

1.9 LIQUIDITY AND TRADING VOLUME IN THE EU COVERED BOND MARKETS

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INTRODUCTION

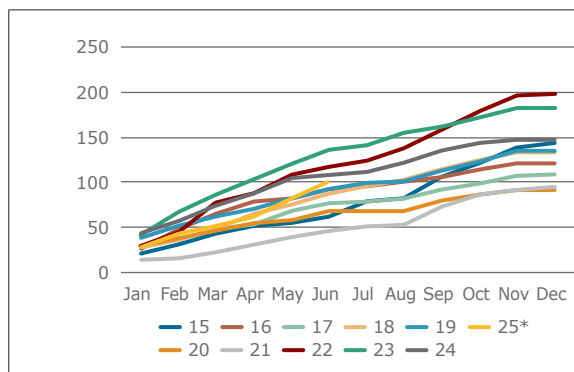
The Covered Bond benchmark segment started in the 90s as an interbanking market-making (head-to-head) market, transformed later into a pure investor market-making market supported by a large number of determined and committed liquidity providers. A functional repo market constantly increases the liquidity, as a consequence of which the covered bond benchmark market is one of the most significant and liquid market segments.

Covered bonds are viewed in different ways: thanks to their nature and rating some view them as part of the rates world, others clearly see credit elements and consider covered bonds as the strongest product in the credit world.

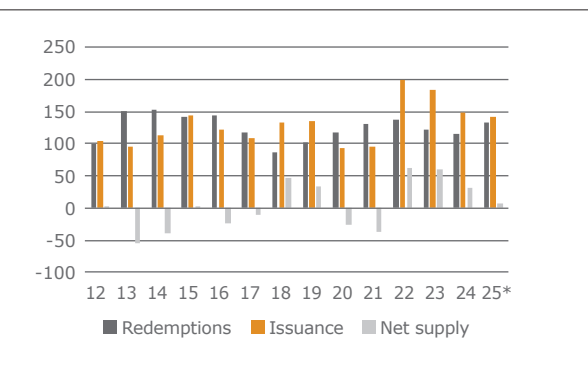
As is the case for any other market in the rates or credit world, the covered bond market faces regulatory requirements which result in a more prudent approach to trading books in terms of balance sheet allocation. In short, while bank inventories have gone down in general, investors are receiving competitive prices for significant sizes from the committed liquidity providers.

However, the tide turned in 2022 when the covered bond market started to grow again after it had been shrinking for two years after the outbreak of the Covid-19 pandemic, which induced central banks to introduce large monetary support measures. These have now come to an end. Furthermore, the Eurosystem decided to first stop purchasing covered bonds in the primary market from March 2023 onward, while it completely withdrew from the covered bond market in July 2023, as the central bank will no longer reinvest maturing covered bond principals that it bought under its asset purchase programme that started in 2014 at all. At the same time, issuers have increased the average new issue size of new deals in recent years, with most new deals having a size of more than EUR 1bn. Their share has remained roughly stable in the past ten years (with some fluctuations) and compares to the GBP covered bond market, where issue sizes have increased, as more than half of new deals had a minimum issue size of GBP 1bn from 2019 onward, up from GBP 500-750mn before. Meanwhile, in USD's the "regS only" market often targets 600mn (to match the regulatory important 500mn + EUR equivalent) while 144a or SEC registered deals are often larger than/or at least USD 1bn. The Swedish or Danish Kroner Covered benchmarks can grow over time to a significant size often larger than in Euro or Dollar benchmarks. Obviously smaller benchmark volumes often lead to smaller secondary turnovers given that the various covered bond markets are dominated by a majority of buy and hold investors.

