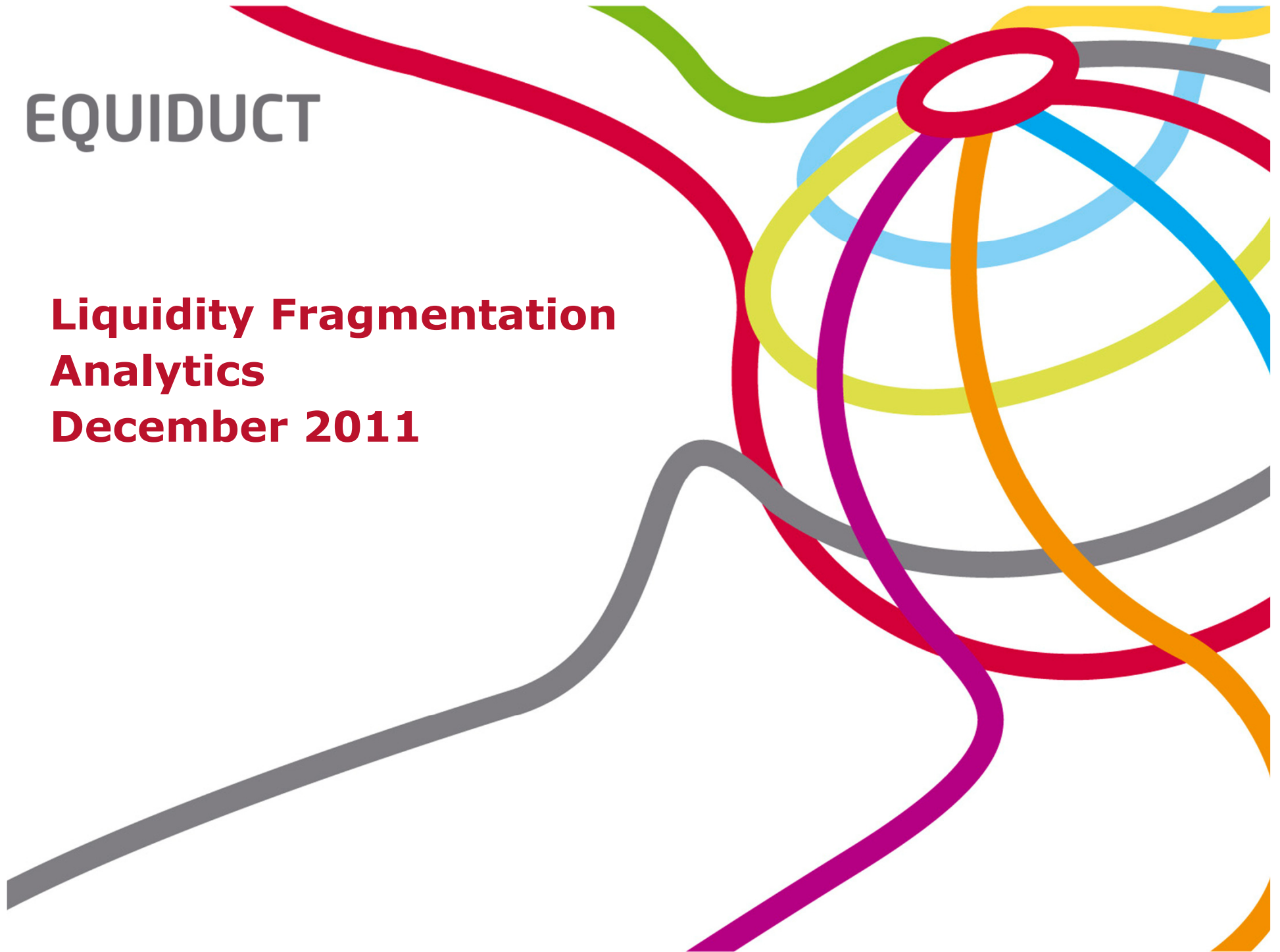


EQUIDUCT

**Liquidity Fragmentation
Analytics
December 2011**



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— Introduction

The aim of the LFA is to provide a simple, unbiased view of what liquidity was available before a trade was executed and where in fact trading should have taken place in order to get the best **net price** (*including price and cost*).

