

1.9 LIQUIDITY AND TRADING VOLUME IN THE EU COVERED BOND MARKETS

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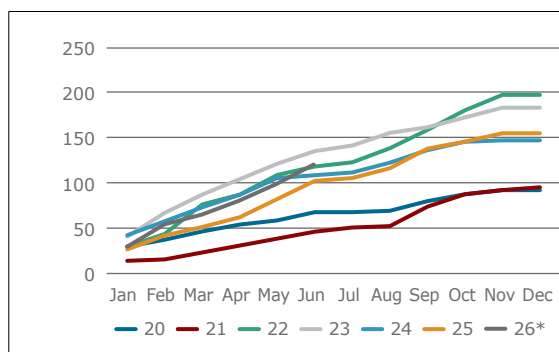
INTRODUCTION

The international covered bond benchmark segment, which started as an interbanking market-making (head-to-head) market in the 90s, transformed into a pure investor market-making market. A functional repo market constantly enhances the liquidity of the covered bond market, making the covered bond benchmark market 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.

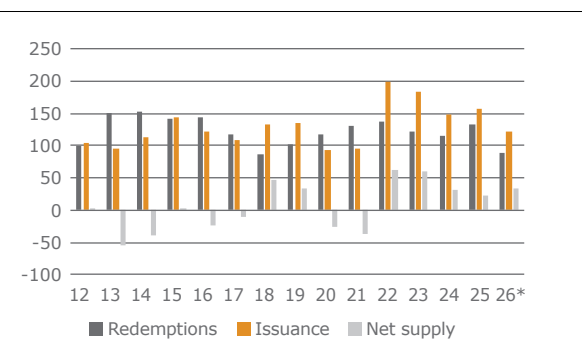
As is the case for any other market in the rates or credit world, the covered bond market faces regulatory requirements which result in a more prudent approach to trading books in terms of balance sheet allocation. In short, while bank inventories have declined in general, investors have continued access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

Furthermore, the covered bond market has started to grow again since 2022, with the expansion up until H1 of 2026 amounting to more than EUR 200bn. Meanwhile, the Eurosystem stopped its covered bond purchases under its purchase programmes in the primary market from March 2023 onward, while it completely withdrew from the covered bond market in July 2023. 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 broadly stable in the past couple of years and is comparable to that of the GBP covered bond market, where issue sizes have increased. Since 2019, more than half of new deals had a minimum issue size of GBP 1bn, compared with GBP 500-750mn previously. 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 at least USD 1bn, if not larger. Swedish or Danish Kroner Covered benchmarks can grow over time to significant volumes often exceeding those Euro or Dollar benchmarks. As expected smaller benchmark issue sizes generally result in lower secondary turnover given that the various covered bond markets are dominated by significant 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 2026

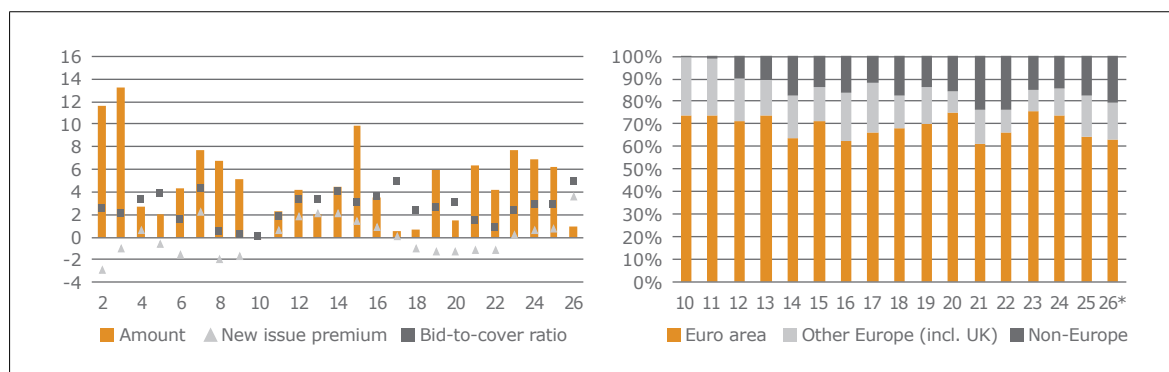
In summary, liquidity conditions indeed appear to be improving further after having been negatively affected by several years of negative net supply, smaller issue sizes, change in regulatory requirements and the composition of the investor base, particularly the ECB as major buy and hold investor. In fact, many traditional investors now perceive the covered bond benchmark market significantly more liquid and tradeable, subject to the caveat discussed later. Gross supply of euro benchmark covered bonds was around EUR 122bn during the first half of 2026, which was the second-highest level in 15 years and the third-largest amount ever. The issuance of covered bonds has been supported in recent years by rising refinancing needs due to redeeming covered bonds, a growing number of new entrants to the covered bond market as well as favourable new issue conditions in the covered bond market. The latter was reflected by ongoing strong demand for covered bonds, underlined by order books on average being 2.5 times the size of new deals in H1 2026, which allowed issuers to pay minimal to even negative new issue premiums.