> FIGURE 1: ISSUANCE OF EURO BENCHMARK COVERED BONDS, BENCHMARK CUMULATIVE EUR BN



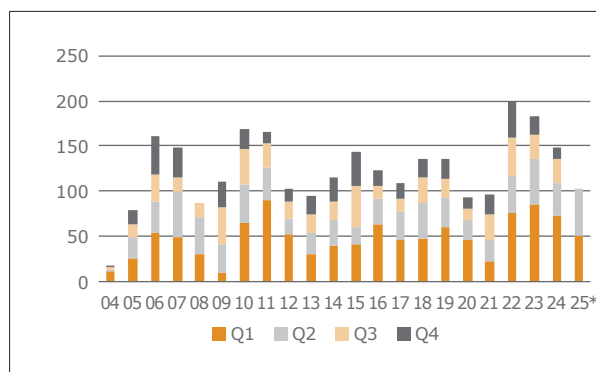
> FIGURE 2: GROSS AND NET SUPPLY OF EURO COVERED BONDS, EUR BN



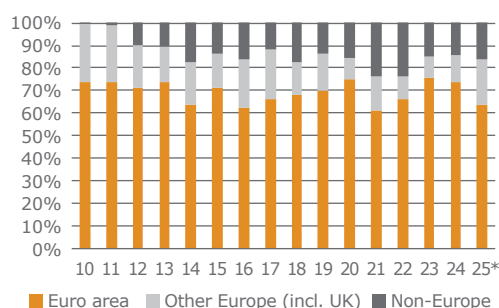
Source: ABN AMRO, Bloomberg, *H1 2025

In summary, it indeed seems that liquidity conditions are further improving, after it had been negatively affected by a few years of negative net supply, lower-sized deals, a change of regulatory requirements and the nature of the investor base, especially the ECB as big buy and hold investor. In fact, many traditional investors perceive the covered bond benchmark market now as way more liquid and tradeable, with the caveat we touch on a little later. Gross supply of euro benchmark covered bonds was around EUR 102bn during the first half of 2025, which was below the levels seen in the previous three years, although it was still well above volumes of new issuance during H1 2012-2021. In the past three years, supply of covered bonds was supported by repayments of the large amounts that banks borrowed in the ECB's targeted longer-term refinancing operations (TLTRO), large refinancing needs due to redeeming covered bonds, and relatively favorable new issue conditions in the covered bond market (supported by the widening in covered bond spreads since 2022). Indeed, the latter was clearly underlined by the on average negative new issue premiums that new bonds offered in H1 2025, which reflected strong demand for new deals, as order books were on average three times larger than deal sizes. Last year, deals were on average 2.8 times covered, while this was orders books were 'only' twice the deal size in 2023. As said, the strengthening demand allowed issuers to issue new deals at, or even below, fair value levels. Furthermore, the volume of new supply of euro benchmark covered bonds exceeded that of redemptions by around EUR 23bn, implying that the covered bond market continued to grow during H1 2025. For 2025 as a whole, we expect net supply to be less positive given that issuance is likely to be less than redemptions in H2 2025. Overall, we see the market growing by EUR 8-10bn in 2025. This would follow upon the almost EUR 32bn of net positive supply in 2024 and the more than EUR 60bn of positive net supply in both 2022 and 2023. In 2022-2024, the covered bond market grew by around EUR 155bn, which was more than compensating for the EUR 60bn shrinkage of the covered bond market in 2020 and 2021. The positive net supply, the exit of the Eurosystem from the market and new investors (re)joining the market should support liquidity in the covered bond market.

