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High trade transparency on the Danish mortgage bond market works well

The Danish covered bond market is the non-equity market in Europe with the highest level of trade transparency. This in part reflects that the Danish Financial Supervisory Authority (FSA) has not made use of the possibility in MiFIR to grant waivers and deferrals due to illiquidity. Furthermore, on the post-trade side a voluntary industry-level agreement among the principal market participants means that only publication of trades above 120 mn DKK (equivalent to 16.1 mn EUR) can be deferred, and only until the end of the trading day. This implies that 90% of the trades and 40% of the total turnover are published no more than three minutes after the trade is concluded.

The transparency regime is an important feature of the Danish covered bond market, which is the largest in Europe. The regime enjoys overall wide support among both issuers, investment firms, professional and retail investors.

The Danish mortgage market is an interesting case to study in relation to the upcoming review of MiFID II/MiFIR by the European Commission as trade transparency is expected to be one of the topics for review. The issue for the Commission is to find the optimal level of transparency, which, however, can be difficult to determine as it depends on a number of factors which may vary across asset classes and markets.

On the one hand, trade transparency brings more information to the market, thereby reducing asymmetric information, improving the price discovery process and increasing competition. This may attract more investors and increase turnover and liquidity. On the other hand, a high level of trade transparency can in some cases expose a market participant, especially a market maker, with a significant sell or buy interest to undue risk as other market participants can exploit this information in their price setting.

This study evaluates the trade transparency in the Danish mortgage market. The main observations are that

- The pre-trade transparency level is low as MiFIR sets no or very limited pre-trade transparency requirements for bilateral trading and SI-

trading. This is the main reason why quotes and orders behind around 95% of trades in Danish mortgage bonds in 2020 were not published.
- The post-trade transparency level in Denmark is high and higher than in other EU-countries' covered bond markets.
- Still, market participants do not seem to adjust their trade sizes in order to make the trade eligible for deferral. It indicates that the transparency level is not too high.
- Neither do foreign market participants who in other jurisdictions are used to a much lower level of post-trade transparency seem to adjust their trade sizes in order to make the trades eligible for deferral.
- Market makers continue to make purchases, including very large ones, despite trades being published end of day where they in some cases still have a large share of the initial purchase on their books. In that way they also carry out their market making activities in cases where they get exposed to trade transparency.

1. The Danish covered bond market

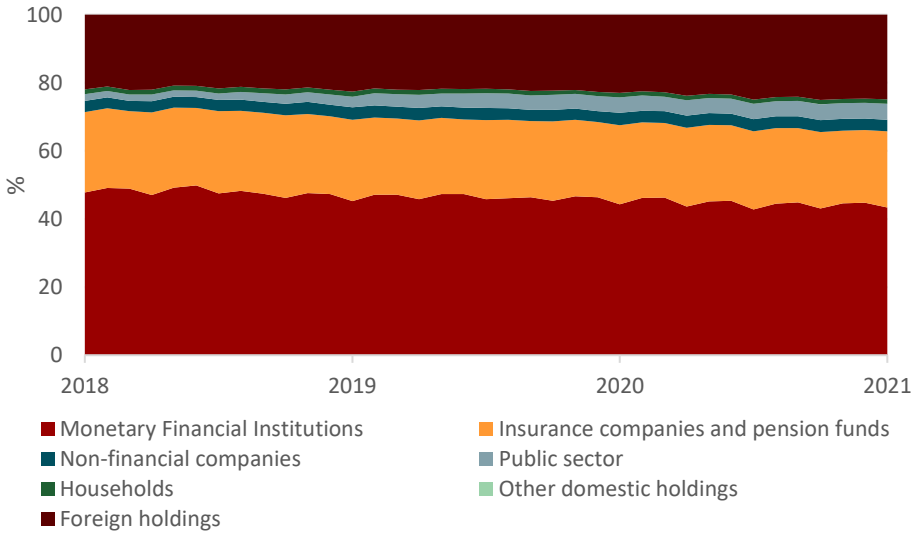
We start with a description of the Danish covered bond market as a background to better understand the benefits and drawbacks of trade transparency as they depend on the specific instrument and market.

The Danish covered bond market is the largest in Europe with a total outstanding volume of 419 bn EUR end of 2019.[1] 96% of the bonds were backed by mortgages which reflects the widespread use of mortgage bonds for financing real estate in Denmark. The bulk of the bonds are issued with a maturity of 30 years, but there is also issuance with shorter maturity, including a one year maturity.

The Danish mortgage-credit sector is highly concentrated as only five mortgage banks issue bonds. They all issue AAA-rated covered bonds. The largest investors are domestic banks reflecting their use of mortgage bonds to manage liquidity and life insurance companies and pension funds using long-maturity bonds to match their long-term liabilities, cf. Figure 1. Foreign investors, mainly institutional investors and hedge funds, held 25% of total bonds outstanding end 2020, following a rise in recent years.

[1] See *ECBC: European Covered Bond. Fact Book 2020*, p. 150. The second largest European covered bond market is Germany with an outstanding volume at 364 bn EUR end of 2019 followed by France at 334 bn EUR

Figure 1: Danish mortgage bonds by investor type



Source: Danmarks Nationalbank.