LFA results indicate a significant potential for price & cost improvement by adopting a best execution routing strategy.

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➔ Methodology – *stock selection criteria*

The LFA covers over 1400 Pan-European liquid equities which satisfy set selection criteria:



- Equities in the CESR database of MiFID Instruments
- Continuously traded on at least two venues
- Eligible for clearing at a major European CCP
- Is a constituent of a major European national or international index, or is traded with sufficient liquidity

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➔ **Methodology – venues considered**

Trade and order book data is collected from 10 major trading venues across Europe:

- BATS Trading Europe
 - Chi-X
 - Deutsche Börse (Xetra)
 - Equiduct
 - London Stock Exchange
 - NYSE Euronext (Paris, Amsterdam, Brussels, Lisbon)
 - Turquoise
 - NYSE Arca
 - Borsa Italiana
 - SIX Swiss Exchange
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➤ Methodology : From best price to best possible result

- MIFID – art. 21 requires that :

*“investment firms take all reasonable steps to obtain, when executing orders, the **best possible result** for their clients taking into account price, costs, speed, likelihood and settlement, size, nature or any other consideration relevant to the execution of an order.”*

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➤ Methodology

- Using published trade details, the LFA methodology considers a virtual stream of orders which represent observed trades.
- Thanks to *millisecond* granularity, LFA is now able to compare the real net price traded – *including trading fees* – with the historic consolidated order book information at a precise point in time.
- To determine the best execution venue for an order, it compares the **net price traded** against the **simulated net price available** across all relevant European venues.
- The result is a theoretical post-trade critique, based on pre-trade data, of order routing policies designed to investigate whether participants are routing orders to the best available price and the lowest trading fees.

