

Equity Research & Strategy

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Humpty Dumpty Fell off a Wall

European Equity Liquidity Fragmentation from the Trader's Point of View

Since the implementation of MiFID, market participants have predicted the "inevitability" of liquidity fragmentation in European securities. Our research suggests that the long anticipated fragmentation arising from the competition of new alternative trading venues versus the incumbent primary exchanges has finally reached significant levels. As a result, liquidity aggregating algorithms are needed to unite a fragmented market. The age of the European order router has dawned.

Best Execution and Order Routing

There is a growing sense of urgency among buy side European stock traders to better understand the micro market's structure and the impact of recent structural changes on the trading process. The urgency is being fueled by MiFID, the Markets in Financial Instruments Directive, which creates a mutual (buy side and sell side) best execution responsibility. MiFID is a results-oriented principles based regulation. We believe MiFID is clear that the buy side cannot abrogate their responsibility for best execution when they send an order to a sell side trader. The buy side trader is accountable to his/her shareholders for the executions that they receive.

MiFID does not define best execution but lays out principles behind best execution - leaving the actual definition of best execution to each market participant. Under Article 21, traders have to take all reasonable steps to obtain the best possible execution result for their client's orders - taking into account price, costs, speed, likelihood of execution and settlement, size, etc. Many traders and their institutions appear to have adopted a principles based approach to best execution - defining it as a "process of seeking the best implementation result on an investment decision considering the price, liquidity, market conditions, settlement costs, etc and the goals of the fund." Thus, best execution can vary from order to order, depending on the

ultimate goals of the execution.

Many Large Cap European Stocks are Experiencing Significant Fragmentation Now

The top most active European stocks now have liquidity spread across several venues - exchanges and alternative trading systems. Most studies on fragmentation have focused on the aggregate market share of each venue. These studies seek to answer questions such as "for stocks listed in London what's the market share on the London Stock Exchange (LSE), Chi-X, Turquoise, etc?"

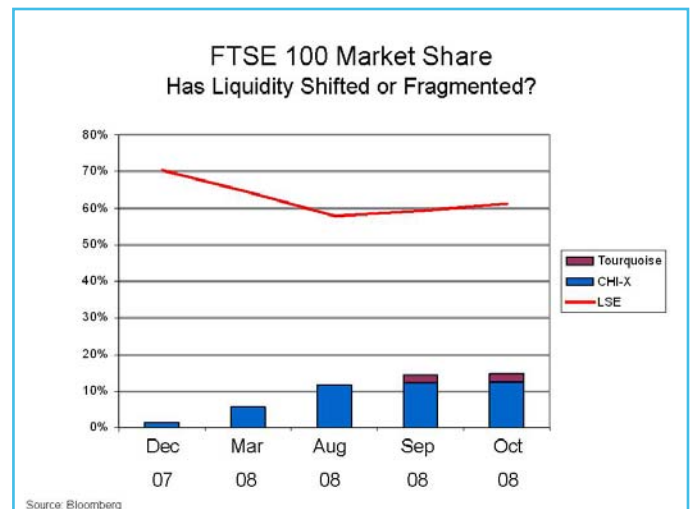


Figure 1

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In the FTSE 100 stocks, Figure 1 illustrates that significant liquidity is migrating to Chi-X and Turquoise and away from the primary London Stock Exchange to warrant trader's attention. This methodology assumes that when a market venue reaches a certain defined market share, then it should be considered a significant venue. Looking at fragmentation this way – in the aggregate - does not tell the whole story.

Distribution tells a more accurate story

From the trader's perspective, a straight market share methodology – as displayed in Figure 1 - is misleading. What the trader cares about is fragmentation - i.e. "Does the stock I am trading have significant liquidity spread across two or more venues?" For example, if a venue attains a 10% overall market share because one or two stocks start to trade almost exclusively on the new venue, then liquidity hasn't fragmented – it has just shifted. For the trader, the implication is that for best execution, there is no need for a new liquidity aggregating algorithm or a change in trader behavior because orders can still be executed using the same simple single exchange order routing platform that they are currently using. Overall market share isn't the salient point – it's the number of stocks where significant liquidity trades on more than one market venue.