The activity in the Danish mortgage bond market is relatively concentrated in a small number of bond series. Although there were around 1,300 bond series outstanding in December 2020, the 100 largest accounted for almost two thirds of the total outstanding volume. Hence, many series have a small outstanding volume. However, bonds of the same type with the same rating from different issuers have traditionally been regarded as near-perfect substitutes by market participants and they trade at almost identical prices despite differences in outstanding volume.

In 2020, the annual turnover in Danish mortgage bonds was 800 bn EUR and in total there were 275,000 trades. Approximately 75% of the trades had a size of less than 1 mn EUR, but they accounted for only 4% of the total traded volume in 2020, see Figure 2. The many small trades reflects issuance, when mortgage banks issue bonds as families finance their homes.[2] The trades in Danish mortgage bonds are concentrated in a small number of series, often the series open for issuance, or the largest series. In 2020 92% of the series had less than two daily trades on average, whereas the 1% most traded series had more than 12 daily trades.

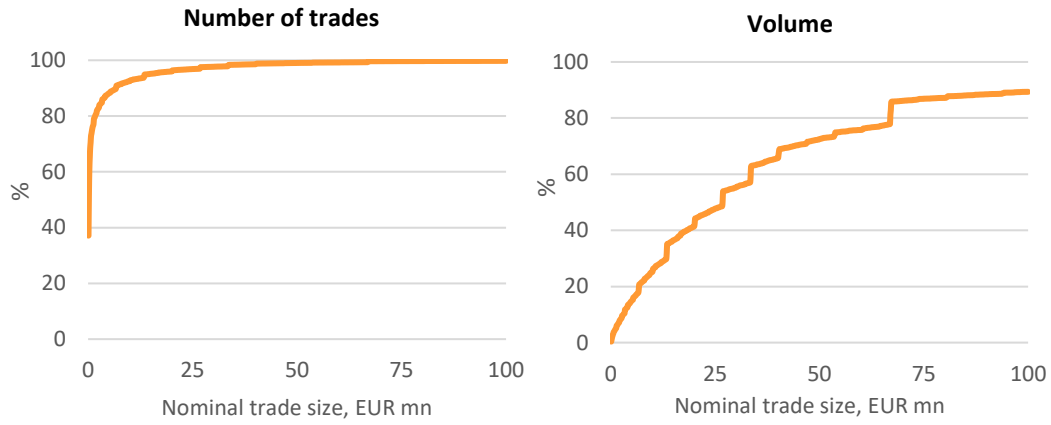
The mortgage bonds are listed on the Danish stock exchange Nasdaq Copenhagen, but only 11% of the volume traded on trading venues in 2020, whereas around 59% of the volume traded at systematic internalisers[3] (SI's) while the remaining 30% traded OTC during the same period, reflecting that

[2] The mortgage bonds to a very large extent match the loans. Normally, when a new loan is granted, the mortgage bank sells a bond that match the loan. Thus, there is a continuous sale of mortgage bonds.

[3] A systematic internaliser is an investment firm that deals on an organised, frequent, systematic and substantial basis on own account when executing client orders outside the organised trading platforms.

the market is price driven. The market is heavily reliant on market makers mediating trades between retail investors, who typically trade at amounts up to 1 mn EUR and professional investors trading in large blocks, usually between 3 and 70 mn EUR. In 2020, the seven market makers in Danish mortgage bonds were involved in 83% of the trades accounting for 92% of the total turnover. This share has been stable in recent years.

Figure 2: Distribution of trades in Danish mortgage bonds in 2020



Note: The figure includes trades of Danish mortgage bonds in the secondary market, excluding trades above 2.5 bn DKK (outlier correction) and trades flagged as security financing transactions. Primary market transactions are excluded from the analysis and are identified as those in which a mortgage bank and a primary dealer are flagged as seller and buyer, respectively.

Source: The Danish FSA on basis of MiFIR transaction reports.

2. The Danish trade transparency regime

MiFIR provides the national competent authorities with options, under certain conditions, to grant market operators and investment firms waivers or deferrals of trade transparency, see Box A.

On this legal basis, the Danish FSA has decided which waivers and deferrals to grant to non-equity instruments in its jurisdiction. The decisions were made to achieve the optimal level of trade transparency in order to secure well-functioning financial markets that serve both home owners, market makers and institutional investors.

In 2017 the Danish FSA arranged a public seminar on trade transparency and its implications for the Danish mortgage bond market, engaged bilaterally with stakeholders and published a discussion paper[4] that invited stakeholders to give their assessment of the optimal level of trade transparency, including their view on the respective waivers and deferrals.

[4]See The Danish Financial Supervisory Authority, 2017, *Discussion paper: Transparency and liquidity – Trade transparency and a well functioning market for mortgage bonds*.

Box A. Trade transparency requirements in MiFIR

Trade transparency is crucial for the functioning of financial markets. Against this background, the European legislators introduced new pan-European rules for pre- and post-trade transparency in Markets in Financial Instrument Regulation (MiFIR) effective from 2018.

Pre-trade transparency: The main rule set out in MiFIR is that trading venues are required, on a continuous basis, to publish the bid and offer prices and the depth of trading interests at those prices. For investments firms trading bilaterally there are no such requirements. However, an investment firm that is a systematic internaliser (SI) in a financial instrument is required to publish a quote below the SSTI threshold in a liquid instrument if a client has prompted for a quote and the SI has agreed to provide it.

