

Choosing the right pools for your custom blend of dark liquidity

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Dark pools and dark liquidity seeking algorithms have become important and widely used execution tools for institutional investors participating in increasingly fragmented and diverse European equity markets.

It is incumbent upon brokers and other providers to ensure that these tools remain fit for purpose and continue to help buy-side traders operate in a constantly changing liquidity landscape in volatile market conditions. The burden of responsibility and the difficulty of the task are not alleviated by a challenging macroeconomic and regulatory environment.

This article examines how market participants' conflicting demands on non-displayed liquidity have been shaping the evolution of European dark pools and how dark liquidity seeking algorithms have been adapted to meet a variety of changing liquidity requirements, including those of the buy-side.

European demand for dark pools

In essence, dark pools provide an electronic version of the still widely used OTC form of manual off-exchange trading. Dark pools allow participants to trade anonymously using non-displayed orders, and trades are publicly revealed only after an execution has occurred.

Fuelled by continued strong demand for dark pools from institutional investors, the European market for non-displayed liquidity has not only grown but also become more fragmented and diverse. Both the number and variety of trading venues offering access to different kinds of dark liquidity have steadily increased since the adoption of the Markets in Financial Instruments Directive (MiFID) in 2007. According to previously cited TABB Group estimates¹ there were around 38 dark pools in Europe in 2012, accounting for almost 8% of European equity trading.

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Dark pool developments reflect a wider trend in European equity markets, which have seen the number of trading venues with displayed order books rise. Moreover, increasingly diverse groups of market participants are trading algorithmically on both lit and dark venues, either using agency execution and routing products, or directly, using proprietary and high-frequency trading strategies.

Choice of European dark pools

Market participants can currently choose to trade in four different types of European dark pool, all of which are, of course, subject to one form of regulation or another. There are non-displayed order books with rules for mid-point matching on trading venues operating as a regulated market (RM) or multilateral trading facility (MTF), and there are systematic internalisers (SI) and broker crossing systems (BCS) – also known as broker crossing networks (BCN) – which are operated exclusively by brokers and broker-dealers.

These dark pool types differ slightly with regard to the operator's control and discretion over price formation, participant connectivity and participant interaction. Prices in an RM or MTF dark pool reflect lit market

quotes, and executions generally occur at the mid-point of the primary exchange or European best bid-offer spread. All participants access the pool and interact on equal terms.

SIs support limited independent price formation, but the operator has an obligation to publish pre-trade quotes, and is required to be the counterparty to every trade, i.e., direct agency-agency interaction is prohibited.

Subject to broker-dealer obligations regarding best-execution and client order handling, the operator of a BCS dark pool can exercise some discretion in managing the interactions of agency and principal flows within the pool. BCS pools also reference lit market prices and can match orders anywhere within the primary exchange best bid-offer spread.

In Europe, Deutsche Bank has been operating SuperX, its internal dark pool, as a BCS since early 2010. SuperX was launched directly in response to demand from institutional investor clients, and the choice of the BCS format reflects the value the buy-side places on broker discretion. In monthly surveys of 19 European dark pools by Rosenblatt Securities², the largest venues by turnover tend to be BCS dark pools with SuperX regularly featuring among the top three since September 2011.

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Benefits of dark pool trading

There are several aspects of trading in dark pools that can be useful to various trading approaches that buy-side participants would employ.

Non-displayed orders:

Since dark pools have non-displayed limit order books, it is possible to place large orders without advertising the intent (side and size) or price to the market, thus reducing impact. While this feature is a prerequisite for trading large blocks, the benefits transfer to smaller scales and allow execution algorithms to post relatively large child orders.

Counterparty selection:

To further avoid signalling to the market, many buy-side participants prefer not to interact anonymously with arbitrary counterparties on the lit markets, or in RM and MTF dark pools, and instead elect to trade in BCS dark pools, where they can limit their interaction to what they consider to be suitable counterparties. The unique ability of BCS dark pools to exercise discretion and thereby facilitate targeted interaction of participant groups with matching trading styles and objectives is very important to many institutional investors.

Additional liquidity:

An unintended but perhaps inevitable consequence of market

fragmentation is that dark pools are increasingly being regarded simply as additional sources of liquidity, and are now accessed by a broader range of market participants who are much less concerned with signalling risk than a buy-side trader seeking to trade blocks.

Price improvement:

Dark pools also afford an opportunity for price improvement on executions of aggressive orders, when a decision to cross the spread on the lit markets had already been made. There are two aspects to this. First, by opportunistically posting to a mid-point dark pool before taking liquidity on the lit markets at the far-touch price, it is possible to gain half a spread price improvement for some if not all of the order quantity. Second, any quantity absorbed in dark pools reduces the amount of liquidity that has to be removed from the lit order book, and hence the chance of moving the price and causing market impact. This impact reduction argument also applies to executions at the far-touch in a dark pool (usually a BCS venue).