This was even more remarkable given that net supply was more than EUR 30bn positive in 2026 H1, implying that the additional volumes of new supply were smoothly absorbed by the market. This, in turn, underlines the broad and diversified (and growing) investor base of covered bonds. Although we expect net supply to be less positive in 2026, we forecast the market to continue to grow by EUR 5-10bn in 2026 as whole. As mentioned, this would imply that the covered bond market would have expanded by around EUR 200bn in the previous five years, which should have supported liquidity.

The covered bond market has also been a beacon of stability in a world where geopolitical risks have been rising. Not only were covered bonds the asset class to reopen the primary market following the market turmoil after the US tariff announcements in April 2025, but this was again the case after the escalation of the conflict in the Middle East in March 2026. Moreover, new issue conditions remained rather good, reflected by new issue premiums staying low and demand solid, as shown in the chart below left. As such, the asset class has continued to underline its crisis proof nature, with the covered bond market functioning well during times of stress.

> FIGURE 3: PRIMARY MARKET DYNAMICS: WEEKLY AMOUNT ISSUED, AVERAGE NEW ISSUE PREMIUM AND BID-TO-COVER RATIO

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



Source: ABN AMRO, Bloomberg, *H1 2026

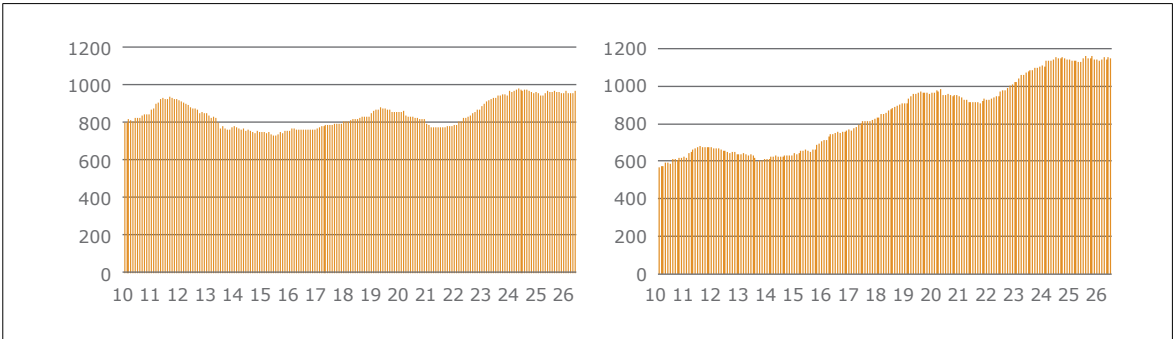
A regional breakdown of euro benchmark covered bond issuance (see chart above right) shows that euro area issuers continue to account for most new supply. However, their share has declined to slightly above 60% in 2025 and H1 2026, compared with an average of 70% between 2019 and 2024 and 73% during 2010–2013. This trend highlights the increasingly international nature of the covered bond market. Still, France and Germany remain the largest issuing countries, together accounting for around 40% of total euro benchmark covered bond issuance over the past two years. Other key contributors during the past five years have included issuers from Canada, Italy, the Netherlands, Norway, Austria and Australia. Meanwhile, the share of non-

European issuers rose to 21% in H1 2026, up from 18% in 2025, while the proportion of issuance from other EU countries declined slightly to 16%, from 20% in 2025. From a liquidity perspective, a broader geographic issuer base has increased market depth, diversification and investor participation, thereby supporting the development of a more liquid and internationally focused covered bond market.

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 2026. 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 1146, also close to the highest number ever (1156 in October 2025).

