

European equity trades execution

Cost of opportunity analysis

Methodology

- The following statistics are based on full depth order book data prices across 7⁽¹⁾ European venues: *Xetra, Euronext, Chi-X, Turquoise, BATS, Borsa Italiana and Equiduct HybridBook*.
- Only order books trades from continuous trading phases on one specific day: **Thursday January 13th 2011** are considered in the analysis.
- The analysis does not include a UK stock as the UK retail market is different from continental Europe. It is based on the Retail Service Provider (RSP) model: it is a quote driven share dealing: the retail investors will send to the Retail Service Providers a request for quote. The RSPs will provide a quote for the deal. The UK retail investors have no access to the LSE order book.
- Our algorithm compares the real traded price of all trades with the prices available on each of the different venues at the precise point in time for each trade of the day.
- A trade is considered to have missed a better price if:
 - In the case of a buy order, the VWAP⁽²⁾ available on the consolidated market is strictly lower than the real traded price,
 - In the case of a sell order, the VWAP available on the consolidated market is strictly higher than the real traded price.
- For all trades missing the best price, we calculate the optimal split of the traded volume across the relevant venues, prioritising venues accordingly to prices and volume.
- The price improvement is calculated as the difference between the real traded price and the VWAP of the consolidated book i.e. the best available price across all different venues.

- ⁽¹⁾ : *In the fragmentation and Best Execution analytics provided regularly by Equiduct, the venue Tradegate is not part of the reference markets selected by Equiduct. The reasons are linked to the market model and the access to this liquidity as well as a market share below 0.5% on the main European indices which does not qualify it to be in the Equiduct's European consolidated book. European Systematic Internalisers are also not in this panel of reference markets for the same reasons.*
- ⁽²⁾ *Volume-Weighted Average Price - represents the total value of shares traded in a particular stock, divided by the total volume of shares traded in that stock.*

AGEAS

- Number of venues where the stock is tradable during continuous : 5
- Executed value: 32,143,828 €
- # trades: 7,123
- Executed value missing the best price on another venue: 2,853,521 € - **8.9%**
- # trades missing the best price on another venue: 612 – **8.6%**
- # trades executed on the home market missing the best price on another venue: **9.2%**
- Total Value Improvement for January 13th : 1,788 €
- Average Price Improvement for trades missing the best price: **2.9 € - 7.5 Bps per trade**
- Average Price Improvement for trades executed on the HM missing the best price: **3.2 € - 7.6 Bps**
- If we extrapolate for a whole year (~250 days of trading), then the Total Value Improvement for a year would be: **447,000 €**
- Total Value Improvement for a year for trades executed on the Home Market missing the best price: **392,000 €**

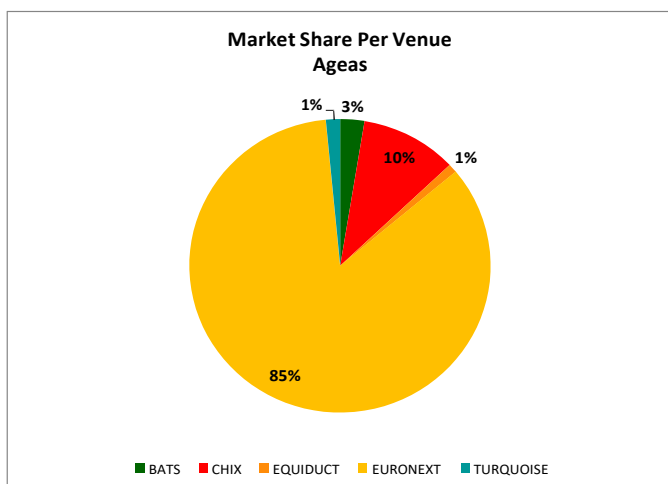


Chart 1: Market Share per venue

It is based on trades occurred during continuous trading only.

It shows that for Ageas, the Home Market only has 85% market share. So when a retail broker sends his clients' orders on the Home Market only, it misses the prices available on the other venues which represent all together 15% of the market for Ageas.