Post-trade transparency: The main rule is that trading venues and investment firms must publish the price, volume, venue of execution, ISIN and time of the transaction as close to real-time as is technically possible.[1]

Possible waivers and deferrals

While the main rule in MiFIR is that there is full trade transparency, there may be reasons for exemptions. This reflects that the optimal level of transparency may vary across asset classes and markets due to different characteristics such as whether the market is order or price driven, relevant investor segments, role of market makers, etc.

Therefore, MiFIR gives the national competent authorities (NCA's) an important role regarding trade transparency due to their knowledge of their national financial markets. For some orders NCA's have the possibility to grant certain pre-trade waivers to market operators and investment firms in their jurisdiction. On the post-trade side, the NCA's may allow publication of trade information to be deferred to the end of the second trading day after the day of transaction (t+2) for prices and up to four weeks for volumes.

The most relevant waivers and deferrals are for orders and transactions that are

- above the size specific to the financial instrument (SSTI)
- large in scale compared with normal market size (LIS)
- in instruments not having a liquid market (illiquidity).[2]

SSTI and LIS are determined as a percentile of all the transactions that took place for covered bonds on all EU trading platforms in the previous calendar year, though minimum 300.000 EUR, see Table 1. Thus, the SSTI and LIS thresholds are annually updated following ESMA's publication of the annual transparency calculation for non-equity instruments.

The SSTI waiver is only eligible for orders in a request-for-quote or a voice trading system. MiFIR grants the SSTI waiver to SI's, but NCA's can discretionarily grant the waiver to trading venues in their jurisdiction.

Table 1. SSTI and LIS thresholds for covered bonds

EUR mn		**3 Jan 2018**	**1 June 2019**	**1 June 2020**
Waiver	SSTI	0.3	0.6	0.3
	LIS	1.5	4.0	3.5
Deferral	SSTI	3.0	6.0	7.0
	LIS	7.0	15.0	20.0

Source: ESMA, Annual transparency calculations for non-equity instruments.

In MiFIR, a covered bond is defined as not having a liquid market if just one of the three criteria below were not met in the previous quarter:

- The average daily notional amount was at least 100,000 EUR
- The average daily number of trades was at least 15 in phase 1, 10 in phase 2 (applies from April 2021), 7 in phase 3 and 2 in phase 4 (final phase)
- The bond was traded at least 80% of the trading days on the market place.

[1] After 1 January 2021, the publication must in any case take place maximum five minutes after the trade was executed.

[2] In addition, MiFIR also gives NCA's the possibility to grant an order management facility waiver, exchange for physical waiver, package order waiver and a package transaction deferral.

Against this background, in June 2017 the Danish FSA published a policy paper[5] with the waivers and deferrals granted, including the arguments for the decisions, see Table 2.

Table 2. Waivers and deferrals for covered bonds granted by the DFSA

	Pre-trade waivers	**Post-trade deferral**
Illiquidity	No	No
SSTI	Yes	No - before 1 June 2020 Yes - after 1 June 2020
LIS	Yes	Yes (t+2 for price and volume)

Note: The SSTI waiver applies for a lower threshold than the LIS waiver, see Table 1, but the SSTI waiver is only applicable for orders in a request-for-quote or voice trading system.

[5] See The Danish Financial Supervisory Authority, 2017, *Trade transparency and possible waivers and deferrals for non-equity instruments*.

The Danish FSA decided that illiquidity should not qualify for a waiver or deferral for covered bonds. Denmark was the only EU country making this decision.[6] The decision was based on an analysis showing that almost all Danish mortgage bonds would be defined as MiFIR illiquid even though they were regarded as highly liquid by market participants and in other parts of the financial regulation.

The SSTI waiver was granted to ensure a level playing field among trading venues and SI's as the latter already had been granted this waiver in MiFIR.

The LIS waiver was granted to ensure that very large orders could take place in the mortgage bond market without undue risks due to pre-trade transparency.

2.1 Voluntary industry-level agreement

Before MiFID II, Denmark had national post-trade transparency requirements in place. The Danish FSA and market participants had good experiences with this regime as it was deemed to ensure a reasonable amount of transparency improving price discovery, while not having adverse effect on liquidity. Hence, the Danish FSA supported a proposal by the industry to make a voluntary industry-level agreement among principal market participants that maintained the existing post-trade transparency regime.

The industry-level agreement implies that information on all trades will be published no more than three minutes after the trade is concluded. However, publication on trades above 120 mn DKK (16.1 mn EUR) can be deferred to 19.00 CET on the trading day.[7] In order to avoid fragmented disclosure, the participants have agreed to publish the post-trade information at Nasdaq Stockholm's Approved Publication Arrangement (APA).

To make the industry-level agreement possible, the Danish FSA granted LIS deferral effective from 2018, as the LIS threshold was lower than the deferral threshold in the industry-level agreement. In 2020, the Danish FSA decided to grant SSTI deferral in addition to LIS deferral following new calculations from ESMA that increased the LIS threshold considerably from 15 to 20 mn EUR, significantly above the deferral threshold in the industry-level agreement.

[6] For an overview of the deferral regimes, see *ESMA provides overview of MiFID II deferral regimes*, 15 December 2017.