To discover if liquidity aggregating algorithms are needed, the analysis needs to go one level deeper. Again, rather than looking at market share in the aggregate, the more important questions to ask are: (1) Is a significant amount of stock trading across two or more venues? (2) Is fragmentation a problem in one, some, or all the stocks that I trade? To answer these questions, an alternative methodology of looking at the distribution of fragmentation is needed - in other words focus on the actual number of stocks where liquidity is traded on more than one venue.

The first question we had to answer is what defines a "significant" amount of liquidity. We looked at the stocks in the FTSE 100, FTSE Eurotop 100 (Eurotop 100), and the MSCI Pan-Euro indexes. We chose 1%, 5% and 10% as market shares as benchmarks to define "significant" market share. For example, let's

assume that a stock has a market share of 7.6% in venue 1 and 92.4% in venue 2. Using a benchmark of 10% we would note that the stock has significant liquidity in only one venue. Using a benchmark of 5%, then the stock would have significant liquidity in 2 venues. What's the right benchmark to define "significance?" That would need to be decided by the firm's own internal policies, but we believe that to mathematically materially affect the weighted average price of an execution, the answer is probably 10%. We looked at the 1% and 5% market share benchmarks from an academic standpoint so we could see the how the markets micro-structure changes evolved. The analysis was done from December 2007 to December 2008. The dates shown on each of the graphs below are dates where we saw significant changes in the distribution occurred.

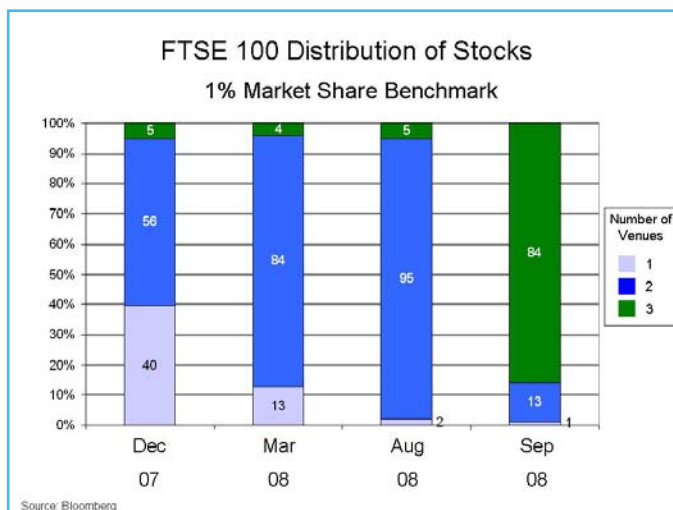


Figure 2

Figure 2 illustrates the growing distribution of liquidity fragmentation in the FTSE 100 stocks since December 2007 (note: There are 102 stocks in the FTSE 100 because Royal Dutch Shell PLC has A and B shares in the index and Schroders PLC has voting and non-voting classes included in the index). The chart shows the number of stocks that have at least 1% of their trading volume executed on a certain number of venues. What is interesting with the 1% benchmark is that in March '08, although Chi-X had only a 5.7% market share (Figure 1), 84% of the FTSE 100 stocks traded at least 1% in two venues. Additionally, as of September

2008, the vast majority of the FTSE 100 stocks are trading in 3 venues.

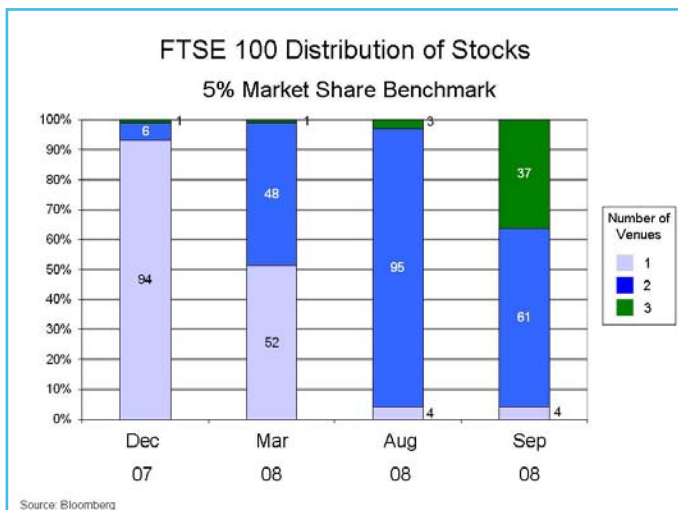


Figure 3

Figure 3 shows the number of stocks that have at least 5% of their trading volume executed on a certain number of venues. What is interesting here is that in March '08, although Chi-X had only a 5.7% market share, 53% of the FTSE 100 stocks traded at least 5% in two venues. We are also seeing a migration to where at least 5% of a stock's liquidity is trading in at least 3 venues.