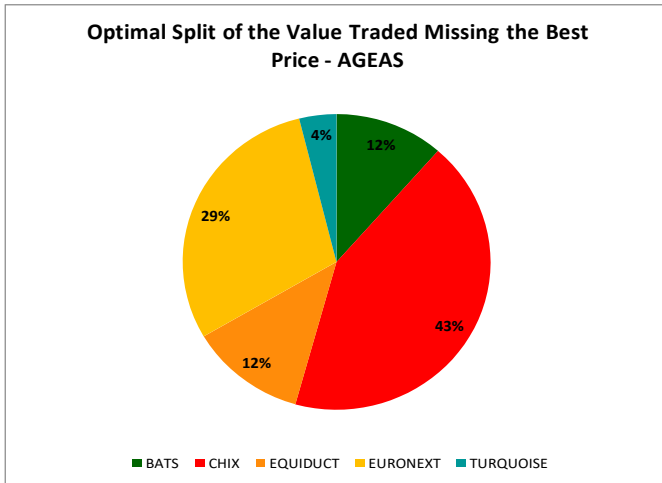


Chart 2: Simulated optimal Split

8.9% of the value traded on all the venues missed the best price available on another venue.

The chart 2 shows how it should have been split to achieve the best price.

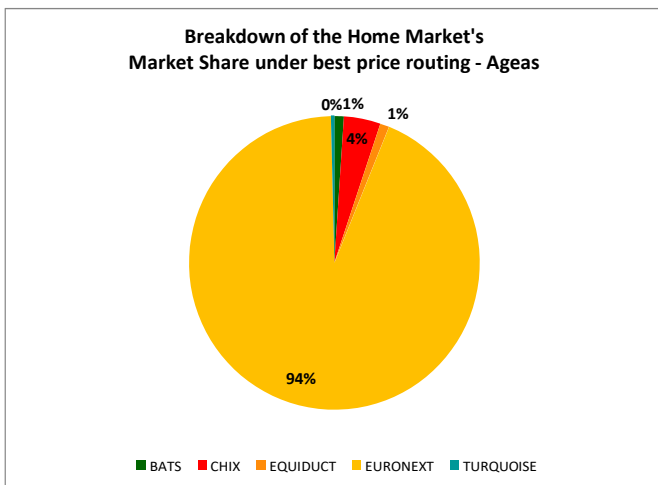


Chart 3: Breakdown of the Home Market market share

It shows that only 94% of the trades occurred on Euronext should have been done there, 6% should have been executed on another venue.

ENI

- Number of venues where the stock is tradable: 6
- Executed value: 417,418,135 €
- # trades: 28,769
- Executed value missing the best price on another venue: 41,900,083 € - **10.04%**
- # trades missing the best price on another venue: 2,930 – **10.2%**
- # trades executed on the home market missing the best price on another venue: **16.3%**
- Total Value Improvement for January 13th : 12,895 €
- Average Price Improvement for trades missing the best price: **4.4 € - 3.5 Bps**

January 2011

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Sources: Equiduct LFA

- Average Price Improvement for trades executed on the HM missing the best price: **4.3 € - 3.2 Bps per trade**
- If we extrapolate for a whole year (~250 days of trading), then the Total Value Improvement for a year would be: **3,223,750 €**
- Total Value Improvement for a year for trades executed on the Home Market missing the best price: **2,455,500 €**

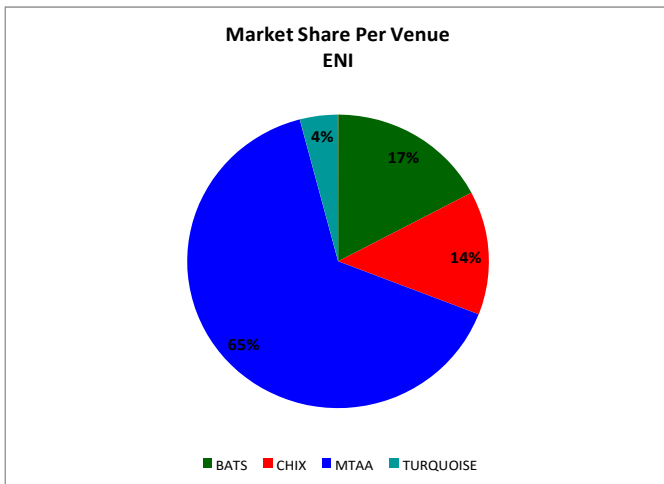


Chart 1: Market Share per venue

It is based on trades occurred during continuous trading only.

It shows that for ENI, the Home Market only has 65% market share. So when a retail broker sends his clients' orders on the Home Market only, it misses the prices available on the other venues which represent all together 35% of the market for ENI.