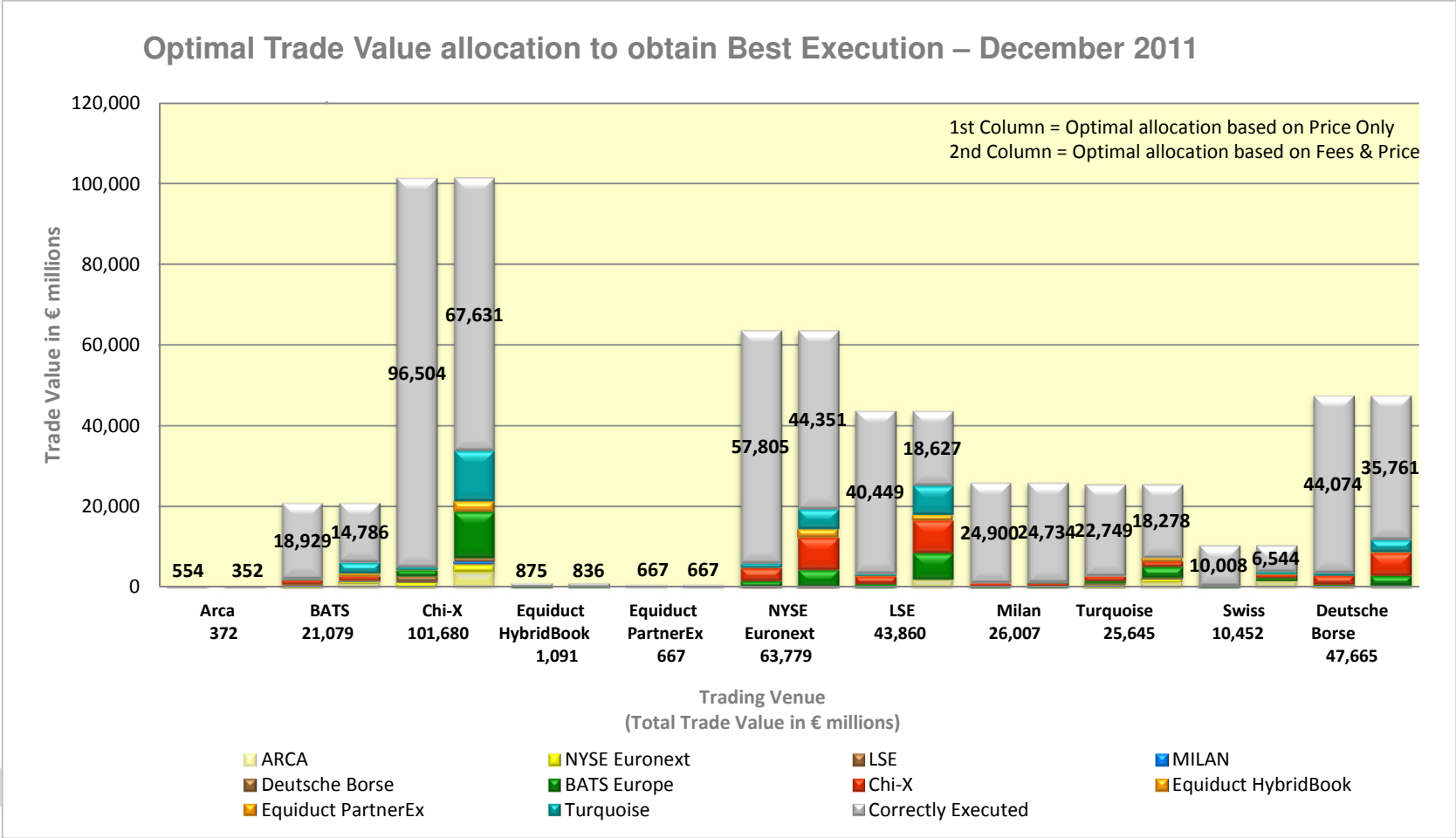
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➔ Methodology

- **Net price** = price +/- trading fees of the execution venue
- Net price available : for the comparison, the consolidated order book information also includes the trading fees for each order from each venue.
- Exchange fees : the analysis considers the variable fees (incl floors and caps) published at the start of the month for the entire month. They will be reviewed monthly.
- Price improvement : the price improvement calculation now also includes : the real **price improvement** on the price traded AND the **cost improvement**.