[7] The deferral threshold has increased over time from 100 mn DKK (equivalent to 13.4 mn EUR) until 31 May 2019 to 112 mn DKK (equivalent to 15.0 mn EUR) to 31 May 2020 to the current 120 mn DKK.

3. Low level of pre-trade transparency due to MiFIR rules

The level of pre-trade transparency in Denmark is low, though the highest in Europe as, contrary to other EU countries, Denmark has not granted the illiquidity waiver.

In practice, the absence of the illiquidity waiver is only of importance for orders on a trading venue. In 2020, only 7% of the trades in mortgage bonds were executed on trading venues. Among the remaining trades, 30% were executed as bilateral trading (OTC), but for these trades MiFIR has no requirements for pre-trade transparency. The remaining 63% of the trades are done at SI's, but in MiFIR the pre-trade transparency requirements for SI's are very limited. SI's are for illiquid non-equity instruments only required to disclose quotes to their clients on request if the SI has been prompted for and agreed to provide a quote. This means that these quotes are not accessible to others than the SI's clients.

Although pre-trade transparency is low, the relatively small share of orders that are published provide a real-time picture of bid and offer prices providing investors with information they can use to determine the price of other bonds with similar characteristics.

This can particularly benefit smaller investors because their knowledge about the market is likely to be less than that of larger investors. Small investors, e.g. retail investors and small institutional investors, trade more rarely. Moreover, they have no or fewer employees, fewer and less advanced systems to calculate prices and fewer contacts in the market to give them relevant knowledge. Therefore, they are more dependent on public information about orders and transactions. The SSTI and LIS waivers are expected to be of minor importance for the order information small investors need as they typically trade at sizes below the SSTI and LIS thresholds.

The consequences of the low level of pre-trade transparency are partly compensated by a high level of post-trade transparency in the Danish mortgage market, see below. The knowledge of the price and associated volume in a recently executed trade gives the investors an important input to determine the price of a similar mortgage bond.

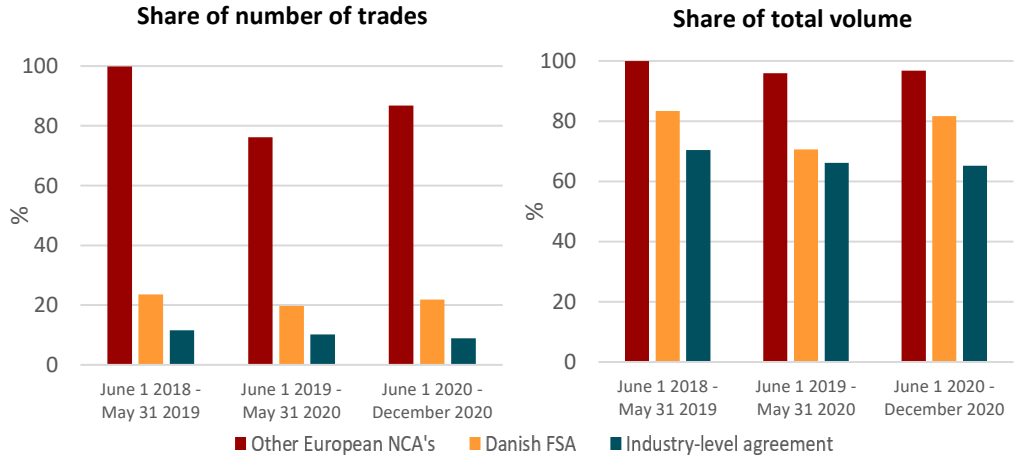
4. High level of post-trade transparency

The Danish transparency regime leads to the highest level of post-trade transparency for covered bonds in the EU. It reflects that the Danish FSA has not granted deferral due to illiquidity contrary to the other EU countries, cf. section 2. This has a significant impact on transparency as most covered bond series are illiquid according to the definitions in MiFIR.

The industry-level agreement implies more trade transparency than required by the Danish FSA. This reflects that the threshold in the voluntary industry-level agreement at 16.1 mn EUR is higher than the SSTI threshold at 7 mn EUR. Hence, trades with sizes between 7 and 16.1 mn EUR qualify for SSTI deferral, which is granted by the Danish FSA, but not deferral in the industry-level agreement. Furthermore, the transparency requirements set by the Danish FSA only applies for trades in its jurisdictions. However, some foreign market participants, including SI's, have chosen to participate in the industry-level agreement and thereby not making use of the deferrals granted by their home NCA.

The transparency regimes given by the Danish FSA and the voluntary industry-level agreement implies that fewer trades in covered bonds are eligible for deferral than in the other EU countries, see Figure 3.

Figure 3: Trades eligible for deferrals in different transparency regimes



Note: The figure shows the share of trades and traded volume in Danish mortgage bonds that fulfill the criteria for deferred publication according to different deferral regimes. "Other European NCA's" assumes that both LIS, SSTI and illiquidity deferrals were granted, i.e. the situation in other EU countries. "Danish FSA" shows trades eligible for deferrals granted by the Danish FSA, i.e. LIS deferral from 1 June 2018 to 31 May 2020 as well as SSTI deferral from 1 June 2020. "Industry-level agreement" shows trades eligible for deferrals granted by the Danish FSA and for those market participants joining the industry-level agreement also the deferral in the agreement. The deferral threshold in the agreement were set to 100 mn DKK (equivalent to 13.4 mn EUR) until 31 May 2019, 112 mn DKK (equivalent to 15.0 mn EUR) in the period 1 June 2019 to 31 May 2020 and 120 mn DKK (equivalent to 16.1mn EUR) from 1 June 2020.