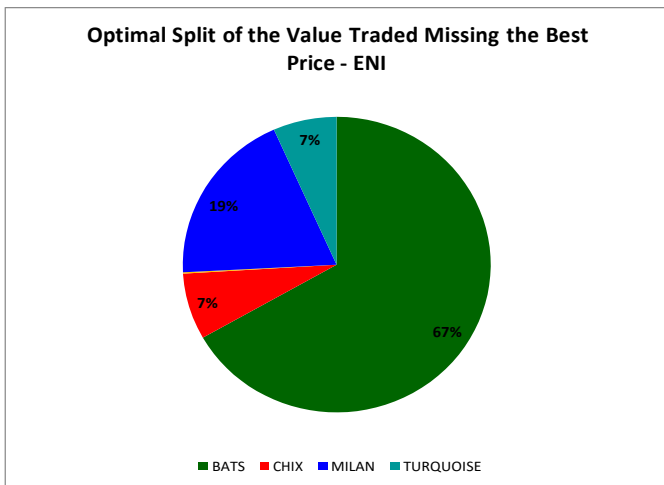


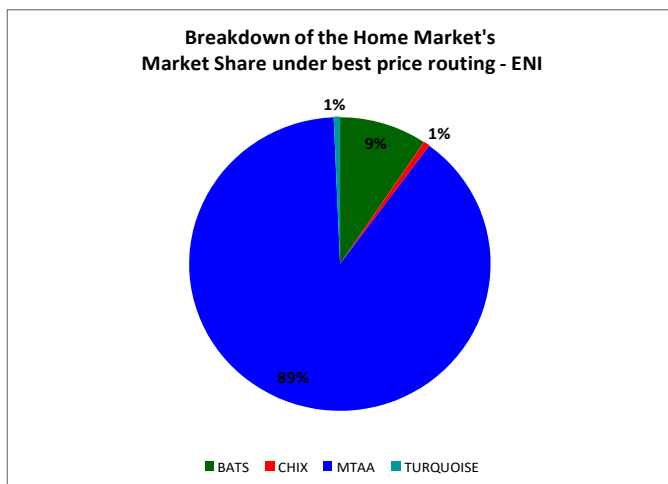
Chart 2: Simulated optimal Split

10.2% of the value traded on all the venues missed the best price available on another venue.

The chart 2 shows how it should have been split to achieve the best price.

Chart 3: Breakdown of the Home Market market share

It shows that only 89% of the trades occurred on MTAA should have been done there, 11% should have been executed on another venue.



SIEMENS

- Number of venues where the stock is tradable: 6
- Executed value: 300,797,019 €
- # trades: 24,966
- Executed value missing the best price on another venue: 48,364,237 € - **16.1%**
- # trades missing the best price on another venue: 3,976 – **15.9%**
- # trades executed on the home market missing the best price on another venue: **14.1%**
- Total Value Improvement for January 13th : 7,329 €
- Average Price Improvement for trades missing the best price: **1.8 € - 2 Bps**
- Average Price Improvement for trades executed on the HM missing the best price: **1.9 € - 1.1 Bps per trade**
- If we extrapolate for a whole year (~250 days of trading), then the Total Value Improvement for a year would be: **1,832,250 €**
- Total Value Improvement for a year for trades executed on the Home Market missing the best price: **504,250 €**

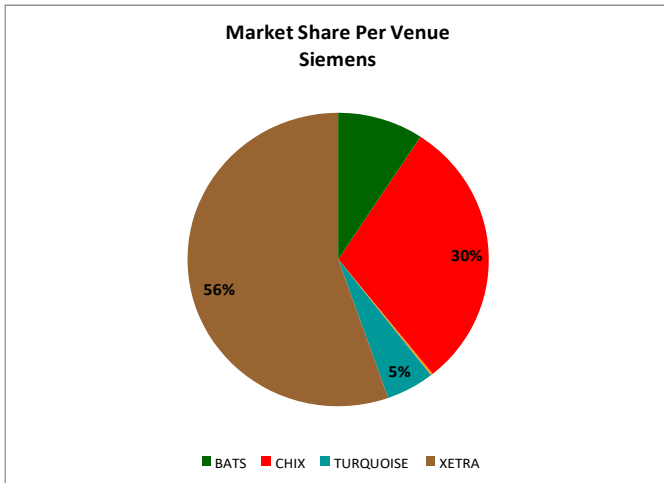


Chart 1: Market Share per venue

It is based on trades occurred during continuous trading only.

