Box 4
Dark pools and market liquidity

Concerns about potential market liquidity shortfalls have grown in recent years, amid changing roles of participants in financial markets and related trading patterns. As these structural changes have taken hold, one of the factors touted as harbouring the potential to disrupt market liquidity is a change in market microstructure. A particularly opaque element of this structural development has been the growth in little understood trading venues with no regulatory pre-trade transparency requirements – so-called "dark pools". These types of venue emerged as the initial transparency regime for equities was implemented in the Markets in Financial Instruments Directive (MiFID). New regulation (MiFID II) aims to limit the size of less transparent trading activities and to bring more trades into light pool (or lit) venues where the order book is made public for all participants. Given the current debate on the impact of expanding the transparency regime to fixed income trading under MiFID II, assessing the development of dark pools within equity markets may provide some insights into the potential effect of the new requirements on bond market structure and liquidity.

The trading structure in equity markets noticeably changed after the implementation of MiFID in 2007. Previously, most trading in equities had occurred on a few large exchanges[26]. MiFID aimed to harmonise transparency, best execution and investor protection across European equity exchanges, and to facilitate competition between exchanges for the trading of equities. As a result, new venues competing for trades emerged, among them "dark" trading venues catering to investors

[26] Large exchanges acting virtually as single-country monopolies, such as the London Stock Exchange.

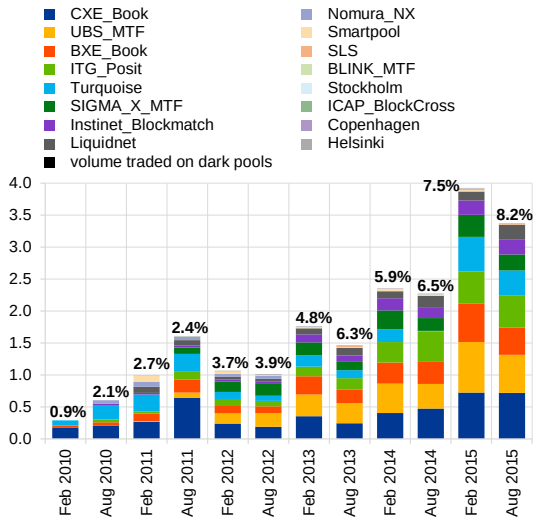
looking for reduced transparency. Using the exemptions for pre-trade transparency requirements, dark pools limit the dissemination of trade data, including information used for price formation. The growth of dark venues, which implies reduced availability of pre-trade information, as well as a higher level of market fragmentation, may be detrimental to market liquidity.

Chart A

Turnover in dark pools has grown rapidly

Reported equity volumes traded in dark pools in Europe

(y-axis: EUR billions; x-axis: traded volumes on the first trading Monday of each month; top of each bar: dark order book as a % of total reported volumes)



Source: BATS Chi-X Europe Market Data.
Notes: Volumes illustrated only for dark order books where data are available via BATS Chi-X Europe; these do not encompass all dark order books or dark pools. Percentages reflect the proportion of all traded volumes in equities on venues reporting to BATS Chi-X Europe.

Dark pools are a type of venue for trading equities with no pre-trade transparency requirements, which serves the needs of traders wishing to place and execute big-ticket orders with minimal adverse price effects. The main types of dark pools are dark order books (DOBs) and broker crossing networks (BCNs). DOBs are registered venues which use pre-trade transparency waivers and external reference prices. In contrast, BCNs are not officially registered venues and use various trade-matching methods. To illustrate the prominence of less transparent trading venues, Chart A shows the growth in volumes traded in a single day on selected DOBs in Europe. Daily trading on DOBs where data are available has grown from less than 1% in 2010 to over 8% of all trading in equities reported by the largest exchanges (including lit and dark order books). There is no equivalent data for volumes traded on BCNs, but studies approximate that 4-6% of volumes traded in equities use these venues.[27]

Certain investors, especially those looking to make large trades, may prefer using dark pools for a variety of reasons. One advantage in using them is that orders are generally executed based on the mid-point of an external reference price, and thus investors can avoid market impact costs.[28] Additionally, as the price and volume are not disclosed pre-trade, investors can place an order without revealing intentions and without allowing informed traders to take advantage. However, new regulation aiming to limit trading in dark pools should not be detrimental to investors placing larger orders, as they will be protected by the waivers and can use any venue type without pre-trade disclosure.