Source: The Danish FSA on basis of MiFIR transaction reports.

In the second half of 2020, 9% of the trades in Danish mortgage bonds were eligible for deferred publication following the industry-level agreement, whereas 87% of the trades were eligible for deferral due to illiquidity, SSTI or LIS, see Figure 3 (left). Looking at turnover, the difference is smaller with 65% eligible for deferral in the industry-level agreement compared to 97% fulfilling at least one of the potential MiFIR deferrals, see Figure 3 (right). The smaller difference for turnover than for the number of trades reflects that only large

trades are eligible for deferral in the industry-level agreement, whereas MIFIR illiquidity deferral also applies for small trade sizes in a MIFIR illiquid bond.

4.1 Market participants' reaction to trade transparency

The higher level of trade transparency in Denmark than in the other EU-countries raises the question whether the Danish regime is too strict – or alternatively that trade transparency could be higher in other EU-countries without harming their financial markets.

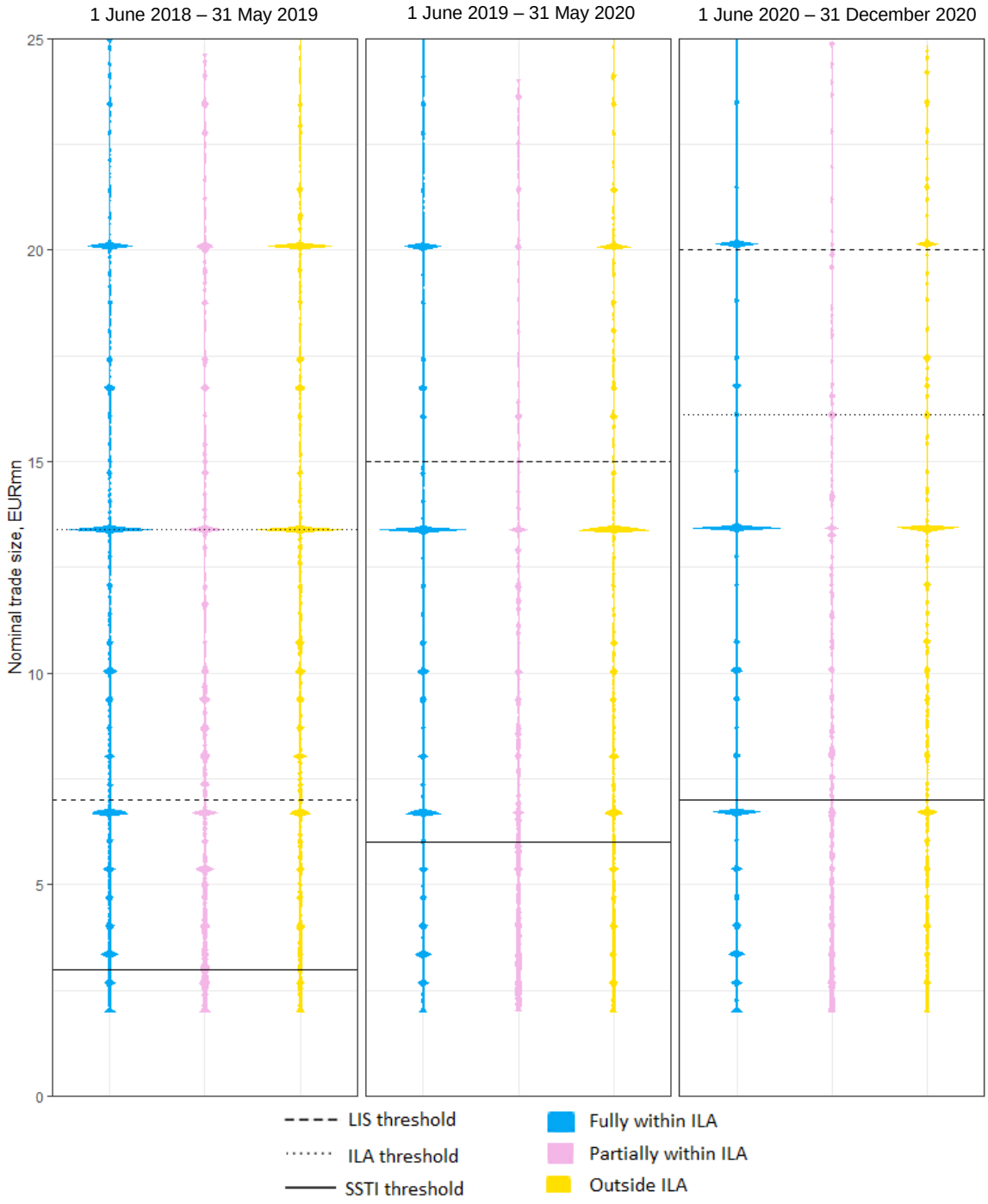
The Danish transparency regime enjoys overall support from both large and small market participants. Trades have not moved to jurisdictions with a less transparent regime than the Danish one.

