

# Liquidity fragmentation and quality of execution

This issue we are presenting an in-depth analysis of fragmentation focused on 5 main indices plus Turquoise, Chi-X, BATS and NASDAQ OMX Europe as alternative venues. We have added the average print size in Euros to the four current benchmarks: *Evolution of market share, Average print size (shares), % Time at EBBO and % Time at EBBO with greatest market size.*

## Primary market share – 74 %

On average, 74% is the current market share retained by primary markets on the main indexes that TAG covers in its analysis. We think that many Smart Order Routers (SOR) are now in place, not just among the bulge bracket, allowing mid-range brokers participation in the fragmentation. In March, Turquoise's liquidity agreements ended and as a consequence their total share immediately after March 15, dropped by more than half but they have since started to gain rapidly. On the other hand, Chi-X has done consistently well.

The major change from the last edition is that the proverbial "pie" will now be divided into five parts: Primary market, Chi-X, Turquoise, BATS and NASDAQ OMX Europe. The main points to highlight for the last three months are:

- Turquoise's mid-March dropped volume was routed mainly back to the main exchange until the end of March, and then Chi-X and BATS started to grab market share.
- By the end of May, Turquoise has staged a progressive fight back, and if their numbers on the coverage benchmark (distribution of their share among a big number of index components) continues to improve, we will be able to confirm that their recovery is permanent.

- BATS has unequivocally done well, attaining 3.5% of global market share.
- Less volatility in the market has helped new alternative venues to capture market share.
- Part of the liquidity gained by MTFs is 'new liquidity', gained from new market models, new technical possibilities (quoting/ executing in microseconds), or arbitrage between all venues.

## Dark Volume and Regulation

TAG is currently doing an in-depth analysis of OTC volumes. We have noticed a significant increase in this type of trading, and with new venues arriving using dark pools, or current lit or hybrid market models, we can predict that dark will grow more than lit. By comparison, in the US the dark volume is close to 15%, and is growing continuously.

## New market models

NASDAQ OMX Europe started offering to route on behalf of their participants, the remaining liquidity to the primary market. This is a very common service offered by all market centres in the US, performed for regulatory purposes among other reasons. For their members, Turquoise will offer a similar service so that non-displayed liquidity will be linked to different dark pools. In the future, this could lead to disintermediation and be seen as a threat by other brokers.

## Transaction Cost Analysis (TCA)

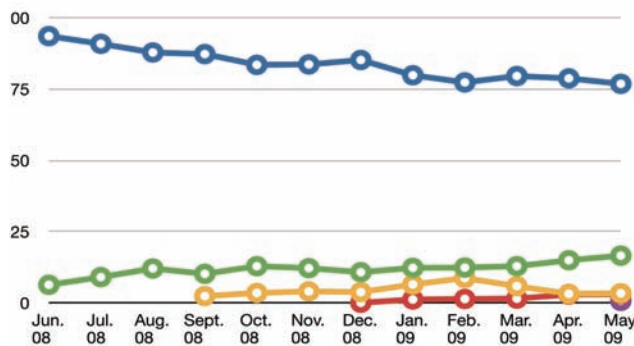
TAG has noticed that several buy-side firms have decided to rethink their TCA, especially their quality of execution.



TAG, as an independent best execution measurement specialist, has met almost all participants: regulated markets, new MTFs, brokers, buy-sides, and data feed providers and regulators, and welcomes the opportunity to bring its vision of this newly fragmented landscape.

