



How Has Turquoise's Order Flow Changed post MIT?

Background

In early October 2010, Turquoise switched to using the new 'MIT' matching engine. This is technologically the same platform that the LSE will move its main markets to early next year. One of the immediate effects of the upgrade saw Turquoise go from having one of the slower MTF matching engines to, according to Turquoise, having the fastest with reported sub 150 microseconds processing speeds.

So what impact might this speed increase have had on the type of order flow that Turquoise receives and its market share in different types of stock?

Of course, it's hard to answer this question precisely as in reality the speed / architecture changes coincided with other changes in the market, some of which may cancel each other out. However, we have noticed one technical change in relative market shares for certain types of stock that appears to coincide, quite abruptly and clearly, with the Turquoise MIT switch.

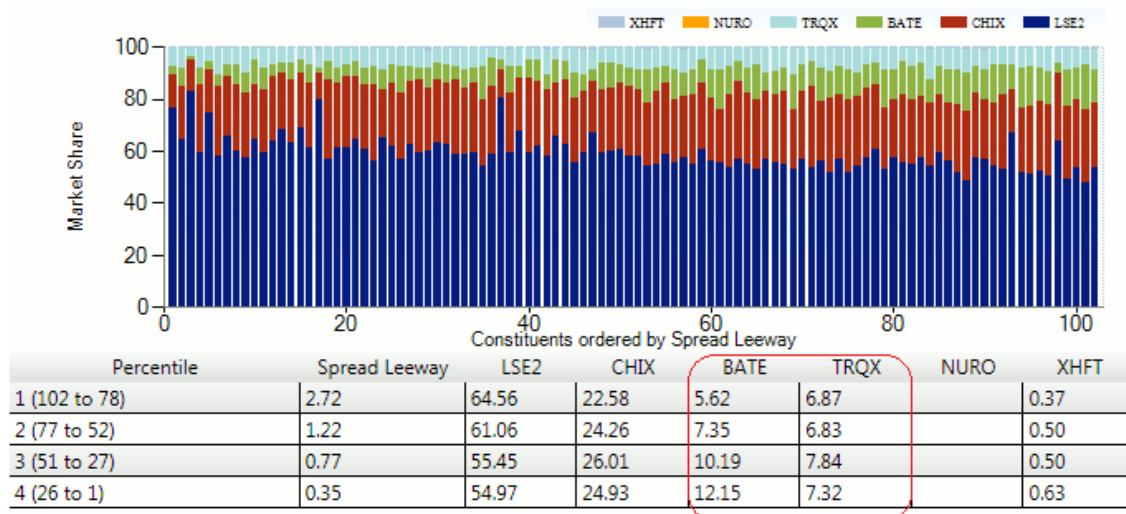
In short, Turquoise appears to have become more like BATS.



Market Share and Spread Leeway

About a year ago, we published a short note (LiquidMetrix article LM003) that examined what ‘type’ of stock fragmented the most. One of the findings was that stocks with a **low spread leeway** tend to **fragment more** than stocks with a high spread leeway. As a reminder, the spread leeway is a measure of how many price ticks (on average) there are between the best bid and the best offer based on either a single venue or in terms of an EBBO, a spread leeway of 1 means that on average there is 1 unused price tick between the best bid and offer.

In the previous article we found that one venue in particular, **BATS**, did especially well relative to other exchanges for stocks with a **low spread leeway**. This aspect of BATS’ relative market share has continued throughout 2010. The graphic for FTSE 100 stocks in September 2010 below shows the market share for each constituent of the FTSE 100 index ordered by spread leeway (high to low spread leeway). For instance, in September 2010 **BATS’ market share** in the 25 stocks with the highest spread leeway was **5.62%**, while its share in the 25 stocks with the lowest spread leeway was more than double this at **12.15%**. TRQX, on the other hand, had a fairly flat market share across stocks with different spread leeways. CHIX was also flat and LSE the relative loser.



Market share versus spread leeway in September 2010 (PRE Turquoise MIT)

Screenshot from LiquidMetrix WorkStation



Why might this be? The key feature of stocks with a low spread leeway is that, because the bid and offer are often only one or two 'ticks' apart, there is a tendency for two or more venues to have visible liquidity **at the same 'best' EBBO prices**. In other words, if you are routing an aggressive order to market in a low spread leeway stock you will often have multiple venues you could send the order to and get the same price. So which venue might you choose?

Factors that might influence your decision are cost (exchange/clearing fees), certainty of execution and, related to this, how much time it will take to send an IOC order to an exchange in order to hit the visible liquidity on that venue. This last factor, round trip IOC execution speed, is important as the *opportunity cost* of sending an IOC to a fast venue is significantly lower than the cost of sending it to a slow one. It certainly would make sense, all things being equal, to send the IOC to the fastest venue first.

