Navigating the dark pool landscape

Interacting selectively with hidden liquidity on the 'efficient frontier' of dark pool trading

*Alex Paley**

The dark pool landscape has changed dramatically over the last few years. The proliferation of dark pools began in the US where there are currently over 40 pools in existence, which constitute 9% to 20% of overall US market volumes. This phenomenon has quickly swept over Europe, where there are currently nearly 20 active dark venues. It is no secret that this is a growing trend, as we continue to see new pools launch and new regulations come into play in an attempt to standardise requirements. Trading in this new landscape promotes a challenge for many buy-side traders looking to source liquidity in what can be called an overly fragmented market. Also, due to a lack of globally consistent reporting requirements, many buy-side traders remain in the dark on what is actually being executed at each venue. This not only causes transparency issues, but also limits access to the data required to analyse where to best execute orders. The need for dark aggregation algorithms has become a necessity for de-fragmenting the market.

Is fragmentation a necessary evil?

There continues to be a negative school of thought that market fragmentation increases the difficulty of uncovering available liquidity. In an increasingly fragmented market, traders have to expand their focus to ensure they are getting access to the desired liquidity in the most efficient, and quick way possible. Technology has become more important than ever before. Even with access to all the relevant venues, traders lacking technology to get there as quickly as their peers are put at a distinct disadvantage. Even though this might be the case, fragmentation can actually be a good thing for the 'smart' trader. There are varying types of dark pools; there are those which focus primarily on

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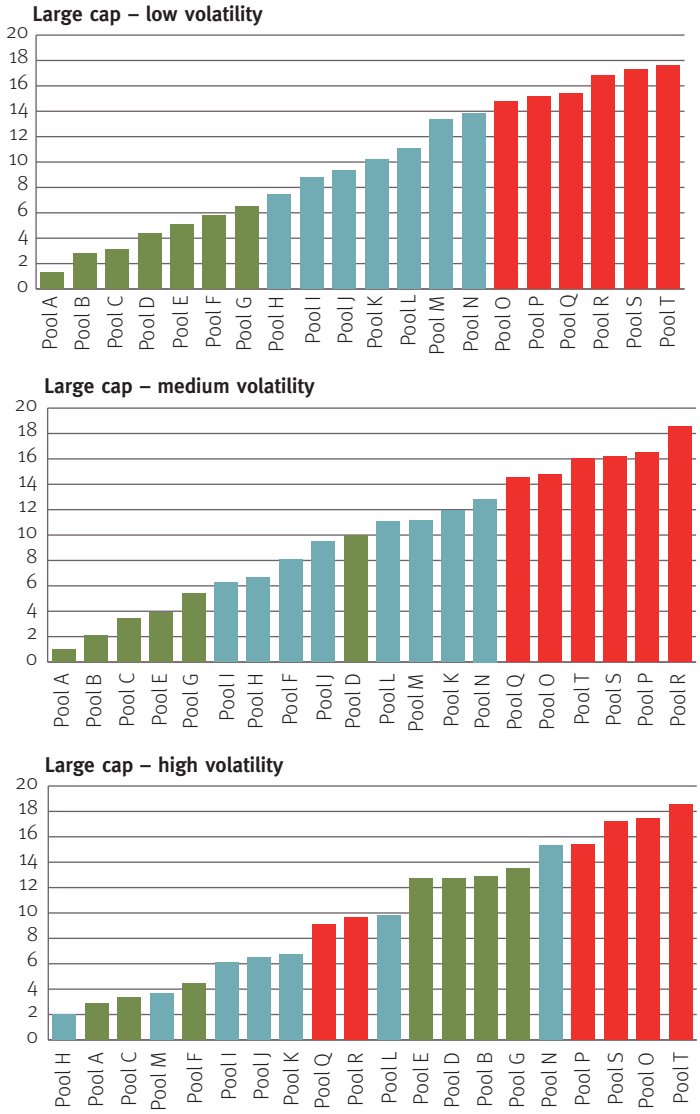
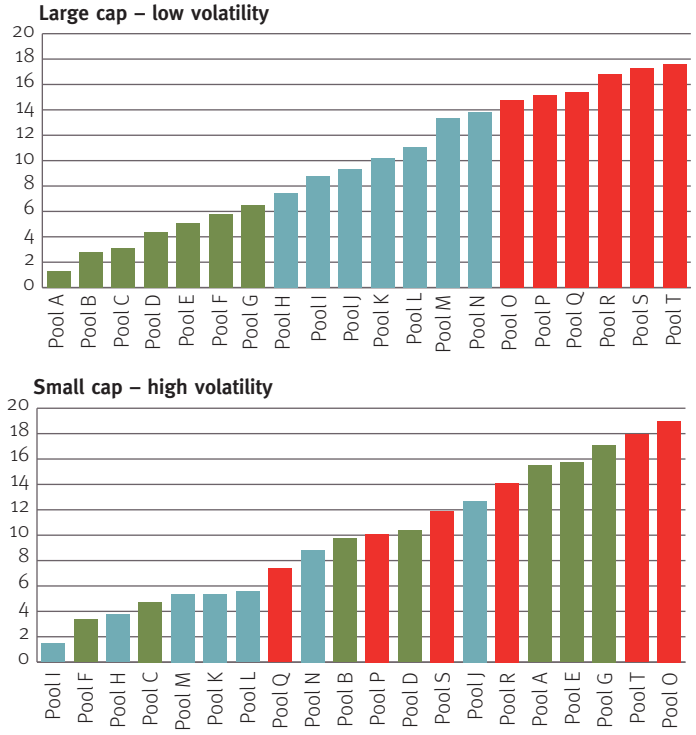
FIGURE 1:



Note: 1 is the highest ranking and 20 is the lowest ranking dark pool aggregated by capitalisation and volatility. The labels for Dark Pools, A through T, are preserved across graphs. Green represents the best performing pools, blue medium, and red the worst for the large-cap low-volatility category, colouring remains constant in all of the charts to highlight the major shifts in rank for the subsequent volatility levels.

Source: Deutsche Bank

FIGURE 2:



The rankings and labels for Dark Pools are the same as in Figure 1.
Source: Deutsche Bank

block trading, those that focus on internalising broker flow, there are agency run dark pools, and MTFs. As we have come to recognise, not all dark pools are created equal, not only are they not created equal, but through our research we have learned that you cannot simply label some pools 'good' and some 'bad'. Performance across pools varies drastically dependant on order characteristics (market cap, volatility etc.) and current market conditions.

For example, Figure 1 depicts dark pool rankings across a range of volatility levels for large-cap stocks in US dark pools. Performance is based on arrival price slippage, adjusted for the pre-trade cost estimate of the original order. What is interesting is how significantly the rank changes when the volatility changes.

The change in performance based rank is even more drastic when you select extreme market capitalisation and volatility levels (see Figure 2).

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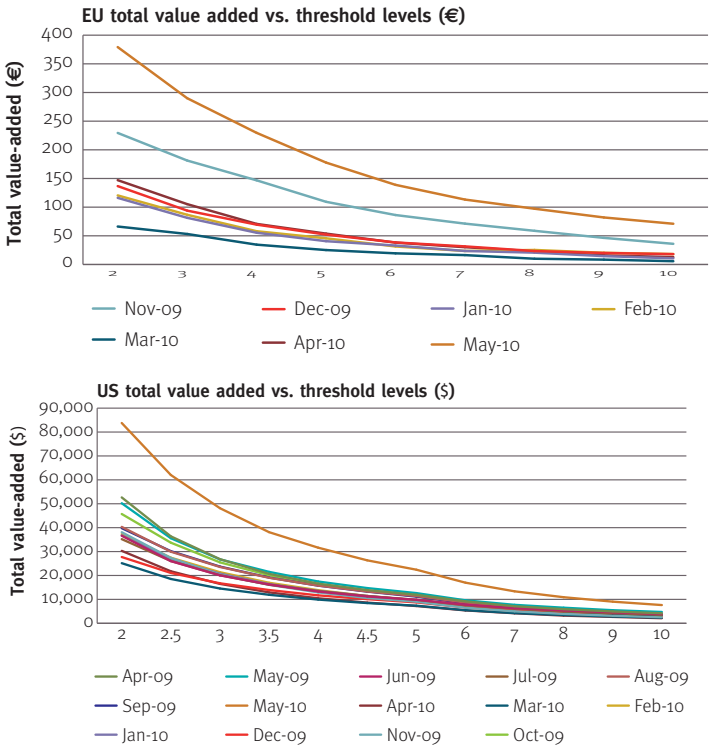
However, all this diversity creates an opportunity for performance improvement once the effort is made to learn where and when to trade, and how best to get there. In the past, there was only one exchange available as the sole source of liquidity, and therefore constituted the sole option. This limited your ability to tailor your execution in any way. In the new trading landscape, filled with multiple venues of differing quality liquidity, you now have the ability to customise your trading experience based on your urgency by balancing fill quality versus quantity with a higher level of precision than was available prior to fragmentation.