Dark pool trading algorithms

Agency execution algorithms and smart order routers that access non-displayed liquidity can be broadly categorised into ‘pure dark’ strategies operating exclusively in

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dark pools, and ‘hybrid’ strategies which simultaneously source liquidity from dark pools as well as lit trading venues.

Pure dark strategies include traditional dark pool aggregators and dark order routing algorithms, which are usually designed to execute larger sized orders. Deutsche Bank’s SuperX Plus strategy is one example of a pure dark algorithm.

Hybrid strategies, which simultaneously trade on both lit and dark venues, comprise execution algorithms ranging from ‘conventional’ strategies, e.g., TWAP, VWAP, Percent Volume (Inline), IS and market-on-close, whose participation rate in the market is essentially benchmark-, schedule- or volume-driven, to the more innovative ‘opportunistic’ liquidity-seeking strategies like Deutsche Bank’s Stealth algorithm.

By virtue of their design constraints, conventional hybrid strategies would tend to send similarly sized child orders to both dark pools and lit venues, as it is the participation rate based behaviour of these algorithms that essentially governs the timing and sizing of orders.

Conversely, opportunistic liquidity-seeking strategies like Stealth are designed around adaptive logic which dynamically adjusts to prevailing market

conditions. As a consequence, such algorithms tend to exhibit far less predictable trading behaviour, and exercise more flexibility and discretion in timing and sizing both lit and dark orders to actively maximise fill rates and minimise market impact.

Dark pool order parameters, such as limit prices and minimum acceptable quantity (MAQ) or minimum execution size (MES) criteria, afford additional control over the type of liquidity that is extracted from a pool, and moreover provide an implicit, indirect and approximate means of counterparty selection.

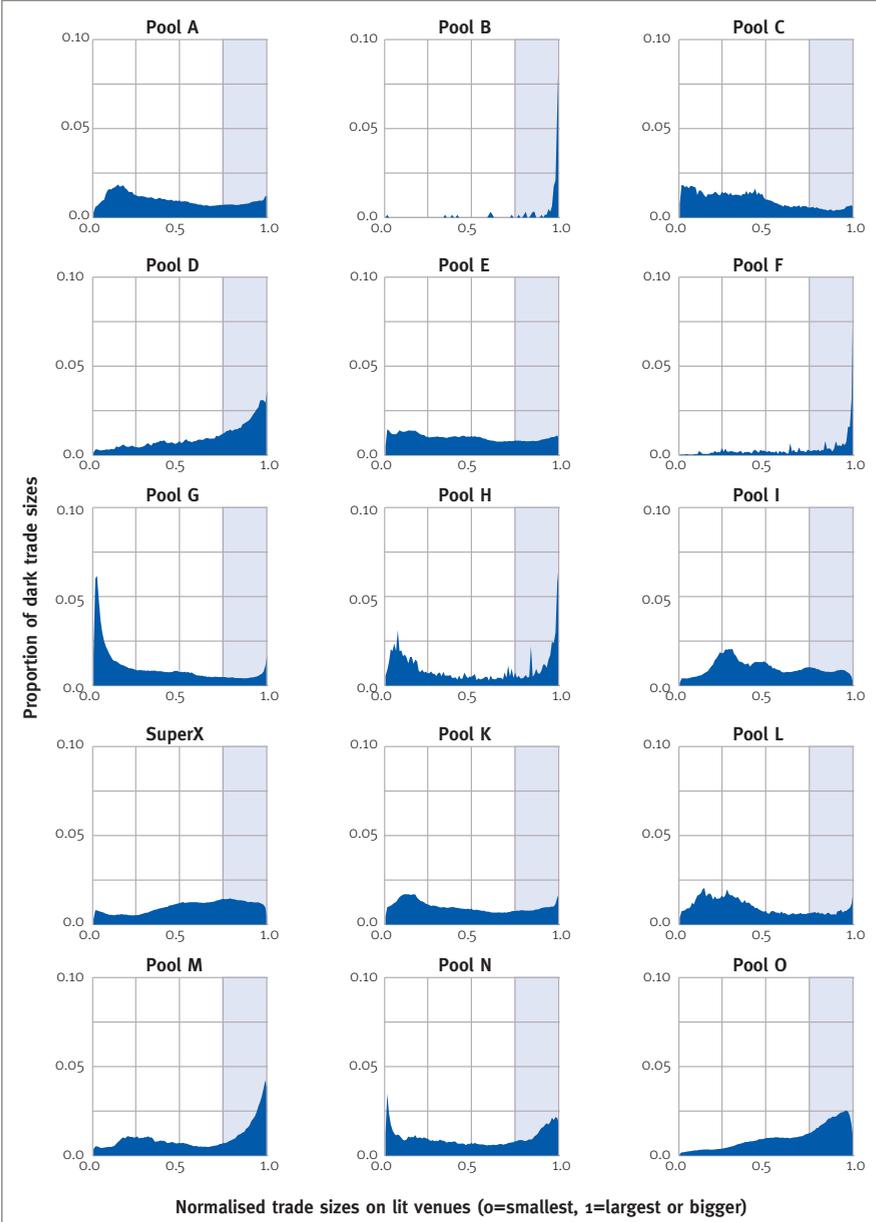
At Deutsche Bank, we have found that while institutional investor clients continue to trade orders using the full range of pure dark and hybrid execution strategies available via the Autobahn Equity platform, in Europe the Stealth algorithm, which accesses dark pools through the SuperX Plus strategy, has become the most popular execution tool.