We can use MiFIR transaction reports to evaluate whether market participants adjust trade sizes in order to make trades large enough to get above the deferral threshold in the industry-level agreement. If they do so, it indicates that they assess the cost of trade transparency to be so high that they prefer to change their trade sizes. However, if we do not observe changes in trade sizes, it indicates that the market participants do not find trade transparency below the current thresholds harmful, or at least not sufficiently harmful to respond to it.

Transaction data for Danish mortgage bonds does not indicate that the market participants in the industry-level agreement change their trade sizes in order to avoid trade transparency. Instead they seem to continue to trade at common sizes like 50, 100, 150 mn DKK (equivalent to 6.7, 13.4, 20.2 EUR mn) irrespective of the size of the deferral threshold, cf. the blue line in Figure 4 and 5. Thus, data does not show a higher number of trades or turnover just above the threshold or at the closest common trade size above it. Furthermore, market participants continue to have the same high share of trades at 100 mn DKK after 1 June 2019, despite that trades at that size thereafter do not qualify for deferral as the threshold was increased in the industry-level agreement.

There is also no reaction observed with respect to trades between a firm outside the industry level-agreement and one following the publication rules set out in the agreement, cf. the pink line in Figure 4 and 5. Hence, also foreign firms participating in these trades do not seem to asses that trade transparency is too high in the Danish bond market even though they are used to less transparency when they trade covered bonds, including Danish mortgage bonds, with other counterparties.

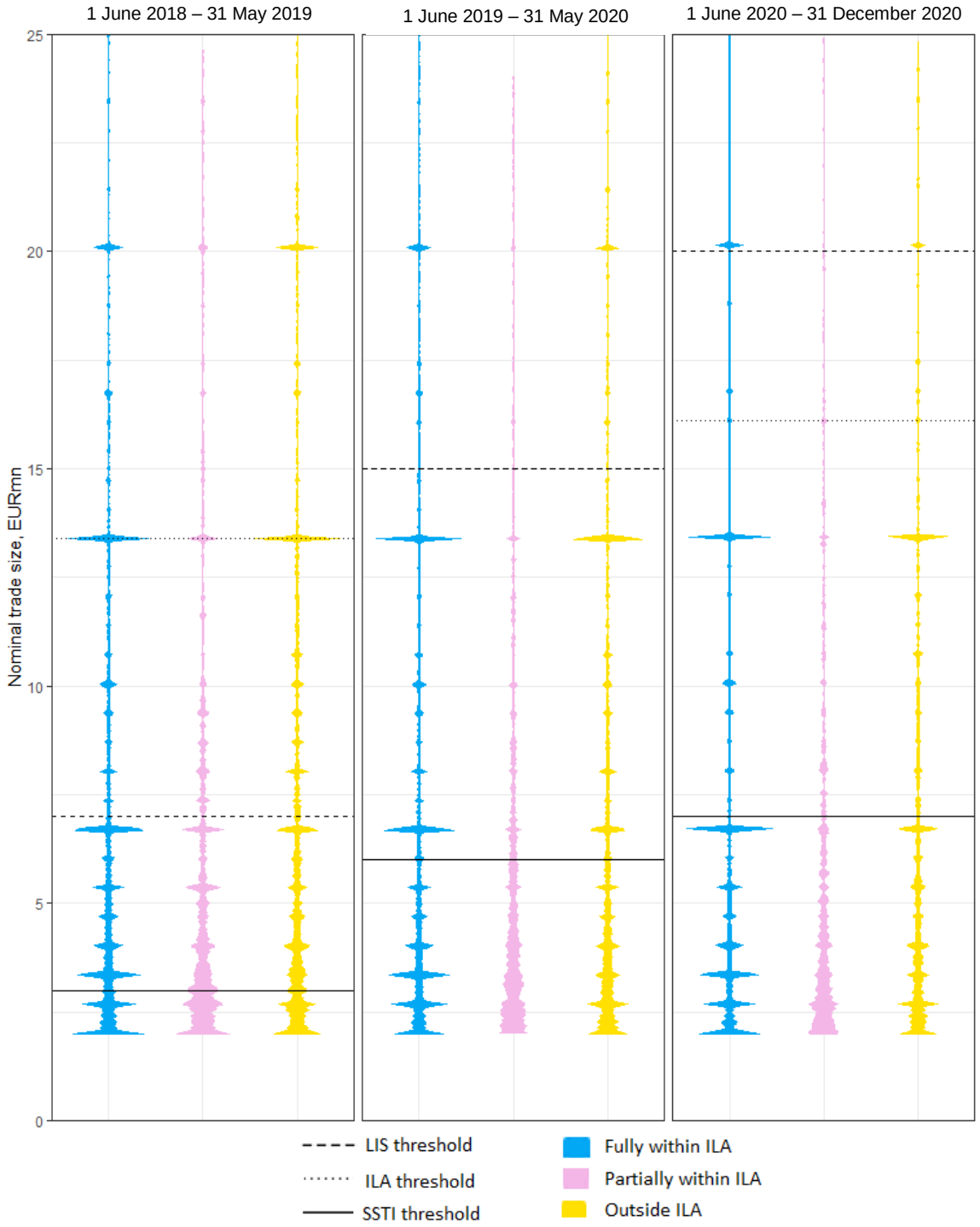
Figure 4. Distribution of turnover with respect to trade sizes



Note: "Fully within ILA" means that both counterparties follow the Danish industry-level agreement. "Partially within ILA" means that one counterparty publishes the trade according to the industry-level agreement, while the other counterparty is not subject to the same deferral regime. "Outside ILA" means that both counterparties are non-Danish and exclusively follow the trade transparency rules decided by a foreign NCA. The figure includes trades of Danish mortgage bonds in the secondary market with a nominal trade size between 2 and 25 mn EUR. Primary market transactions are excluded from the analysis and are identified as those in which a mortgage bank and a primary dealer are flagged as seller and buyer, respectively.