While uninformed traders may prefer dark pools, informed traders should favour lit markets, because they face lower execution probability in the dark if more of them cluster on one side of the market. As more uninformed traders move to dark pools, the risk of adverse selection for uninformed investors trading on lit venues is higher due to the fact that they are less likely to complete a profitable trade when trading against informed traders. Additionally, this shift may reduce the profits accruing to market-makers from capturing profitable uninformed order flows on lit

[27] The TABB Group estimates that BCNs accounted for 6% of pan-European equity market trading in 2012. Deloitte estimates that 4% of equity volumes were traded in BCNs in 2014.

[28] The additional transaction cost of executing a trade resulting from the movement in price required to complete it, which depends on market depth.

exchanges. However, market-makers are also active in dark pools, which allows them to also make some profit on these venues.[29]

Academic literature investigating the effect of dark pools on market liquidity has found mixed results. Those finding negative effects argue that dark pools remove liquidity and information from mainstream platforms where price formation occurs.[30] This leads to lower depth, increased trading costs and volatility on lit venues. They claim that consolidating liquidity on a few venues creates economies of scale and positive network externalities.[31] Thus, reducing dark pools by bringing more trades under a transparency regime may benefit market liquidity.[32] On the other hand, the defenders of dark pools argue that current levels of dark trading are too low to harm market quality and provide evidence that these venues benefit especially uninformed and small traders.[33]

The growth of dark pools under MiFID illustrates how regulation might influence evolving market microstructure, including a potential fragmentation of liquidity. According to the new provisions, all liquid financial instruments, including bonds, are to be subject to pre- and post-trade transparency on price and volume regardless of the trading venue. The new regulation aims to bring more trading to transparent venues, which, if successful, would also result in more liquidity on those venues. The majority of traders would benefit from consolidating information and promoting transparency, competition and financial stability. That said, some market participants might become more reluctant to engage in the market, as they may perceive transparency to increase the risks and costs of trading. Dark pools for fixed income instruments may emerge, pooling together liquidity and further changing the structure of these markets. Bonds are more heterogeneous than equities and traded less frequently but in larger trade sizes; thus fixed income traders may prefer dark pools to avoid revealing intent and trading with more informed counterparties on lit exchanges. Moreover, larger trade sizes in fixed income markets may make these trades more frequently eligible for transparency waivers. In light of this, more in-depth analysis of the development and potential effects of dark pools, as well as closer monitoring of the evolution of fixed income markets, are essential for designing regulation to adequately capture all facets of rapidly evolving financial markets.

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29 Brugler, J., “Into the Light: Dark Pool Trading and Intraday Market Quality on the Primary Exchange”, *Working Paper Series*, No 545, Bank of England, 2015.

30 Degryse, H., De Jong, F. and Van Kervel, V., “The Impact of Dark Trading and Visible Fragmentation on Market Quality”, *Review of Finance*, 2014.

31 Each additional trader increases execution probability and reduces the market impact cost for others. For further discussion, see Pagano, M., “Endogenous market thinness and stock price volatility”, *Review of Economic Studies*, Vol. 56(2), 1989, or Fioravanti, S. F. and Gentile, M., “The impact of market fragmentation on European stock exchanges”, *Working Paper Series*, No 69, Commissione Nazionale per le Societa e la Borsa, 2011.

32 Comerton-Forde, C., and Putniņš, T. J., “Dark trading and price discovery”, *Journal of Financial Economics*, 2015.

33 Brugler, J. (2015), op. cit.