transaction would appear in Austraclear. These missing transactions may lead to an upward bias in our estimates of non-trading bonds.
- [8] The flag is there for all repo transactions, but we are confident that it only accurately identifies repos with the RBA. An algorithm for capturing non-RBA repos in transactional data was developed by Garvin (2018). However, this algorithm was not used in this article for ease of exposition.
- [9] Note that many of the smaller bond lines for semis are private placements held by a single investor. They usually do not intend to trade them, which helps to explain the high proportion of non-traded semis in this size category.
- [10] Caution should be exercised when comparing our estimates to international estimates in this section, due to differences in methodology. For example, inclusion or exclusion of repos and non-traded bonds in calculating turnover ratios, as well as definitional differences may confound the comparisons. While this implies that turnover in level terms may be less comparable, general trends and patterns may be more relevant when comparing between countries.

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