> FIGURE 3: ISSUANCE OF EURO BENCHMARK COVERED BONDS BY QUARTER, EUR BN



> FIGURE 4: ISSUANCE OF EURO BENCHMARK COVERED BONDS BY REGION, % SHARE IN TOTAL ISSUANCE



Source: ABN AMRO, Bloomberg, *H1 2025

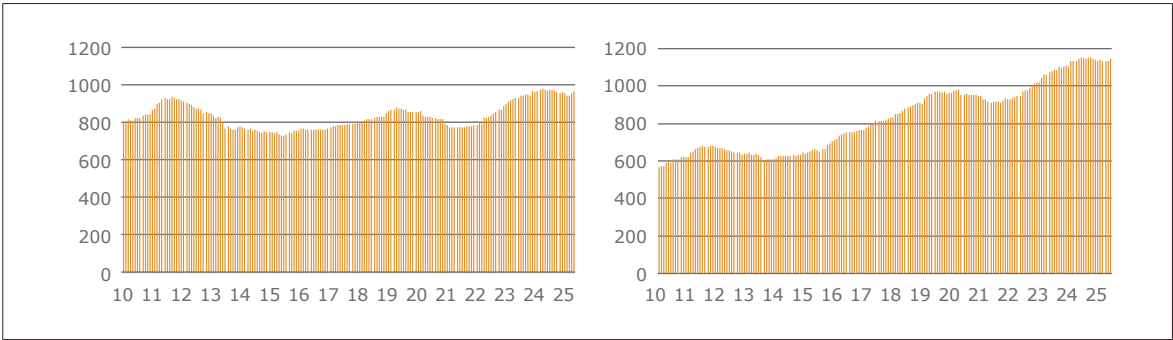
A regional breakdown (see graph above right) shows that euro area issuers account for the majority of new issuance of euro benchmark covered bonds. However, while their share rose in the past three years, it declined during H1 2025. This is likely related to the fact the euro area banks have fully repaid TLTRO loans during these years, with funding needs now depending on redemptions and balance sheet growth. A country split shows that France and Germany remain the largest countries in term of issuance, accounting for almost half of total supply, but that issuers from Norway, Sweden, and Australia/New Zealand stepped up issuance in H1 2025 compared to 2024. The share of non-European issuers stood at 16% in H1 2025, roughly in line with their

share in 2023 and 2024, while that of other EU countries increased to 20%, up from 12% in 2024, and the highest level since 2017.

The fact that the covered bond market grew so strongly in recent years has also been reflected by a rise in the total outstanding volume of euro benchmarks in the covered bond indices. The Bloomberg-Barclays euro covered bond index had, for instance, an outstanding amount of EUR 964bn in June 2025. Although this is a similar number as a year ago, it marks a 22% increase versus the start of 2022, while the number still hovers at historically high levels. The number of bonds in the index stood at 1145 in June 2025, also close to the highest number ever (1151 in June 2024).