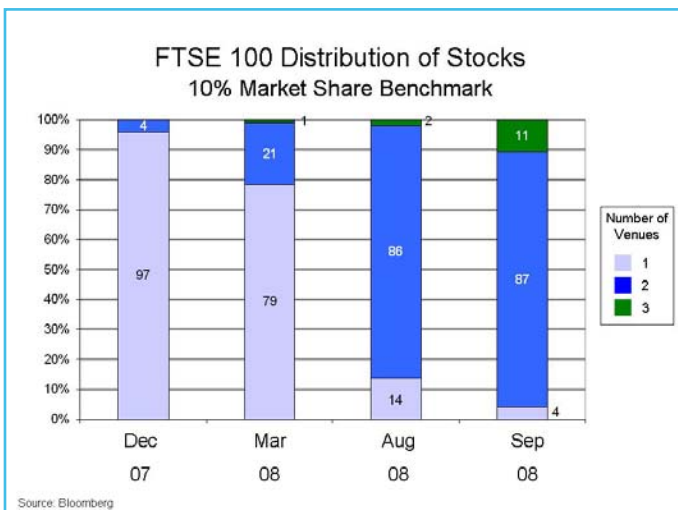


Figure 4

Figure 4 shows the number of stocks that have at least 10% of their trading volume executed on a certain number of venues. As we discussed, we believe that 10% is probably the appropriate benchmark for where there is an opportunity cost to missing (not aggregating) liquidity. For

example, in December 2007, only 4 of the members of the FTSE 100 stocks had 10% of their volumes trading on two venues. In August 2008, a powerful shift occurred and a majority of stocks had at least two venues where 10% or more of their total volume traded.

In November 2008, Chi-X's market share was about 12.6%. Turquoise was about 2.3%. It appears that we are in the throes of yet another major liquidity shift where 11 of the members of the FTSE 100 index now have at least 10% of their volume trading on 3 venues (Figure 4). If we lower the benchmark to 5% of the total volume, 37 of the FTSE 100 members now have at least 5% of their volume trading on 3 or more venues (Figure 5).

The fragmentation phenomenon isn't restricted to just London Stock Exchange (LSE) listed stocks. Our study of the Eurotop 100 and the MSCI Pan-Euro indexes indicate similar shifts are occurring in the active large cap stocks across the continent.

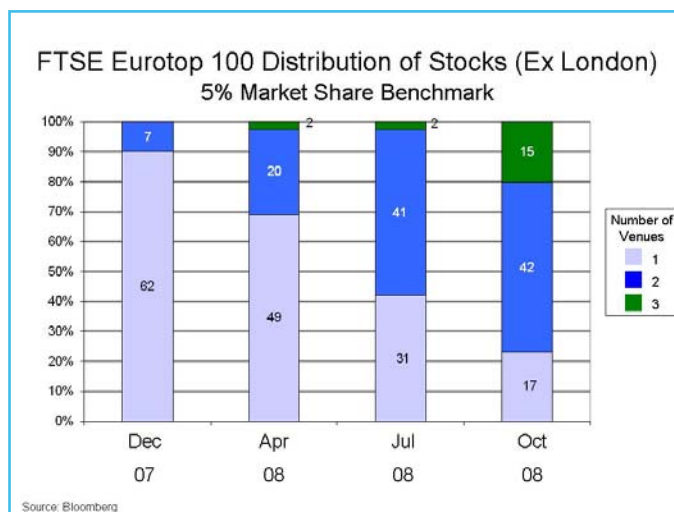


Figure 5

Figure 5 illustrates the number of stocks that have at least 5% of their trading volume executed across different venues. To illustrate the Pan European fragmentation, we removed 26 the LSE-listed names in the Eurotop 100 Index. Our study of the remaining index members indicates similar migrations are occurring in active large cap stocks across the European continent. For example in December 2007 62 members had 5% of their market share

in 1 venue.¹ In July 2008 the market shares shifted dramatically, 41 names had 5% market share in 2 venues. Furthermore, in October of 2008 a majority of names were in 2 venues and nearly a quarter of stocks were transitioning into at least 3 venues. The striking fragmentation goes one step further in supporting our thesis; it is imperative to have a liquidity aggregator to minimize opportunity cost.