> 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



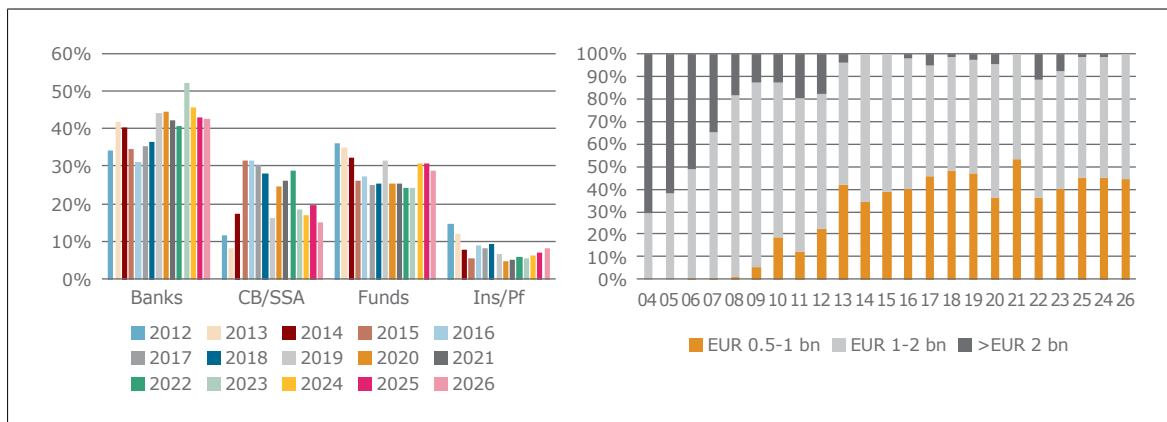
Source: Bloomberg

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 illustrates the impact of the Eurosystem's end of its purchases in the covered bond market in 2023 when the share of central banks/SSAs dropped to 17% in 2024, down from 29% in 2022 (when the Eurosystem was still an active buyer of covered bonds). This was mirrored by a rise in the share of fund managers to 31% (up from 24% in 2023). In fact, their share has remained stable ever since. This likely reflects the increased relative value that covered bonds offer versus senior bank debt since covered bonds have underperformed senior preferred bonds since 2023. This has reduced the additional compensation that investors get from investing in senior preferred bonds, which are riskier than 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 have supported liquidity of covered bonds.

Still, banks are the largest investors in covered bonds with an allocation share in new deals of 43% in 2025 and H1 2026. Although this is well below the 52% share in 2023, it 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

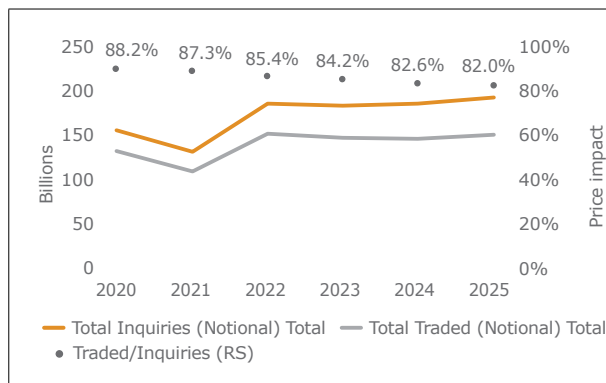
Finally, the larger the issue size, the better the liquidity. In this respect, the good news is that most new deals have an issue size of at least EUR 1bn, as their share was around 55% in 2025 and 2026 and has been above 50% since 2022. This masks that in 2026 no new deals with a size of above EUR 2bn were issued, which was the case in previous few years. Nevertheless, liquidity conditions seem to be improving as the share of new deals with outstanding amounts of EUR 1bn and above has been steadily rising since 2022.

Liquidity in a simple form vs. understanding it as a 3D Problem

When asking issuers about liquidity, they often view it as the volume of new issuance the market can absorb. Investors, on the other hand, typically interpret liquidity as how large a position can be cleared in an adverse market environment.