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## French stocks – CAC 40

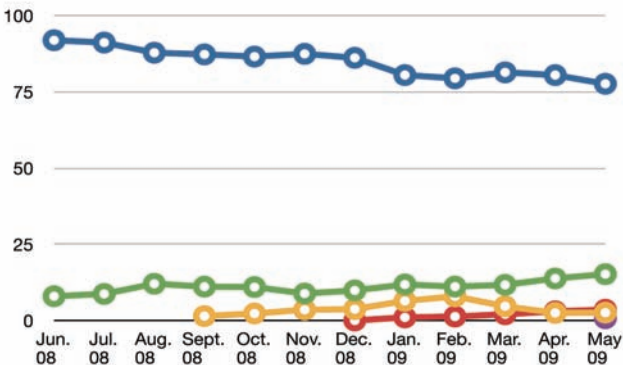


STOCK: (%)	Jun. 08	Jul. 08	Aug. 08	Sept. 08	Oct. 08	Nov. 08	Dec. 08	Jan. 09	Feb. 09	Mar. 09	Apr. 09	May 09
Euronxt	93.62	90.92	87.88	87.32	83.54	83.69	85.25	79.90	77.39	79.62	78.8	76.89
Chi-X	6.38	9.08	12.12	10.24	12.92	12.24	10.81	12.34	12.44	12.92	15	16.62
Turquoise				2.44	3.54	4.07	3.84	6.52	8.74	5.93	3.24	3.42
BATS							0.09	1.24	1.42	1.54	2.97	3.07
Nasdaq OMX euro												0.77

Legend: Euronxt (blue circle), Chi-X (green circle), Turquoise (orange circle), BATS (red circle), NasdaqOMX euro (purple circle)

**French stocks – CAC 40** – From the beginning of the year, total volume has been dropping, but Chi-X's market share is increasing. Turquoise and BATS continue to grab market share. NASDAQ OMX is achieving a significant share of the pie, due to their new aggressive pricing on Euronext routing.

## German stocks – DAX 30

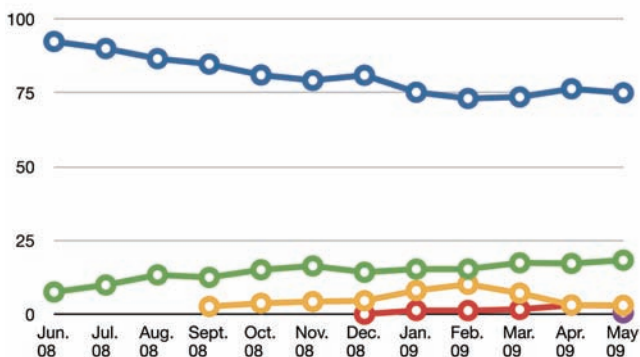


STOCK: (%)	Jun. 08	Jul. 08	Aug. 08	Sept. 08	Oct. 08	Nov. 08	Dec. 08	Jan. 09	Feb. 09	Mar. 09	Apr. 09	May 09
Xetra	91.98	91.22	87.89	87.34	86.62	87.51	86.22	80.56	79.49	81.44	80.55	77.69
Chi-X	8.02	8.78	12.11	11.16	11.02	8.91	9.92	11.87	11.18	11.74	13.85	15.26
Turquoise				1.50	2.36	3.58	3.79	6.49	7.98	4.72	2.55	2.64
BATS							0.07	1.08	1.34	2.1	3.06	3.59
Nasdaq OMX												0.82

Legend: Xetra (blue circle), Chi-X (green circle), Turquoise (orange circle), BATS (red circle), NasdaqOMX (purple circle)