It shows that for Siemens, the Home Market only has 56% market share. So when a retail broker sends his clients' orders on the Home Market only, it misses the prices available on the other venues which represent all together 44% of the market for ENI.

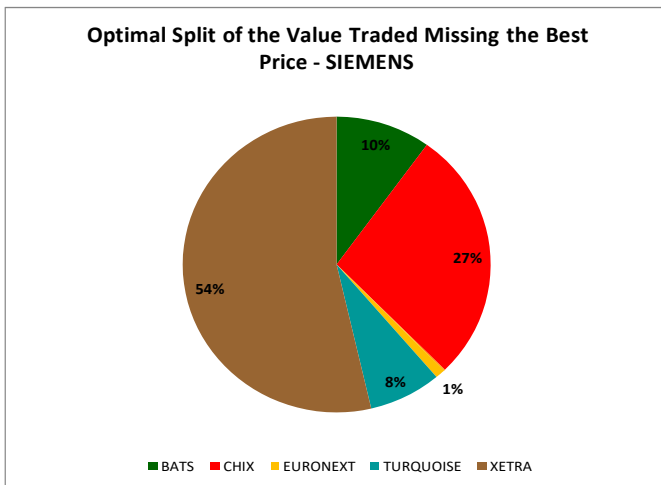


Chart 2: Simulated optimal Split

15.9% of the value traded on all the venues missed the best price available on another venue.

The chart 2 shows how it should have been split to achieve the best price.

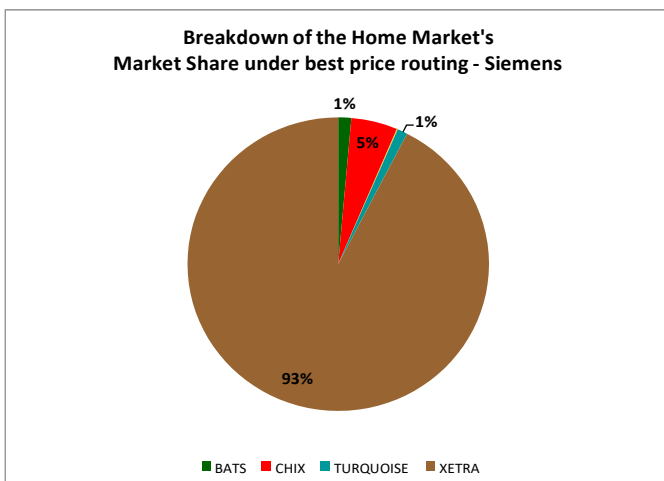


Chart 3: Breakdown of the Home Market market share

It shows that only 93% of the trades occurred on Xetra should have been done there, 7% should have been executed on another venue.

SOCIETE GENERALE

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Sources: Equiduct LFA

- Number of venues where the stock is tradable: 5
- Executed value: 468,723,530 €
- # trades: 57,025
- Executed value missing the best price on another venue: 73,864,485 € - **15.8%**
- # trades missing the best price on another venue: 9,418 – **16.5%**
- # trades executed on the home market missing the best price on another venue: **19.3%**
- Total Value Improvement for January 13th : 16,770 €
- Average Price Improvement for trades missing the best price: **1.8 € - 2.5 Bps per trade**
- Average Price Improvement for trades executed on the HM missing the best price: **1.9 € - 2.7 Bps**
- If we extrapolate for a whole year (~250 days of trading), then the Total Value Improvement for a year would be: **4,192,500 €**
- Total Value Improvement for a year for trades executed on the Home Market missing the best price: **3,140,750 €**

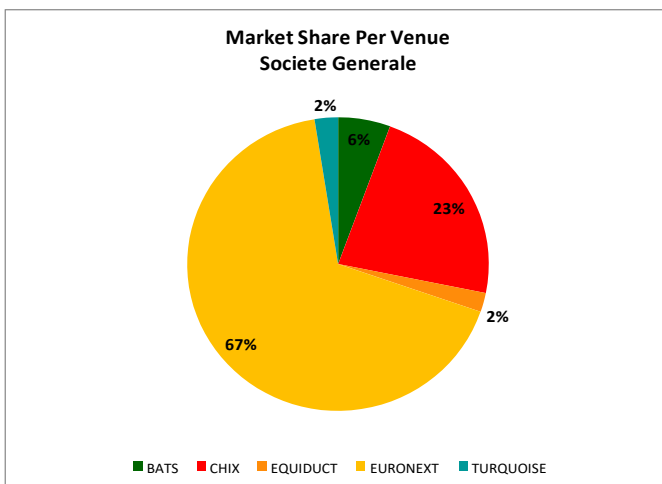


Chart 1: Market Share per venue

It is based on trades occurred during continuous trading only.