Is crossing at mid-point free?

The idea of saving half the spread when executing a trade sounds very appealing, but is crossing at mid-point as cost effective as it seems at first glance? To answer this question we really need to break down the market participants that could potentially be involved in these transactions. If both participants are using a long-term alpha model (weeks, months) and are looking to buy or sell positions based on long-term goals then these could be great trades. But, if one of the participants is an active or high-frequency trader (HFT) the outcome can be startlingly different. Active traders make decisions by selectively picking their spots, and HFT traders generally employ very short-term alpha models. This can cause a situation where you might receive a mid-point fill, but too often find the price moving against you shortly thereafter. HFT trading adds significant liquidity to the market by using these sophisticated techniques very effectively, and more and more desks employ active trading techniques coupled with specialised execution tactics to gain a performance edge. 'Next generation' algorithms should be built with this theme in mind. In the past, agency algorithms had been built to 'trade like a trader would,' this was very logical when algorithms would typically be interacting with a human trader. In today's new liquidity landscape it makes sense to incorporate HFT and active trading techniques to best source this new kind of liquidity without creating any conflict with the main objectives of the algorithm. Moreover, algorithms built with HFT models inside are best equipped to provide protection against gaming. A large portion of gaming-like behaviour is not actual manipulation, but rather an accumulation of the execution efficiency of next generation liquidity providers.

The charts in Figure 3 illustrate

FIGURE 3:



Note: US value add is expressed in dollars per 100 shares, per month; EU value add is expressed in euros per share, per month. The event threshold is normalised across stocks and is expressed in multiples of standard deviations of beta-adjusted price excursions.
Source: Deutsche Bank

the value added results of incorporating HFT reversion strategies into agency algorithms in Europe and the US. Due to signals from the model, trading was halted during inopportune times and then resumed when prices were favourable; the result of all of these very numerous but very short trading suspensions was a significant money saving.

The value add of incorporating these strategies into agency algorithms can be very large, and they work especially well during the most turbulent market conditions. HFT signals are generally based on a very short

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time horizon so they can be utilised to improve performance with regards to order placement without deviating from an algo schedule or objective, while providing efficiency in sourcing liquidity and protecting orders.

So are dark mid-point fills good? The short answer is sometimes yes, and sometimes no – it all depends on the ability of the algorithm to find them at attractive price levels, not just at attractive placement within the spread.

Will minimum size solve all my problems?

Placing minimum shares on an order removes the likelihood of being 'pinged' for information. Potential discovery of large orders resting in a dark pool by 'pinging' it with small orders is a big worry for many traders. Once this information is received it may be used against the trader by executing a large order in the pool on the other side when prices are advantageous. Minimum sizes may protect orders from this type of practice; however, there is a flip side to this. By placing a minimum quantity you are stopping yourself from interacting with a large amount of clean liquidity such as retail flow and benign algorithms such as small slices of a VWAP order. Those counterparts provide some of the least toxic, best liquidity to hit up against. The truth of the matter is that trade sizes have been shrinking by the year, and just because a trade is small doesn't make it bad. Gaming in dark pools is not the only concern, adverse selection is a major concern as well and this issue cannot be solved with the usage of minimum quantities. The active trader is intimately involved with the markets, sectors and names that he trades. He scans the market looking for the most opportune conditions in which to trade. Being outmaneuvered by the active trader isn't gaming, but the results can be the same, or worse. What is needed is the intelligence built into an algorithm that is able to selectively execute with venues to source the desired liquidity based on the urgency discretion of the trader. Simply cutting out all smaller size executions can be detrimental to performance; more precision is necessary to achieve an optimal quality versus quantity trade-off.

We have barely even begun to scratch the surface on the very complex, and continuously evolving dark pool landscape, but we hope that we have been able to touch upon some of the most important issues affecting buy-side traders today. When you really break it down you begin to see the opportunity that has arisen

out of the complexity of the 'dark environment', the opportunity to strike the perfect balance between quantity and quality. We like to call this the 'efficient frontier' of dark pool trading. When sourcing liquidity, you can use the idea of the efficient frontier to trade selectively in only a few venues of utmost quality and stay very hidden, or sacrifice some of this anonymity for a higher fill rate. The key to this flexibility is to have an electronic offering with the intelligence built-in to help you navigate this new landscape. The old school algorithms that were built to trade like a trader are no longer as effective when sourcing liquidity from HFT and active trading liquidity providers. New age algorithms need to adapt and incorporate HFT trading techniques and models which are capable of sourcing liquidity selectively based on this new landscape or you run the risk of being caught behind the times.