> FIGURE 5: OUTSTANDING AMOUNT IN THE BLOOMBERG-BARCLAYS EUR COVERED BOND INDEX, EUR BN

> FIGURE 6: NUMBER OF BONDS IN THE BLOOMBERG-BARCLAYS EUR COVERED BOND INDEX



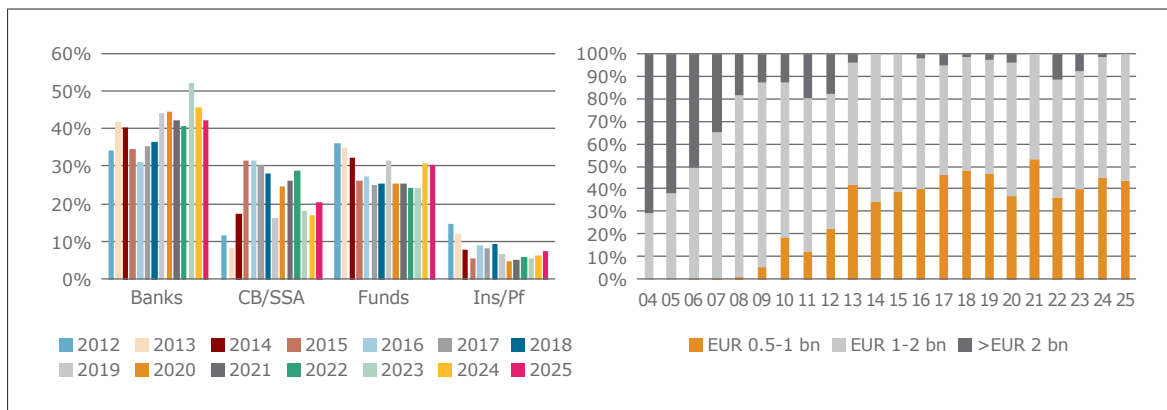
Source: Bloomberg

Let us again look at the evolution of the investor base as an angle for liquidity. If the share of buy-and-hold investors has risen in the past few years, this should have reduced liquidity of covered bonds. Figure 7 shows the average allocation share per investor type in new euro benchmark deals. The graph nicely illustrates the crowding out impact of the Eurosystem's CBPP3, but also the impact of the central bank's exit in 2023. The share of central banks/SSAs was 17% in 2024, down 29% in 2022 (when the Eurosystem was still an active buyer of covered bonds). In H1 2025, their share increased somewhat to 21%, suggesting that some central banks probably e-entered the covered bond market now that the Eurosystem itself is no longer an active buyer. It could also be that other central banks/official institutions have entered the market.

While asset managers were most ousted by the central bank at the time of the ECB's asset purchase programme, they have come back to the market. Indeed, their allocation share of new euro benchmark covered bonds has risen to around 30% in 2024 and 2025, up from 24% in previous two years. The return of asset managers likely reflects the increase in relative value that covered bonds offer versus senior bank debt due to the spread widening during the continuous underperformance of covered bonds versus senior preferred bonds, which has reduced the pick-up investors get from investor in senior preferred bonds versus covered bonds. As asset managers can be regarded as the most active portfolio managers, it seems fair to conclude that the change in the investor base should support liquidity of covered bonds. Meanwhile, banks are still the largest investors in covered bonds with an allocation share in new deals of 42% in H1 2025. Although this is well below the 52% share in 2023, it brings their share back at levels seen in 2019-2022 and still confirms that covered bonds are an attractive asset class in their LCR portfolios. Unfortunately, most banks are buy-and-hold investors, so this does not support liquidity in the end.

> FIGURE 7: NEW EURO BENCHMARK COVERED BOND DEALS, BROKEN DOWN BY INVESTOR TYPE, % SHARE

> FIGURE 8: NEW EURO BENCHMARK COVERED BOND DEALS, BROKEN DOWN BY ISSUE SIZE, % SHARE



Source: ABN AMRO, Bloomberg

Finally, the larger the issue size, the better the liquidity. Although issuers increased deal amounts in early 20s (except for 2020), the share of deals with an issue size below EUR 1bn rose in 2024 and remained stable in H1 2025. The graph above-right depicts the share of new deals broken down by issue size. The share of deals with an issue size below EUR 1bn was 44% in the H1 2025, which was in line with the average in the prior ten years. Meanwhile, 56% of new euro benchmark deals had a minimum deal size of at least EUR 1bn, which is therefore still the majority. Together with the growth of the covered bond market, this suggests that liquidity conditions should improve in the covered bond market over time, although evidence of this is not yet convincing.