Diversity of dark pool liquidity

It is clear that different market participants seeking to capitalise on the various benefits of dark pool trading through a variety of dark liquidity seeking algorithms can have conflicting expectations and constraints regarding the amount of liquidity to be extracted from a

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FIGURE 1: DISTRIBUTION OF DARK TRADE SIZES RELATIVE TO LIT TRADE SIZES OF EUROPEAN STOCKS IN 2012 H1 FOR RM & MTF DARK POOLS AND SUPERX



Source: Reuters, Deutsche Bank AG London

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dark pool in a single transaction, and the rate at which dark liquidity should be sourced.

While the overall decline in average trade sizes seen in European dark pools over the past few years may reflect increasing market fragmentation and use of algorithmic trading strategies in general, it is interesting and important to observe that different dark trading venues nevertheless exhibit a broad range of different trade size profiles.

Using the stock-specific normalisation method previously applied in [1], we express dark pool trade sizes in terms of lit market trade sizes. The normalised dark trade size histograms shown in Figure 1, where 0.5 on the x-axis reflects the median lit trade size, illustrate that individual RM/MTF dark pools support various combinations of trading styles and hence offer different blends of dark liquidity.

This kind of information can help dark liquidity seeking algorithms to select the most appropriate subset of venues, given the liquidity requirements of a particular client order, e.g., to trade a block.

Finding a balance in the dark

Participants trading in dark pools fundamentally face the two-fold problem of discovering and capturing non-displayed liquidity, while remaining undiscovered and hiding their intent from the market.

Thus, sourcing dark liquidity is essentially about balancing liquidity risk and signalling risk.

Liquidity Risk:

The flip side of the anonymity conferred by non-displayed orders is that potential counterparties seeking to interact in dark pools remain unaware of any available liquidity until after their orders have been matched and executed. Finding the desired dark liquidity, particularly in a fragmented dark trading environment, is a challenge, and there is always a risk of going unfilled.

Particularly when the expectation is to execute a block or trade in larger sizes, the use of restrictive limit price and execution size constraints (MAQ/MES) can exacerbate the liquidity risk for an order, even if there is liquidity on the opposite side. The risk can be mitigated by selectively accessing the dark pools that are most likely to provide dark fills meeting the client's size and price constraints.

Signalling Risk:

Dark pool executions transfer information between interacting counterparties: the participant whose order was fully filled might reasonably expect more liquidity to be resting on the other side. This informational advantage could in principle be sought actively using small 'fishing' orders, and exploited by subsequent attempts to

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manipulate the reference mid-price leading to a less favourable execution price, i.e., adverse selection, for the partially filled order.

In practice, the use of sensible MAQ/MES settings and anti-gaming logic based on fair-price models are quite effective in reducing this kind of signalling risk. Moreover, this concern does not apply to partially filled ‘aggressive’ orders where the strategy then proceeds to source the residual liquidity from the far-touch on lit venues. Therefore, if participants use available execution tools to trade in the dark on their terms, then signalling risk need not be too serious a concern.

Conclusion

The European market for non-displayed liquidity will continue to

develop and change as the details of pending regulatory changes being considered under the MiFID review are finalised and eventually come into effect. It seems likely that BCS dark pools will need to be reclassified and the ability to use discretion when managing flow interactions will become more limited. Invariably, the liquidity landscape and trading styles will change, and dark liquidity seeking algorithms must continue to adapt in order to extract non-displayed liquidity that is desirable to market participants.

As a broker and the operator of one of the largest European dark pools, Deutsche Bank is well placed to respond to regulatory change, and continues to invest in the development of smarter execution tools that serve the need of its buy-side clients. ■

References

[1] Hesse, C., “To trade dark is to trade big(ger)”, *The Trade*, Issue 31, Jan-Mar 2012, pp. 32-33.

[2] <http://rbt.com/lettherebelight.aspx>