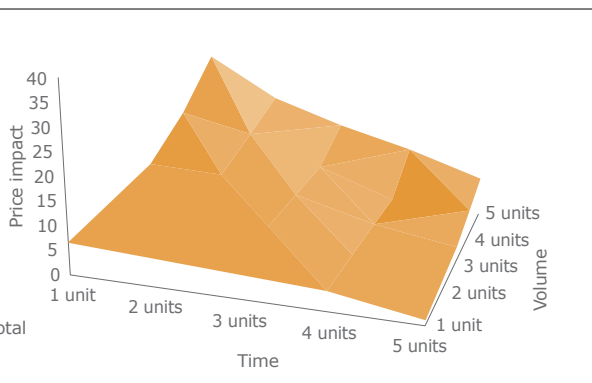
The foundation for these views is mostly rooted in a very basic idea about liquidity: increasing net issuance leads to more tradeable material, which in turn leads to higher turnover. In other words, liquidity may be understood as tradable volume. As displayed in Figure 2, gross issuance has increased over the past few years, while aggregate net new issuance has hovered around EUR 200bn over the past five years, albeit on a downward path. As such, liquidity is poised to decrease. This conclusion, however, leaves aside buy-side aspects: it does not take into account a growing or shrinking investor base, or changes in investor profiles (e.g., shifts toward or away from buy-and-hold investors). In other words, deriving the degree of market liquidity solely by looking at issuance volumes is a one-sided approach, and such conclusions are likely to fail the reality test. In fact, reality means day-to-day trading, which brings us to the second simple approach.

> FIGURE 9: COVERED BOND TURNOVER,
TRADE INQUIRIES VS. TRADED VOLUME



Source: Bloomberg, JP Morgan, Helaba Capital Markets

> FIGURE 10: STILIZED LIQUIDITY MODEL
TIME-TO-EXECUTE VS. VOLUME VS. PRICE IMPACT



Source: Helaba Research

One could also argue that if an asset is liquid, its turnover should be high. In other words, liquidity may be understood as traded volume. In this context, electronic trading platforms enhance our insight into liquidity by providing not only the actual turnover but also the number of inquiries leading to it, based on trading data from the largest electronic platforms. As displayed in Figure 9, the development of inquiries and turnover appears rather stable, with an understandable dip during the COVID-19 crisis. However, this approach to assessing liquidity similarly fails to account for changes in the structure of supply and demand, nor does it consider aspects regarding the pace of turnover or the price impact of these inquiries.

Although tradable and traded volumes are valid proxies, a complete picture requires additional dimensions. Traded volume alone fails to reflect the time required to turn a position around. Likewise, the amount issued and absorbed by the market reveals nothing about the price impact of executing such trades. In a nutshell

“What quantity can be traded at what cost and within what time-frame?”

In this context, “cost” should be understood as the upward pressure a “buy order” or the downward pressure a “sell order” of a given quantity exerts on secondary market price levels.

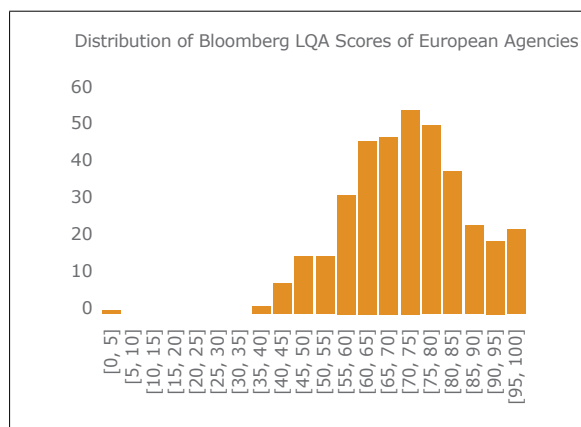
The more rapidly (x-axis) a given quantity (y-axis) needs to be executed, the greater the potential price impact (z-axis). The larger the quantity that needs to be turned around during a given time-frame, the higher the potential impact on price. This interdependence is illustrated in the chart below:

A prime example of this logic in practice is Bloomberg’s Liquidity Assessment (LQA) Score, which evaluates securities based on relative liquidity rather than absolute metrics. Represented as a centile rank from 1 to 100 (where 100 is the most liquid), it compares assets on a like-for-like basis within specific peer groups. Mathematically, Bloomberg addresses the three-dimensional liquidity surface by fixing the time horizon at one day. By holding time constant, the 3D surface collapses into a two-dimensional curve mapping volume against cost. This approach is tailored across asset classes. With respect to Fixed Income, the score reflects the probability that the liquidation cost for a fixed position remains below 20bp over the one-day horizon. This fixed position is set at USD 10mn equivalent for US and EMEA sovereign bonds (including Agencies), and USD 1mn equivalent for all other securities (including Covered Bonds). Consequently, Bloomberg’s framework proves that practical liquidity analysis requires locking down specific dimensions to make cross-asset comparisons meaningful.