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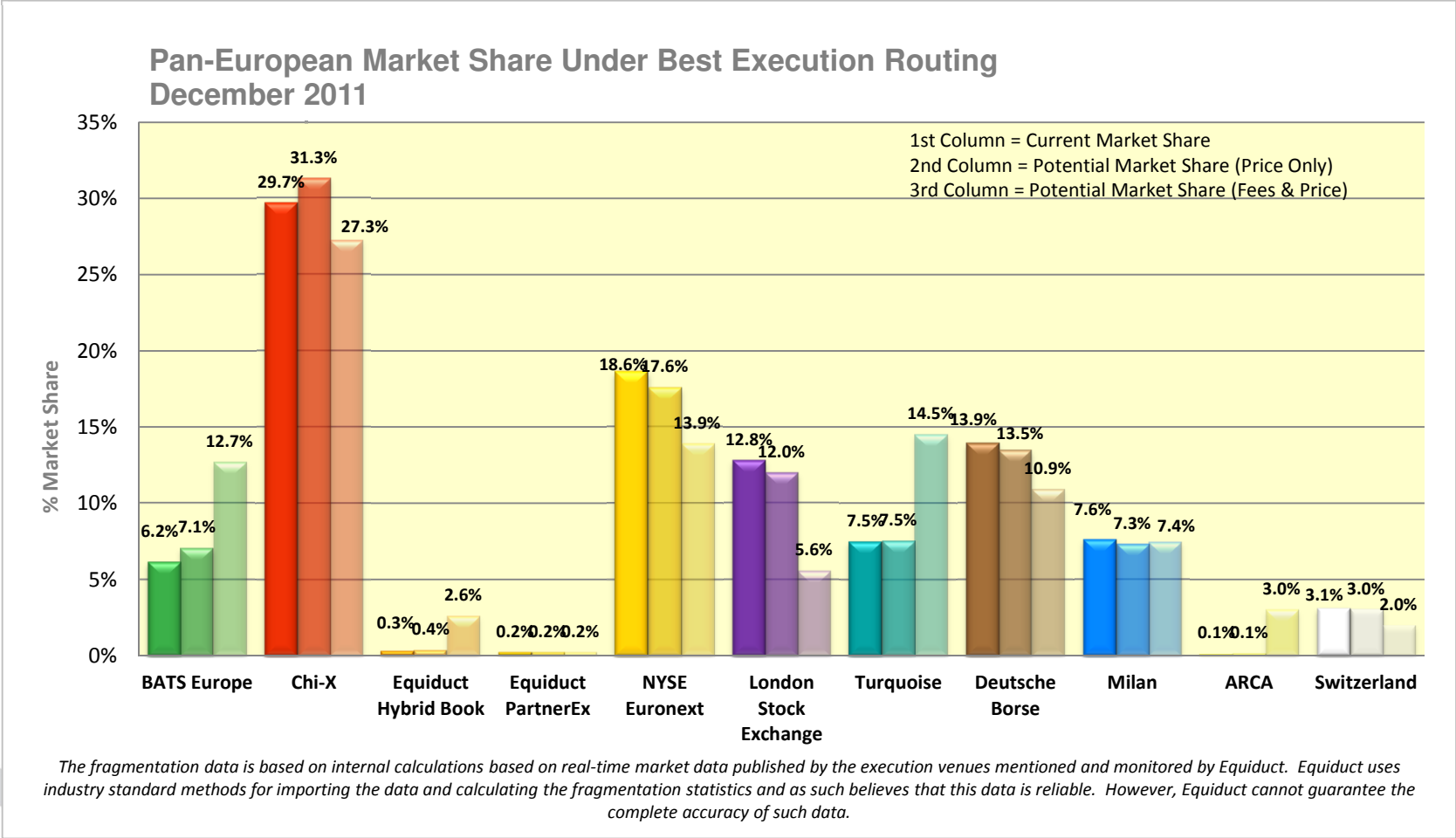
Results – Best Execution remains elusive



The fragmentation data is based on internal calculations based on real-time market data published by the execution venues mentioned and monitored by Equiduct. Equiduct uses industry standard methods for importing the data and calculating the fragmentation statistics and as such believes that this data is reliable. However, Equiduct cannot guarantee the complete accuracy of such data.