Source: The Danish FSA on basis of MiFIR transaction reports.

Figure 5. Distribution of number of trades with respect to trade sizes



Note: See the note to Figure 4.
Source: The Danish FSA on basis of MiFIR transaction reports.

Figure 4 and 5 also show that the distribution of trade sizes is almost the same for trades where publication takes place according to the industry-level agreement, as for trades where publication takes place according to

the rules of a foreign NCA, i.e. where only trades in liquid bond series below the SSTI threshold do not qualify for deferred publication. This is seen in the figures, as the distributions for the blue and pink line are largely the same as for the yellow one, which shows the distribution for trades between foreign firms. As market participants choose to trade at the same sizes despite differences in trade transparency, it indicates that market participants do not consider full trade transparency to be particularly harmful to trades below the threshold in the industry-level agreement.

Furthermore, the distribution of trade sizes appears robust under different market conditions. Hence, in these periods there is no indication that market participants try to avoid trade transparency in Danish mortgage bonds by adjusting trade sizes in order to qualify for deferral. In particular, distributions of trade sizes are generally unchanged during bouts of increased volatility such as the unrest in US repo markets in September 2019 and the COVID-19 pandemic in March 2020. Likewise, the distributions are unchanged in periods with high turnover (above the 75th percentile) and low turnover (below the 25th percentile).

In mid-March 2020 there was a fall in the demand for Danish mortgage bonds causing higher interest rates. However, trading continued and the issuance of mortgage bonds continued in the weeks with market turmoil. In contrast, the issuance of covered bonds was unusually low in other countries.[8] The Danish FSA notes that the high level of post-trade information for Danish bonds supported the market during the turmoil as it provided important information in the price formation process and supported the investors' investment decisions.

4.2 Time market makers use to reduce a position

The justification for deferring publication of trade information is that it can otherwise make it less attractive to execute large trades. If, for example, a market maker has bought a large number of bonds and within a few minutes had to publish detailed information about this, then other market participants could exploit this information and reduce their own buy prices implying a worse trade for the market maker wishing to unwind its position.

If the trade transparency requirements entail that it is harder and less attractive to make large transactions, liquidity in the bond market will potentially be impaired. This will be particularly relevant if market makers no longer want to act on the market, or only do so to a limited extent.

Against this background we look at the time market makers in Danish mortgage bonds use to unwind a position. If they can reduce the position fully or partly before the end of the deferral period, then publication of the trade will

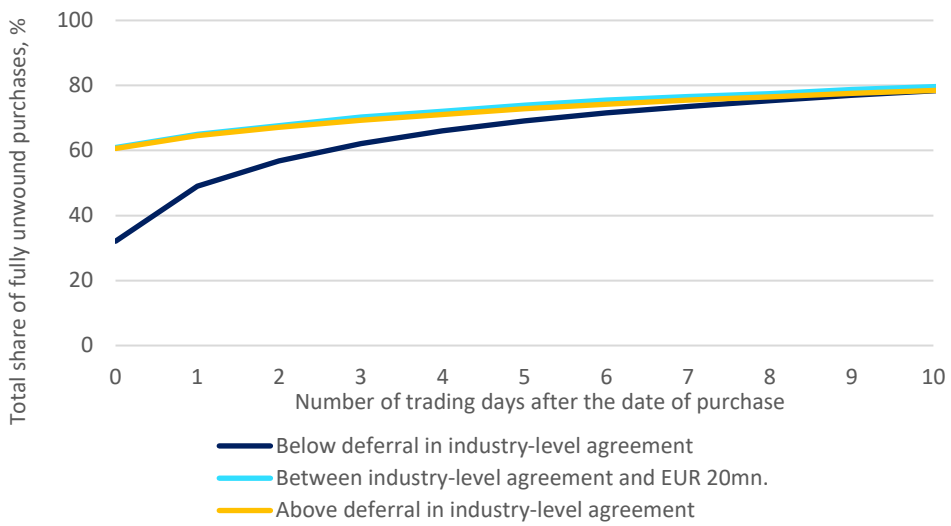
[8] See Danmarks Nationalbank, 2020, *Danish Mortgage bond liquidity briefly impacted by covid-19.*

have no or only a reduced impact for them. Alternatively, if the market maker has hedged the position, e.g. by buying derivatives, it has also protected itself from a price reaction due to the trade publication.

The findings below do not seem to show that avoidance of post-trade transparency is of major importance to the market makers in Danish mortgage bonds. They continue to make purchases, including very large ones, even though the purchase is published while they often have managed only to unwind a small share of the purchase and thus are expected to be exposed to the other market participants' price changes. This practice is in line with that the market makers support the industry-level agreement and voluntarily have chosen to participate in it.