After the CBPP3: Trading activity in covered bonds barely recovered¹

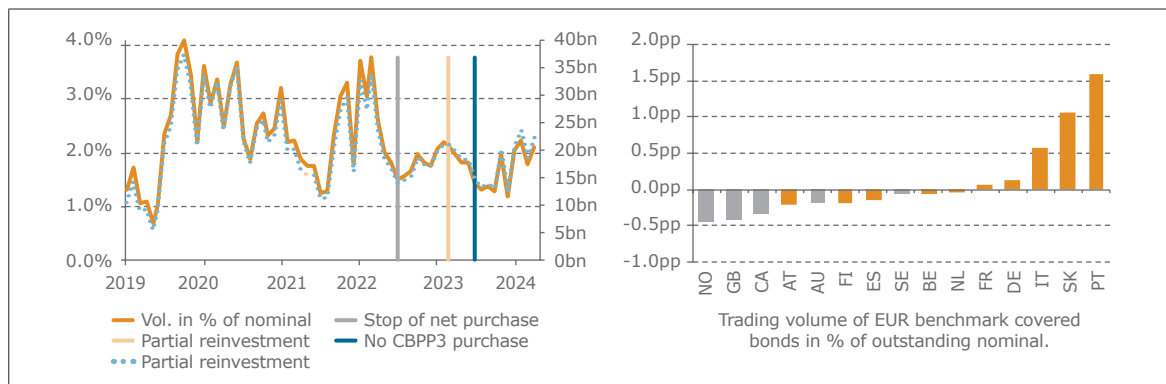
The year prior to last, we argued that the recovery in liquidity could take some time once CBPP3 purchases are discontinued (Fact book 2023²); today, we may could say the recovery period appears even longer. We mainly look at trading volume as one of the best measures of market liquidity for covered bonds.³ In fact, trading activity did not really get going after the end of net purchases in mid-2022. In 2019, when CBPP3 net purchases were stopped for the first time, activity increased significantly, but it was different in 2022: Less than 2% of the covered bond volume was traded per month (Figure 9). Eurosystem turnover is included in these data. While the increase was more pronounced in 2019, both periods are not fully comparable. On the one hand, the primary market was more active in 2022 than in 2019, which would have argued for a larger liquidity increase in 2022. On the other, more buy and hold mentality thanks to low inventory, attractive spreads and other investment strategies plus the CBPP3's typical primary market order after the net stop was higher in 2022 than in 2019, which would have indicated lower secondary turnover by the Eurosystem and thus a smaller liquidity increase in 2022. Ultimately, the dominant buyer groups differed in both years, as well: the gap left by CBPP3 was filled by banks and asset managers in 2019; while the latter remained more cautious three years later. Therefore, it is debatable whether the low increase in liquidity after the net stop in 2022 is unusual. However, activity remained low for sure, and amid the additional withdrawal of CBPP3 last year at the latest one could have hoped for a noticeable surge in activity.

¹ Section drafted with the support of Michael Weigerding, Deutsche Bank.

² An electronic copy of the Fact Book 2023 is available upon request to the EMF-ECBC Secretariat.

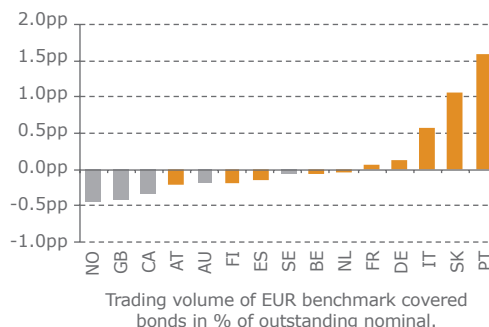
³ Our data are based on several trading venues and OTC data providers aggregated by Bloomberg and are likely to cover most of the market.