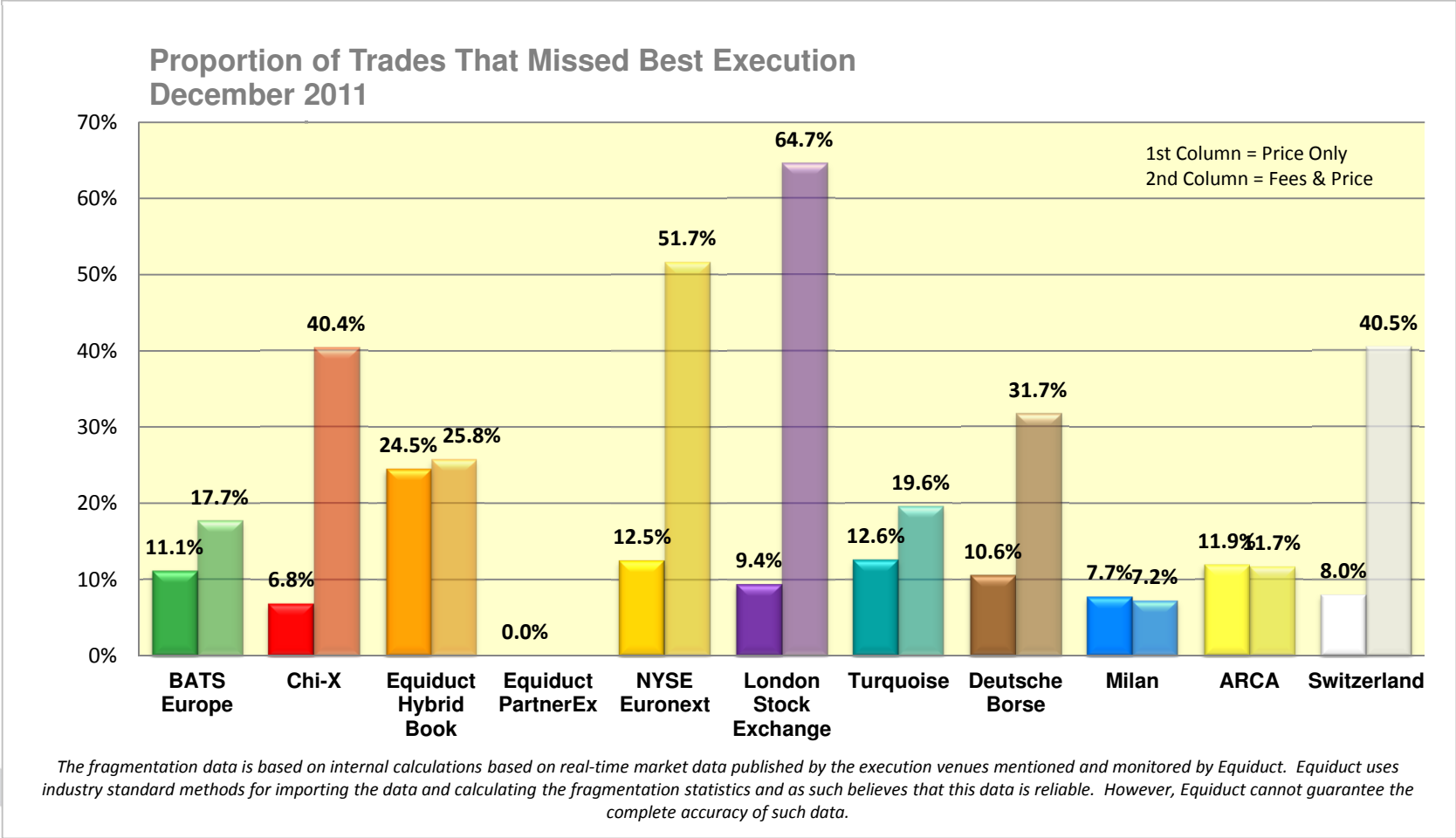
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Results



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Results



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➤ Delta Analysis FFI against LFI

- The Fidessa FFI calculation measures the fragmentation of observed, traded liquidity across European markets based on trading decisions made by market participants.
- The LFI enhances this by calculating a theoretical market share based on an optimal best price and cost allocation – ie where the order *should* have been routed, rather than where it *did* go to.
- Both calculations use the same inverse Herfindahl methodology¹, but they differ in result because the OLFI predicts a different market share for each of the venues; the LFI predicts what it *could* be, while the Fidessa FFI uses what it was.