Figure 6 exhibits the Eurotop 100 excluding LSE listed stocks, where 10% of the total daily volume trades across different venues. If you look at the drastic change of market share distribution over the course of April through October 2008, there is a clear pattern. In April, only 12 stocks had a 10% market share in 2 venues, while in October there is an overwhelming 40 stocks on 2 venues. We expect this trend to continue. It is clear that fragmentation is a Pan-European issue rather than just the stocks where the primary exchange is the LSE.

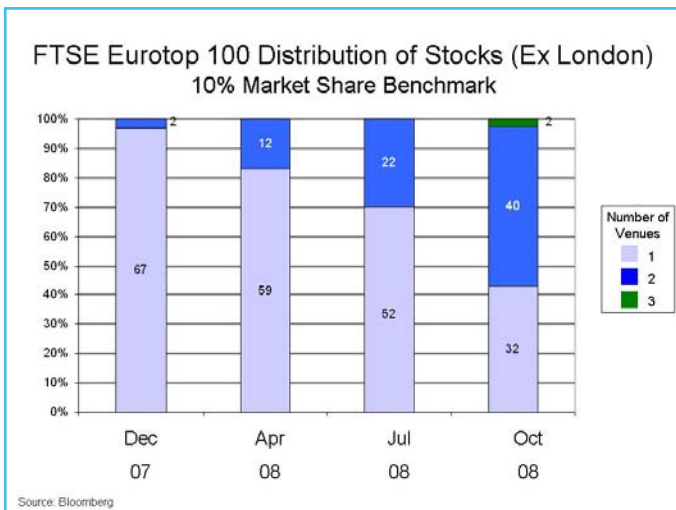


Figure 6

Traders can use the Bloomberg Professional[®] service analytic **MDM<Go>** to monitor the fragmentation in any stock that they may be trading (Figure 7).



Figure 7

Each Market has its Own Anomalies

Adding to the complexity of fragmentation is that each market venue has its own distinct characteristics. Average trade differs among the venues. Using the Bloomberg Professional[®] service analytic **VWAP<Go>** (Figure 8), we determined that the average trade size of the FTSE 100 stocks traded on the LSE is about 2.5 to 3 times larger than Chi-X and Turquoise.

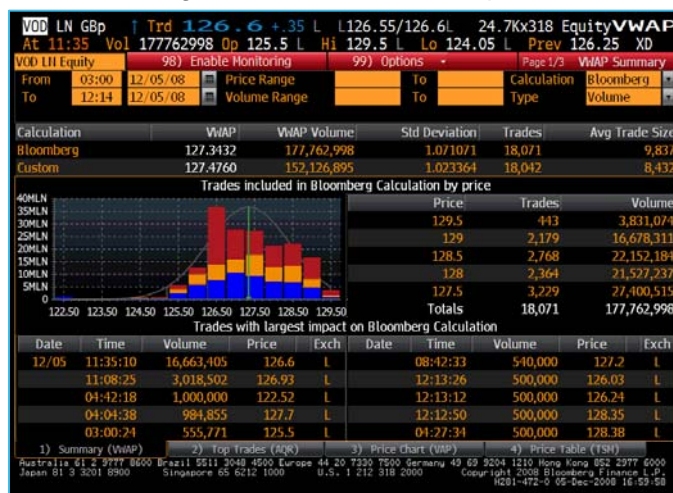


Figure 8

Additionally, each venue has different points in time when it is most active. Using Bloomberg Tradebook AlphaPro's algorithmic trading analytics **BVA<Go>**, we looked at the 50-day average volume pattern of the same stock trading on the LSE, Chi-X and Turquoise. The volume patterns were revealed that each market

is slightly different. Below are the trading activity/volume patterns of HSBC in the 3 market venues. These volume patterns are typical of what we saw of the FTSE 100 stocks.

The LSE resembles a typical volume pattern where the day starts off active with the opening auction, volume declines until mid-afternoon and volume gains to the peak in the closing auction (Figure 9).