> FIGURE 9: TRADING VOLUME OF SELECTED EUR
BENCHMARK COVERED BONDS



Source: Bloomberg, Deutsche Bundesbank

> FIGURE 10: CHANGE IN THE AVERAGE RELATIVE
TRADING VOLUME AFTER THE APP STOP



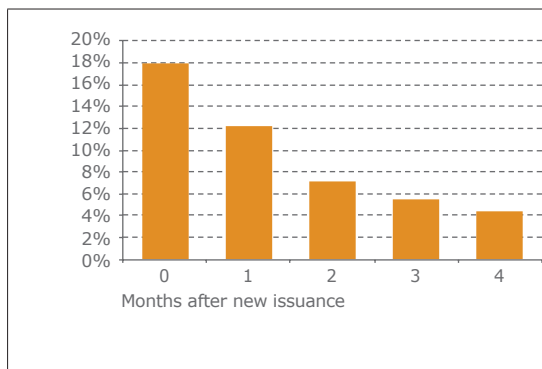
The complete stop of CBPP3 purchases in mid-2023 has not pushed trading volume markedly upwards, either, average trading volume did not even double when looking at euro-area paper only. Comparing them to the lows of 2023 have climbed from over 1% to just under 2% of the nominal monthly volume. There is already a clear gap to the levels from 2020-22 (up to 3%), and activity would have to double or triple again to reach the levels seen before the start of CBPP3 in 2013/14. In the case of covered bonds outside the euro area, average monthly turnover has even reduced slightly after the end of CBPP3.

In principle, this results in a predictable increase in turnover for CBPP3-eligible paper compared to non-eligible ones, but the difference is not large and probably not particularly significant from a statistical point of view. This is highlighted by a regional split (Figure 10), which compares the average turnover from July 2022 to June 2023 with that from July 2023 to April 2024.

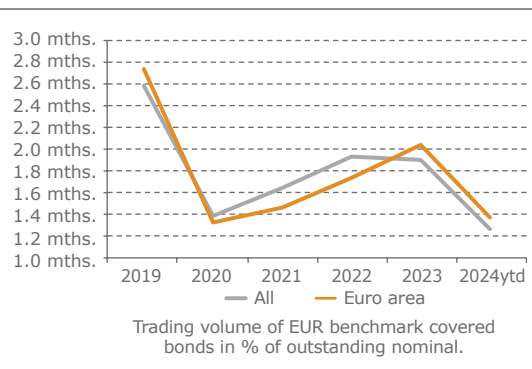
On the one hand, this development is somewhat remarkable, given that the APP stop would have argued for a stronger recovery of liquidity in the covered bond market. The increased share of asset managers in the investor base and the stronger issuing activity would have also been factors that should have strengthened activity (see above). On the other hand, it may simply take longer for the market to recover from the CBPP3 purchases and for more bond volumes to land with market participants keener to trade. With ongoing redemptions and new issues, this environment could in principle materialize at some point.

After all, while their secondary market trading volume increased slightly in the month of the new issue itself, it remains low immediately afterwards. Typically, covered bonds have a few weeks after placement in which they are traded on a larger scale. Faster money investors leave the trade and term, strategic and even buy and hold investors enter the trade. On average since 2019, monthly turnover halved within 1.8 months, and it decreased again within a further 1.8 months (Figure 11). This half-life for turnover of new bonds has shrunk noticeably with the withdrawal of CBPP3 in 2022. From 2022 to 2024, the half-life almost decreased by 2 (Figure 12). Half of the covered bond turnover now disappears within one month rather than two. Adjusting for seasonal effects, there is still a small decline this year. Covered bonds from the euro area are performing slightly better than their counterparts from this perspective. Therefore, it cannot be expected that new covered bonds will soon spur the trading volume of the overall market.

> FIGURE 11: POST PLACEMENT: TRADING ACTIVITY OF EUR BENCHMARK COVERED BONDS



> FIGURE 12: HALF-LIFE OF NEW COVERED BONDS' RELATIVE TRADING VOLUME DURING THEIR FIRST FOUR MONTHS



Source: Bloomberg, Deutsche Bundesbank

In sum, although an increase in secondary market activity is likely limited in the near future, despite the growth of the market and more asset manager active, it seems to us – and to market participants alike – that this probably wouldn't hurt market liquidity when needed. The current level of turnovers probably constrain the growth of the investor base in specific areas. Tough market contacts confirmed that they are satisfied with the current liquidity situation and in extreme stress scenarios, we know from experience that this opens up trade ideas for sophisticated and/or new investor bases.