There are seven market makers in Danish mortgage bonds. Depending on the calculation method, we find that for their purchases in Danish mortgage bonds with trade sizes above the deferral threshold in the industry-level agreement, 60% of the trades have been fully unwound at the end of the trading day, see Figure 6. Hence, for these trades it does not matter for the market maker that the trade information is published end of day as agreed in the industry-level agreement.

Figure 6. Market makers' purchases that have been fully unwound



Note: The share of unwound positions is made up end of day (19.00 local time). The figure includes purchases of Danish mortgage bonds in the secondary market by the seven market makers, excluding trades above 2.5 bn DKK (outlier correction). Trading day 0 is the trading day where the bonds were bought. The shares are calculated across ISINs, brokers and trading days from 1 June 2018 to 31 December 2020 and for trades that are fully unwound within 100 calendar days. The holding period is calculated by the principle of last in-first out and positions are consequently closed in a reverse chronological order.

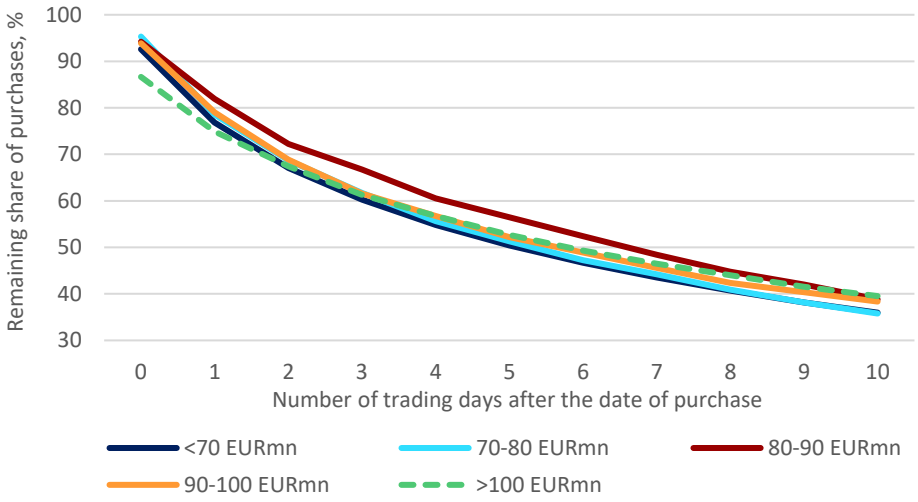
Source: The Danish FSA on basis of MiFIR transaction reports.

The Danish industry-level agreement only allows deferral to the end of the trading day. This is two trading days shorter than the shortest possible deferral

period in MiFIR which is the end of the second trading day after the date of the transaction (t+2). In these additional two trading days the share of closed positions above the deferral threshold increases by 7 percentage points to 67%

Looking at the purchases that have not been fully unwound on the trading day, we see that for trades at sizes above the deferral threshold the market makers have on average 93% of the initial purchase remaining at the end of the trading day, i.e. when the trade is published, see Figure 7. Potentially, this part of the initial purchase might suffer from worse execution prices due to trade transparency. Had the MiFIR deferral period at (t+2) instead been applied, this share would, ceteris paribus, have been 69%.[9]

Figure 7. Remaining share of market makers' trades that have not been unwound on the trading day



Note: The remaining share positions is made up end of day (19.00 local time). The figure includes purchases of Danish mortgage bonds in the secondary market by the seven market makers, excluding trades above 2.5 bn DKK (outlier correction). Trading day 0 is the trading day where the bonds were bought. The shares are calculated across ISINs, brokers and trading days from 1 June 2018 to 31 December 2020 and for trades that are fully unwound within 100 calendar days. The holding period is calculated by the principle of last in-first out and positions are consequently closed in a reverse chronological order.

Source: The Danish FSA on basis of MiFIR transaction reports.

How large share of a given purchase that remains on the market makers' book to some extent depends on the size of the purchase as a larger purchase necessarily requires more subsequent sales in order to be fully unwound.

[9] Note that the 'last in-first out' approach results in right skewness in the distribution of calculated holding periods compared to other methods, e.g. 'first in-first out'. Combined with the distribution being truncated at 0, the 'last in-first out' approach may thus introduce an upward bias in the calculated statistics. This is a consequence of the calculation presuming that the most recent positions are prioritised when a dealer decreases her stock of bonds, meaning that purchases made at the beginning of the data period can be registered as open for an extended period even if the dealer continually opens and closes new positions. However, as a robustness check a 'first in-first out' approach has also been applied and it yields similar results to those presented above.

However, this picture is only to a minor extent seen for initial purchases above 70 mn EUR. Different purchasing sizes below 70 mn EUR have a very similar profile for the remaining share over time (and they have as a result been pooled into one group in Figure 7).

The observations above does not indicate that it is disproportionally more difficult and time consuming to sell large positions at e.g. 70 mn EUR than smaller ones at 10 mn EUR. Accordingly, the short deferral period in the Danish industry-level agreement do not seem to be particular harmful for very large trades either. However, one must also take into account that the larger purchase, the higher amount in DKK is remaining on the market maker's book. Other things being equal this makes the market maker more exposed to potential price adjustments from other market participants reacting at the published trade information.