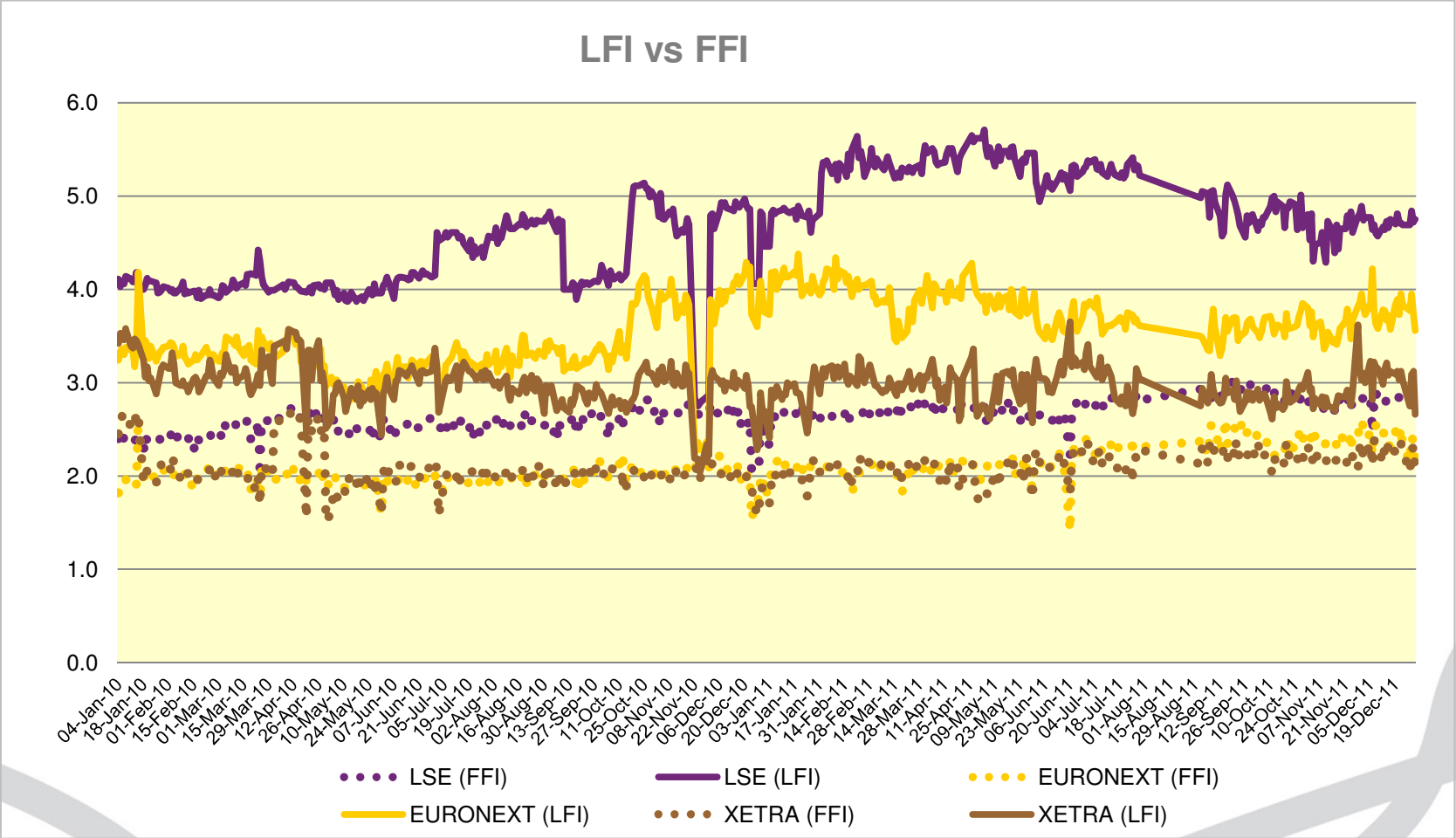
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— Delta Analysis FFI against LFI

- The difference between the LFI and the FFI measures the *potential* for liquidity to move between venues if market participants were using an optimal routing strategy.
- A large difference suggests that the market is acting inefficiently, and therefore liquidity may shift if participants improved their executions.
- A low value suggests that the participants are acting in a very efficient manner – ie the market is approaching an equilibrium point.
- ¹ For more information on the Herfindahl index, we recommend the Wikipedia explanation available at http://en.wikipedia.org/wiki/Herfindahl_index