THE SWEDISH COVERED BOND MARKET

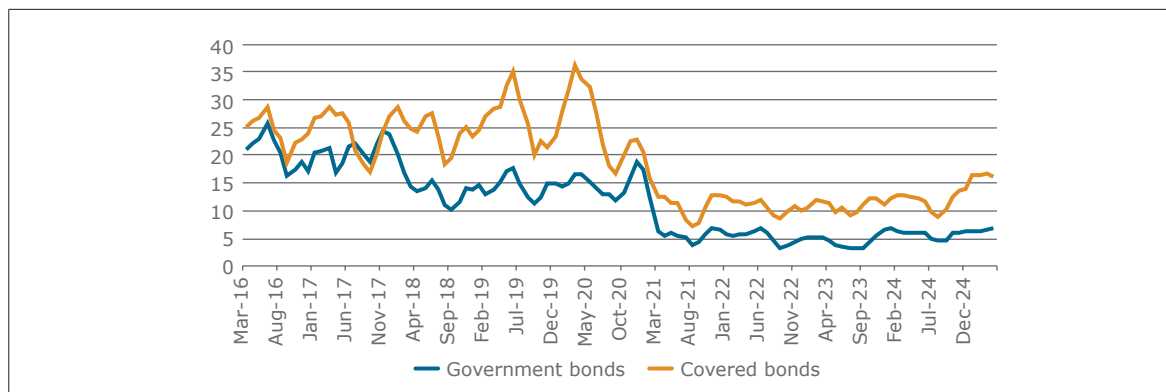
The Swedish domestic market for covered bonds is of great importance for the domestic capital market. Before Sweden implemented a law for covered bonds in 2004 a liquid market for mortgage bonds had at least been around since the beginning of the 80's. The outstanding volume of covered bonds in SEK was EUR 224.9 bn at year end 2024. That was more than twice as much as the outstanding volume of government bonds.

Swedish bond market investors appreciate liquidity. The large banks issue their covered bonds as benchmarks, which means that large amounts are issued and that several dealers are contracted to show both bid and offer prices. Also, only benchmarks are deliverable in the future market. When a new benchmark bond is issued, the issuers make sure that the amount issued meets the requirements for a benchmark sized deal. After the initial day of issuance, the issuer can, without further notice, issue "on tap". The benchmark bonds can reach volumes of SEK 60 bn. Sweden has a liquid and smoothly operating repo market with almost all banks involved in the trading. The issuers offer their market makers a repo-facility in their own bonds. The repo transaction is viewed as a 'sell-buy back' or 'buy-sell back' deal and the ownership of the security has to be transferred.

Overall, this system has been working for a long period of time. The recently implemented legislations have not been observed to have had any significant effects on the liquidity in the Swedish covered bond market. Although, because of a rather aggressive QE during the pandemic, the liquidity was hurt. Many foreign investors left the Swedish market. During the fall of 2024 and the beginning of 2025 many investors have returned, and the liquidity has improved. The Riksbank is now shrinking its holding of covered bonds, but the central bank is still owning 7.4 percent of the stock of bonds in SEK. Over 1/3 of the outstanding bonds are kept by foreign investors. Domestic banks just keep 13 percent of the covered bonds.

The daily turnover in the spot market for covered bonds was SEK 12.1 bn during 2024 and SEK 44.9 bn in the repo market. The repo market has always been larger than the spot market. In the figure below [reference to the correct figure] it is only the spot markets turnover that is shown. In the beginning of 2025, the average daily turnover increased to SEK 16.7 bn.