**German stocks – DAX 30** – Chi-X and BATS are increasing share over the last quarter.

## Dutch stocks – AEX 25

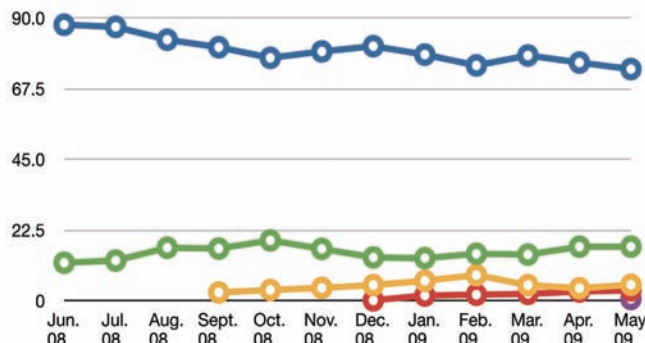


STOCK: (%)	Jun. 08	Jul. 08	Aug. 08	Sept. 08	Oct. 08	Nov. 08	Dec. 08	Jan. 09	Feb. 09	Mar. 09	Apr. 09	May 09
Euronext	92.42	90.04	86.61	84.77	81.08	79.25	81	75.23	73.13	73.61	76.41	75.02
Chi-X	7.58	9.96	13.39	12.54	15.13	16.41	14.29	15.35	15.36	17.48	17.26	18.36
Turquoise				2.68	3.79	4.34	4.62	8.08	10.20	7.22	3.19	3.07
BATS							0.09	1.34	1.30	1.70	3.14	2.99
Nasdaq OMX												0.56

Legend: Euronext (blue circle), Chi-X (green circle), Turquoise (orange circle), BATS (red circle), Nasdaq OMX (purple circle)

**Dutch stocks – AEX 25** – Dutch stocks are probably the most fragmented. Chi-X continues gaining market share, and BATS achieves its largest share in the Dutch market. The global pie volume is stable, with all MTFs' shares up except Turquoise.

UK stocks – FTSE 100



STOCK: (%)	Jun. 08	Jul. 08	Aug. 08	Sept. 08	Oct. 08	Nov. 08	Dec. 08	Jan. 09	Feb. 09	Mar. 09	Apr. 09	May 09
LSE	87.88	87.2	83.1	80.71	77.34	79.37	81.05	78.37	74.92	78.09	75.83	73.76
Chi-X	12.12	12.8	16.9	16.63	19.23	16.53	13.81	13.58	14.96	14.72	17.21	17.22
Turquoise				2.66	3.43	4.11	5	6.37	8.19	4.98	4.01	5.1
BATS							0.15	1.68	1.93	2.21	2.95	3.32
Nasdaq OMX												0.60

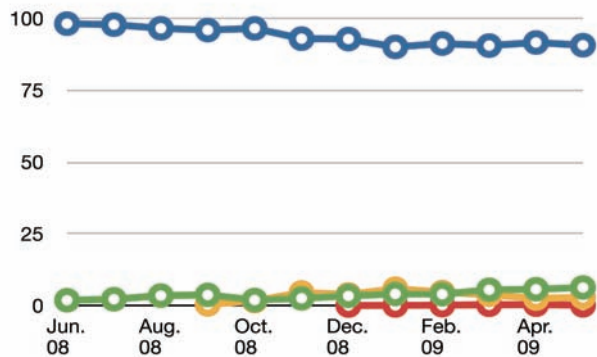
**UK stocks** – The size of the pie routed away from LSE is larger than 26%. This is due to two main factors:

- Since December, LSE has been relatively stable, with only a small decrease in share.
- Over the same period, Chi-X, Turquoise and BATS’ volumes have continued to grow, apart from Turquoise’s fall as mentioned above.

At the end of 2008, Turquoise had achieved 10% share in several stocks. The trend is towards two types of fragmentation. One type is a continuous erosion of shares from the LSE to other venues – by the end of February, the LSE market share was under 74%. The other fragmentation trend occurring is the rebalancing between Chi-X, Turquoise and BATS. In recent days Bats has claimed 5% of share.

These patterns were predicted last year in our first analysis of fragmentation. Namely, first between the main markets and the newcomers, followed by a competitive struggle between the newcomers as they try to establish their positions.