In the charts below, we plot the Liquidity Score distributions of Covered Bonds and Agencies. The distribution for Agencies shows a denser population at the very high end (>90%), reflecting their active, global secondary market. Conversely, the modal bracket for Covered Bonds sits at 75–80% (compared to 70–75% for Agencies),

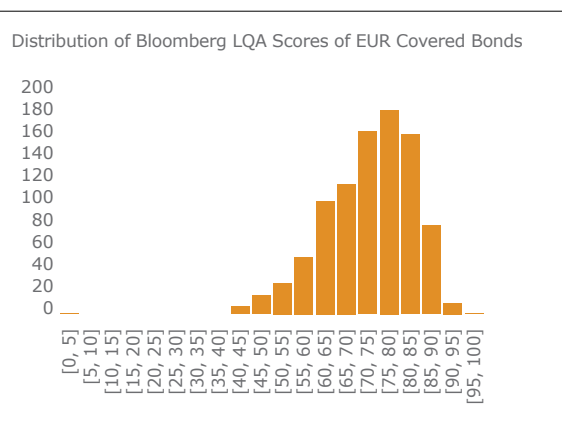
and their median score is slightly higher at 74% (vs. 73% for Agencies). This demonstrates that while the typical Covered Bond enjoys remarkably stable and solid baseline liquidity, it rarely reaches the absolute top-tier scores. This capping effect is driven by the structural 'buy-and-hold' nature of the Covered Bond market, where a vast portion of outstanding paper is locked away by long-term institutional investors. Despite this structural drag, the two overall distributions remain remarkably similar.

> FIGURE 11: COVERED BOND TURNOVER,
LQA SCORES OF EUROPEAN AGENCIES



Source: Bloomberg, Helaba Research

> FIGURE 12: STILIZED LIQUIDITY MODEL
LQA SCORES OF EUROPEAN COVERED BONDS



Source Bloomberg, Helaba Research

This striking similarity reveals a profound structural insight when cross-referenced with Bloomberg's methodology. Since Agencies are tested against a USD 10MM horizon while Covered Bonds are evaluated at just USD 1MM, these near-identical figures suggest that the model views a USD 1MM Covered Bond trade as methodologically equivalent in risk to a USD 10MM Agency trade. Consequently, the headline LQA Score penalizes the lower baseline turnover of the Covered Bond segment, understating its actual liquidity depth. In reality, the Bloomberg framework may not fully capture the covered bond market's underlying liquidity resilience, which is supported by consistently tight bid-offer spreads and strong dealer market-making despite comparatively modest secondary-market.

THE SWEDISH COVERED BOND MARKET

The Swedish domestic covered bond market is of considerable importance to the domestic capital market and represents a central source of funding for Swedish banks. Even before the introduction of dedicated covered bond legislation in 2004, Sweden had a well-established and liquid mortgage bond market, dating back at least to the early 1980s. At year-end 2025, the outstanding volume of SEK-denominated covered bonds amounted to EUR 206.3 billion, which was more than twice the outstanding volume of Swedish government bonds.

Liquidity is highly valued by investors in the Swedish bond market. The major banks issue covered bonds in benchmark format, involving large issue volumes and the appointment of several dealers to quote both bid and offer prices. Only benchmark bonds are deliverable in the futures market. When a new benchmark bond is issued, the issuer ensures that the initial volume meets the requirements for a benchmark-sized transaction. Following the initial issuance, the issuer may increase the outstanding amount through tap issuance without further notice. Benchmark bonds may reach volumes of SEK 60 bn or more.