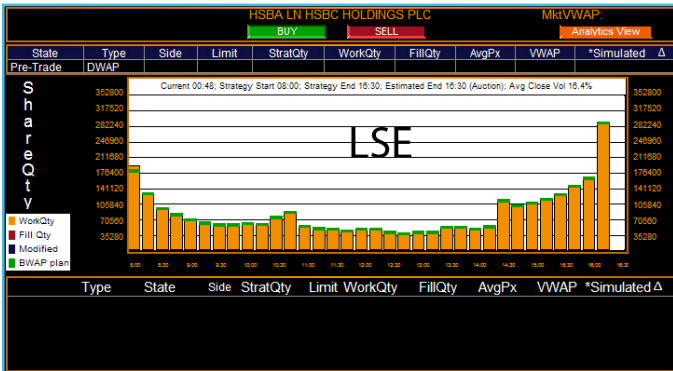


Figure 9

Whereas London's volume grows into the closing auction, Chi-X's volume remains somewhat steady from mid-afternoon to the close (Figure 10).

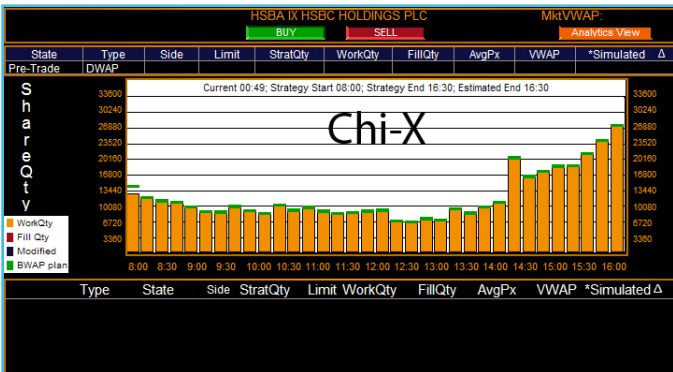


Figure 10

Turquoise's volume, though, is very different. Turquoise's volume patterns become active around 9:00am potentially after the market has discovered price. Volume peaks then and then trades off into the close (Figure 11).

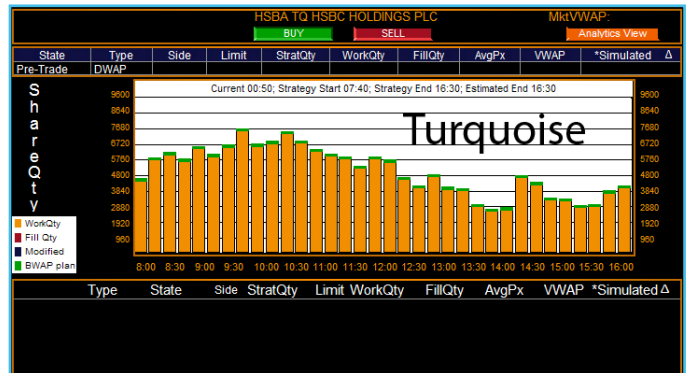


Figure 11

We are not sure what to make of the differences in the volume patterns. A possible explanation is that different constituencies that have gravitated to the different market venues. The increase in volume at Chi-X at 2:30pm (9:30am in the EST) may be due to heavy U.S.-based automated market maker activity. Perhaps the spike in activity from 9:00 to 9:30am in Turquoise is an indication of more institutional volume entering the market as institutional portfolio managers sometimes wait until price is discovered before they place their orders. We can't be sure of the composition of the participation supporting the different market venues, but for liquidity aggregating algorithms, it illustrates that each market venue has its own anomalies and challenges that must be considered in seeking best execution.

The accelerating liquidity fragmentation has consequences under MiFID. We have clearly entered the age of the European order router. In our next Equity Research and Strategy, we will look at "Order Routing" vs. "Smart Order Routing." There are many technological challenges to overcome. As a result, European orders routers will have vastly different varying degrees of sophistication – some will be smart, most, however, will be simple.

Footnotes:

1. This study looked at market share on the most active exchanges across Europe. We excluded the stocks that have LSE as their primary exchange. Some names on E100 did not have volume on the below exchanges during the months of review; Chi-x, Turquoise, London, SWX Europe Lt, Germany, Netherlands, Switzerland, Italy, Finland, France, Portugal, Xetra, U.K. ISEAQ, Spain



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