Swiss stocks – SLI



STOCK: (%)	Jun. 08	Jul. 08	Aug. 08	Sept. 08	Oct. 08	Nov. 08	Dec. 08	Jan. 09	Feb. 09	Mar. 09	Apr. 09	May 09
Swx	98.16	97.81	96.54	95.93	96.52	92.94	92.81	90.05	91.23	90.52	91.60	90.65
Chi-X	1.84	2.19	3.46	3.68	1.92	2.52	3.35	4.05	3.96	5.48	5.67	6.27
Turquoise				0.39	1.56	4.55	3.84	5.86	4.68	3.73	2.43	2.86
BATS							0.00	0.04	0.13	0.26	0.30	0.16
Nasdaq OMX												0.06

**Swiss Stocks – SLI (Swiss Leader Index)** – SWX is the market, looking at total volumes, whose market share trend is most stable. Due to this stability the main reason there is any fragmentation is due to a drop in Turquoise’s volume. Again, the SWX continues to achieve the highest market share of all five market segments analyzed.

	CAC 40					DAX 30					AEX 25			
	May 09					May 09					May 09			
	Chi-X	Turquoise	BATS	Nasdaq OMX	Euronxt	Chi-X	Turquoise	BATS	Nasdaq OMX	Xetra	Chi-X	Turquoise	BATS	Nasdaq OMX
Average Print Size	237	231	240	180	472	270	266	294	195	800	462	466	422	283
Average print (€)	6005	62338	5954	4816	10389	7014	7901	7479	5835	20991	6599	6925	5798	5097
% Time Best Bid & Offer	34.24	5.15	6.79	3.06	34.87	41.05	3.85	1.33	2.7	25.5	37.28	5.1	9.29	1.4
% Time EBBO with Greatest Size	13.63	1.6	1.05	1.38	22.47	22.47	7.11	6.12	0.65	21.1	13.93	0.26	1.21	0.88

## Other Benchmarks

Chi-X is closest to the main market on several benchmarks, and even better in some such as “% time at EBBO”. This benchmark, together with the average spread is a clear indicator of market share acquisition. Almost all venues have improved compared with the last issue’s analysis, but “% Time EBBO with greatest size” appears to be more resistant to these improvements. In conclusion, from analysis of our benchmarks, fragmentation is increasing with some MTFs continuing to grab greater market share.

## EXECUTION VENUES – CURRENT AND POTENTIAL

Key: **Bold** – US only (no EU equities). **Red** – announced, but not yet live.

Main Market/ Promoter	Displayed	Dark Pool	Comment
LSE	NYSE Arca Europe	Smartpool, <b>Matchpoint (US)</b>	Routing Facilities for other main venues TQ Channel: same as above for Dark orders
NASDAQ OMX	NASDAQ OMX Europe	<b>Baikal</b> NEURO Dark	
Investors Consortium	Turquoise	Turquoise	
BATS	Bats Europe	Some dark volume also	
Investors North Europe	Burgundy	Chi Delta Euromillennium <b>Liquidnet, H2O</b> Posit Match, Posit Now, Block Alert <b>Pipeline</b> BIDS ATS Axe/Blink (Cheuvreux), Instinet CBX, <b>Vortex (BNY)</b> BIX, AES CrossFinder, Citimatch, <b>CrossStream (Fidelity)</b> , SIGMAx (GS), BlockMatch, Instinet CBX, Lighthouse-X, KnightLink, MLXN, MSPool/Trajectory Crossing, PIN (UBS), Liquifi (Citi), LX (Barclays), <b>Level, Getco, Blockcross (Pulse), Midpointmatch (ISE), RiverCross</b>	
West UE investors	<b>Quote MTF</b>		
Nomura	Chi-X		
Nyfix			
Liquidnet			
ITG			
Pipeline			European Equities: 11
BIDS – Consortium			
Agency Brokers DP			
Full Service Brokers DP			
Börse Berlin	Equiduct		Regulated Market
Consortia (Portugal)	PEX		
SWX		SWX Swiss Block	Mid point Cross (with Nyfix)
Deutsche Börse	1.Crossing Function LOB <b>2.Trading European Equities</b>		Xetra Mid point Live soon