> FIGURE 13: DAILY TURNOVER, 3M MOVING AVERAGE, WITHOUT REPOS, SEK BN



Source: Riksbanken

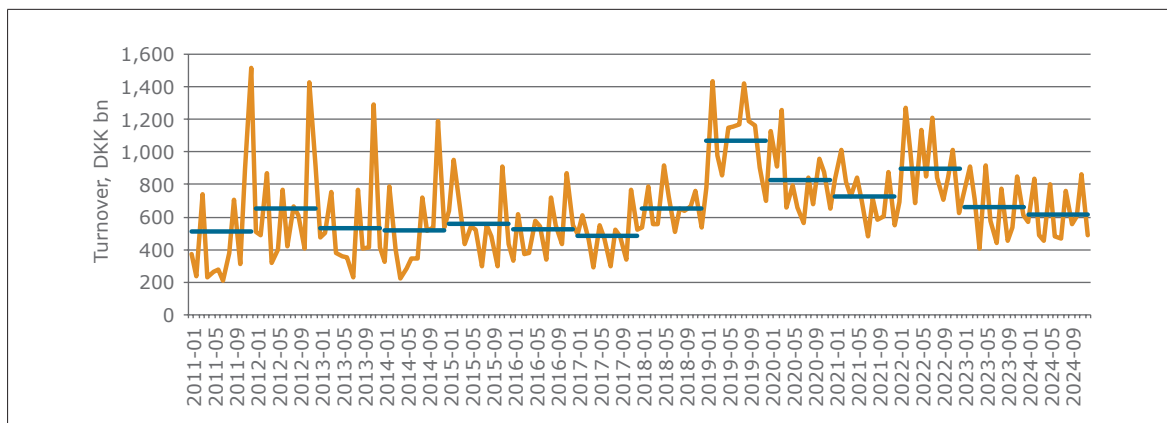
THE DANISH COVERED BOND MARKET

The type of bonds making up the Danish covered bond market fall into three major segments: callable bonds, bullet bonds and floaters with or without a cap. The market comprises a great number of securities, but the vast majority of the nominal value is concentrated on a relatively small number of large series. With an outstanding volume of EUR 460 bn the Danish covered bond market is one of the largest in Europe. Trades in mortgage covered bonds are reported to Nasdaq Copenhagen, including over the counter trades and excluding repos.

Average monthly turnover reported to Nasdaq Copenhagen including over the counter trades and excluding repos in the period 2011 – 2024 came in at around DKK 656 bn (app. EUR 88 bn). In 2024 average monthly turnover was DKK 610 bn (app. EUR 82 bn), cf. Figure 14. On average this means that approximately 18 per cent of the outstanding volume was traded every month of 2024.

After the financial turmoil and the increasing interest rates that impacted the financial markets globally in 2022, the Danish covered bond market was in 2023 back to a more normal state with a turnover corresponding to the average over the last 13 years. In 2024, the turnover in Danish covered bonds was slightly lower than in 2023. The market maker function of universal banks is handed a central role providing liquidity in the covered bond market, as professional investors are mostly unwilling to buy in small batches. Market makers are the main source of liquidity in the Danish covered bond market.

> FIGURE 14: TURNOVER IN DANISH COVERED BONDS, MONTHLY TURNOVER IN DKK BN.



Source: Nasdaq Copenhagen

Note: Data is for nominal value Non-Repo Mortgage Covered Bond transactions including OTC. Horizontal lines indicate yearly averages. From 2018 a new transaction reporting was implemented. Data before and after 2018 is not directly comparable.

Pass through, tap issuance, quarterly refinancing auctions and frequent early repayment activity are all characteristics of the Danish covered bond market, which among other more universal factors affect the level of market turnover. The strict balance principle deployed by Danish mortgage banks incorporates pass through of payments between borrowers and investors. Covered bonds are tap issued and sold in the market on a daily basis in sync with borrowers' demand for mortgage loans. Following the initial tap issuance, mainly bullet bonds and to an extent floaters, are refinanced by the issuance of new bonds at refinancing auctions over the life of the loan.

Borrowers' early repayments influence liquidity in the Danish covered bond market. Any Danish covered bond can be bought back by the borrower at the current market price and delivered to the issuing mortgage bank – the buyback option – or in the case of fixed rate mortgages it is also possible to redeem at par. This type of early redemption activity gives rise to an increase in transactions both when bonds are bought back (the buyback option), and when new bonds are issued.