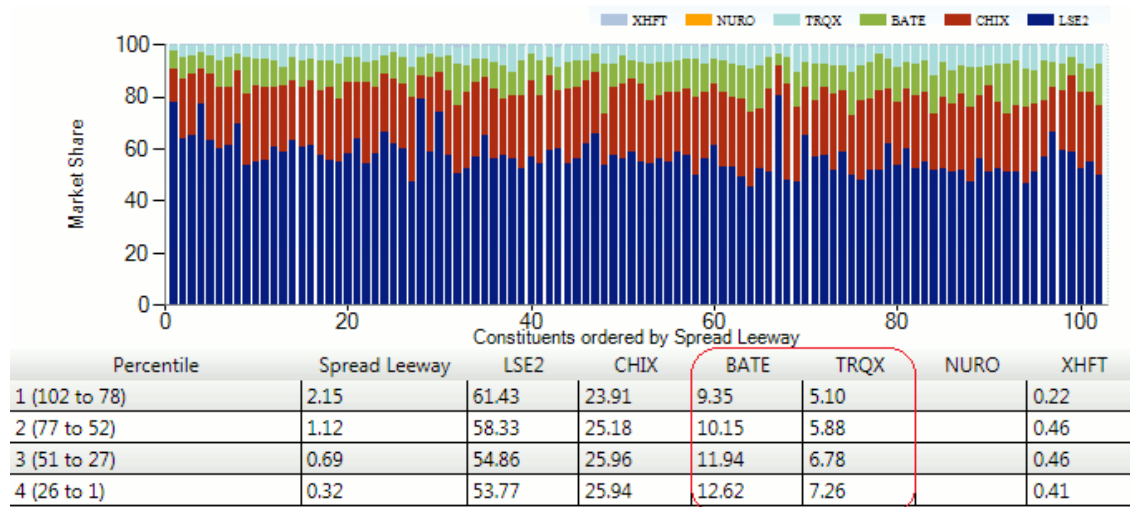
BATS has low exchange fees and, until recently, the fastest matching engine. These factors may partially explain why it seems to do so well in stocks that often show multiple-venue price ties at EBBO

So what has happened to market share versus spread leeway since Turquoise took over the mantle of having the fastest matching engine?



The 'New' Turquoise Post MIT Trading System Upgrade

The graphic below shows spread leeways for the second week in November 2010.



Market share versus spread leeway in November 2010 (POST Turquoise MIT)

Screenshot from LiquidMetrix WorkStation

The profile for LSE and CHIX is relatively unchanged from the rest of 2010. BATS has lost some of its 'slope'. BATS's market share now rises relatively by around 50% from the highest to lowest spread leeway stocks. **Turquoise now has a similar slope** with a 50% rise in market share from highest leeway to lowest leeway. A remarkable property of these spread leeway shapes is their stability over time.

The sudden change in the characteristics for Turquoise pre and post MIT is significant. Turquoise appears to have similar 'advantages' to BATS for stocks where there are frequent price ties at EBBO.



Summary

By looking at the market share of low spread leeway stocks and comparing them to market shares in high leeway stocks, we get an indication of how participants route their orders in cases of price ties at EBBO. Until October 2010, BATS seemed to be the main beneficiary of market share in stocks that had frequent price ties at EBBO. Other MTF's were largely flat and LSE clearly lost market share, presumably to BATS.

Post MIT, **Turquoise seems to have become like BATS** and BATS' advantage seems to be 'shared' with TRQX. CHIX is still largely flat and LSE continues to be the relative loser in low spread leeway stocks.

It will be interesting to see the same statistics following the LSE MIT launch in 2011 when the LSE will go from being the slowest of the current major UK trading venues to being equal fastest.

Caveats

As always there are quite a few caveats to the analysis:

- The change in relative market share performance may coincide with other changes in the number and type of participants sending flow to Turquoise post MIT go-live. Differing trading objectives or styles of new or leaving participants could just as easily explain the changes.
- Turquoise's overall market share is down a couple of percentage points post MIT and BATS is up by a similar amount. These 'absolute changes' may be as relevant as the change to the relative market shares in different types of stocks.

Spread leeways currently correlate quite closely with stock by stock Market Volumes. So, a similar pattern is seen simply by ordering market shares by value traded in each stock rather than by spread leeway. However, as we pointed out in the previous article (LiquidMetrix LM003), where we looked at a number of different potential factors that might affect fragmentation, the trends in relative market share are not as strong versus Market Volumes as they are versus Spread Leeways. However either (or both or neither!) might be causal - we have just looked at correlation.