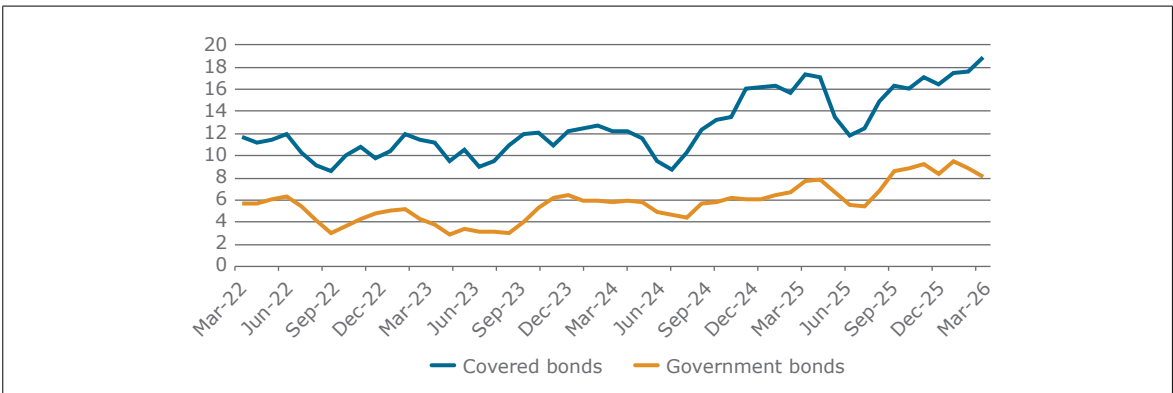
Sweden also has a liquid and well-functioning repo market, in which almost all banks participate. In the domestic bond market, repo transactions are conducted primarily in covered bonds and government bonds. In recent years, covered bonds have become the more commonly used asset in repo transactions. Daily turnover in the

covered bond repo market is approximately three times higher than turnover in the spot market. Issuers provide their market makers with repo facilities in their own bonds. Repo transactions are treated as sell-buy-back or buy-sell-back transactions, and ownership of the security must therefore be transferred.

Overall, this market structure has functioned effectively over an extended period. Recent legislative changes have not had any significant observable impact on liquidity in the Swedish covered bond market. Liquidity did, however, deteriorate during the pandemic, partly as a result of extensive quantitative easing, and many foreign investors reduced their exposure to the Swedish market. Since autumn 2024, a substantial number of investors have returned, contributing to an improvement in market liquidity. During spring 2026, turnover continued to increase, primarily as a result of higher client-related trading activity. By contrast, primary-market activity and interbank trading have remained smaller parts of the market and have not expanded to the same extent.

The Riksbank has been reducing its holdings of covered bonds for several years under quantitative tightening and currently holds approximately 4 percent of the outstanding volume. Swedish banks' holdings of covered bonds are also limited, amounting to around 15 percent of the outstanding stock. More than one third of outstanding Swedish covered bonds are held by foreign investors. Average daily turnover in the covered bond spot market amounted to SEK 15.4 bn in 2025, compared with SEK 55.4 bn in the repo market. At the beginning of 2026, average daily turnover in the spot market increased further, reaching SEK 17.6 bn.

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



Source: Riksbanken

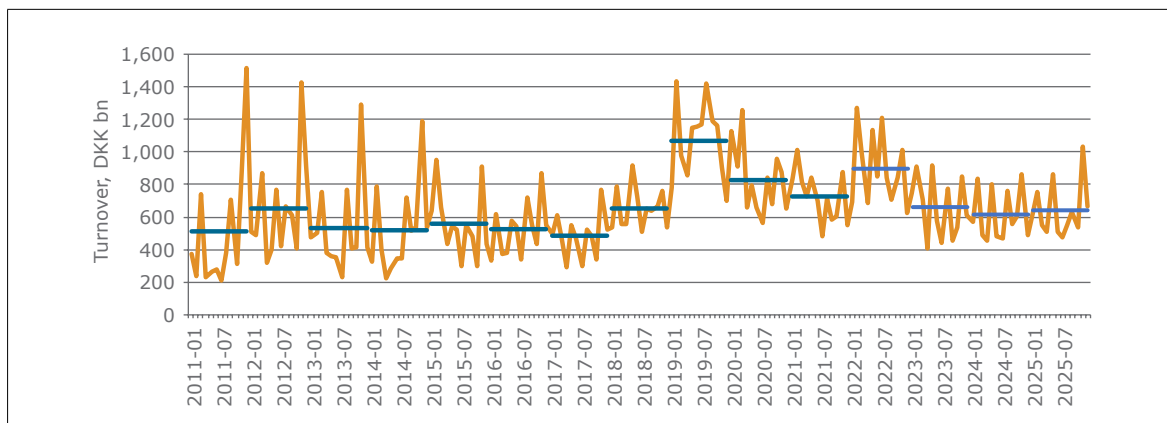
THE DANISH COVERED BOND MARKET

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 480 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 – 2025 came in at around DKK 655 bn (app. EUR 88 bn). In 2025 average monthly turnover was DKK 637 bn (app. EUR 86 bn), cf. Figure 14. On average this means that approximately 18 percent of the outstanding volume was traded every month of 2025.

In 2025, the turnover in Danish covered bonds was slightly higher than in 2024. 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.