It shows that for Societe Generale, the Home Market only has 67% market share. So when a retail broker sends his clients' orders on the Home Market only, it misses the prices available on the other venues which represent all together 33% of the market for ENI.

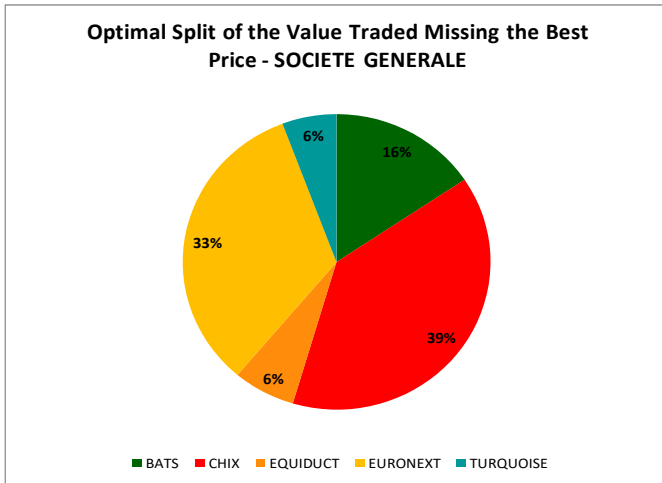


Chart 2: Simulated optimal Split

16.5% of the value traded on all the venues missed the best price available on another venue.

The chart 2 shows how it should have been split to achieve the best price.

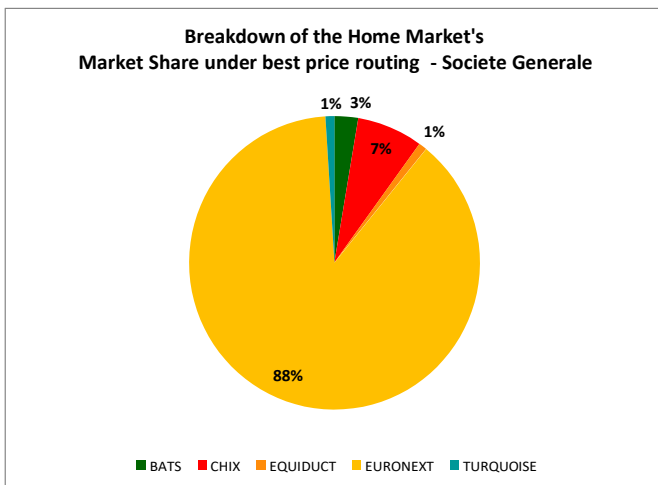


Chart 3: Breakdown of the Home Market market share

It shows that only 88% of the trades occurred on Euronext should have been done there, 12% should have been executed on another venue.

Conclusions

- Brokers only displaying information from the Home Markets would miss between 20 and 40% of the liquidity available on other venues:
 - BEL20: Home Market's market share = 63.2% in December 2010¹
 - CAC40: Home Market's market share = 61.6% in December 2010¹
 - DAX30: Home Market's market share = 65.7 % in December 2010¹
 - MIB40: Home Market's market share = 78.6% in December 2010¹
- Because the online brokers are often only connected to the Home Markets and because the Home Markets only have ~60% of the liquidity, it results in a cost of opportunity to the investor who has no access to that liquidity and to the better prices sometimes available there.

¹ Source: Thomson Reuters

- **Between 10 and 20% of the trades** executed on the Home Markets could have achieved a better price on another venue.
- The cost of opportunity amounts to a few Euros per trade; in total **6.5M€ per year** for the 4 stocks analysed here only.
- It is most likely that most of the cost of opportunity is supported by the retail investors given that:
 - Retail brokers are mostly only connected to the Home Market
 - They don't have the Smart Order Routing Technology required (for cost reasons) to split the orders and send it where the best prices are.
- MiFID has introduced competition to the equity market but the benefits of that competition are not available to the retail investors