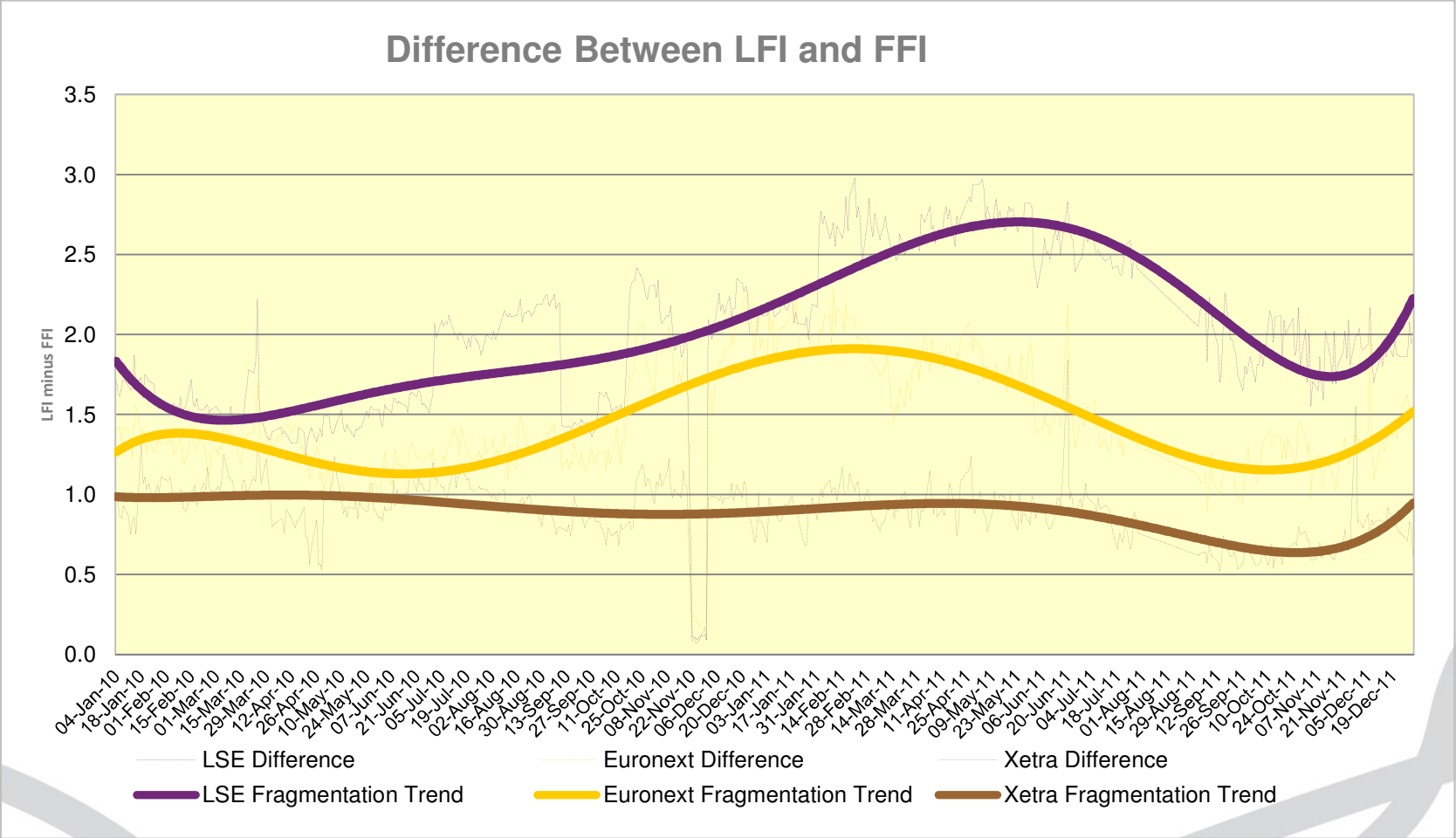
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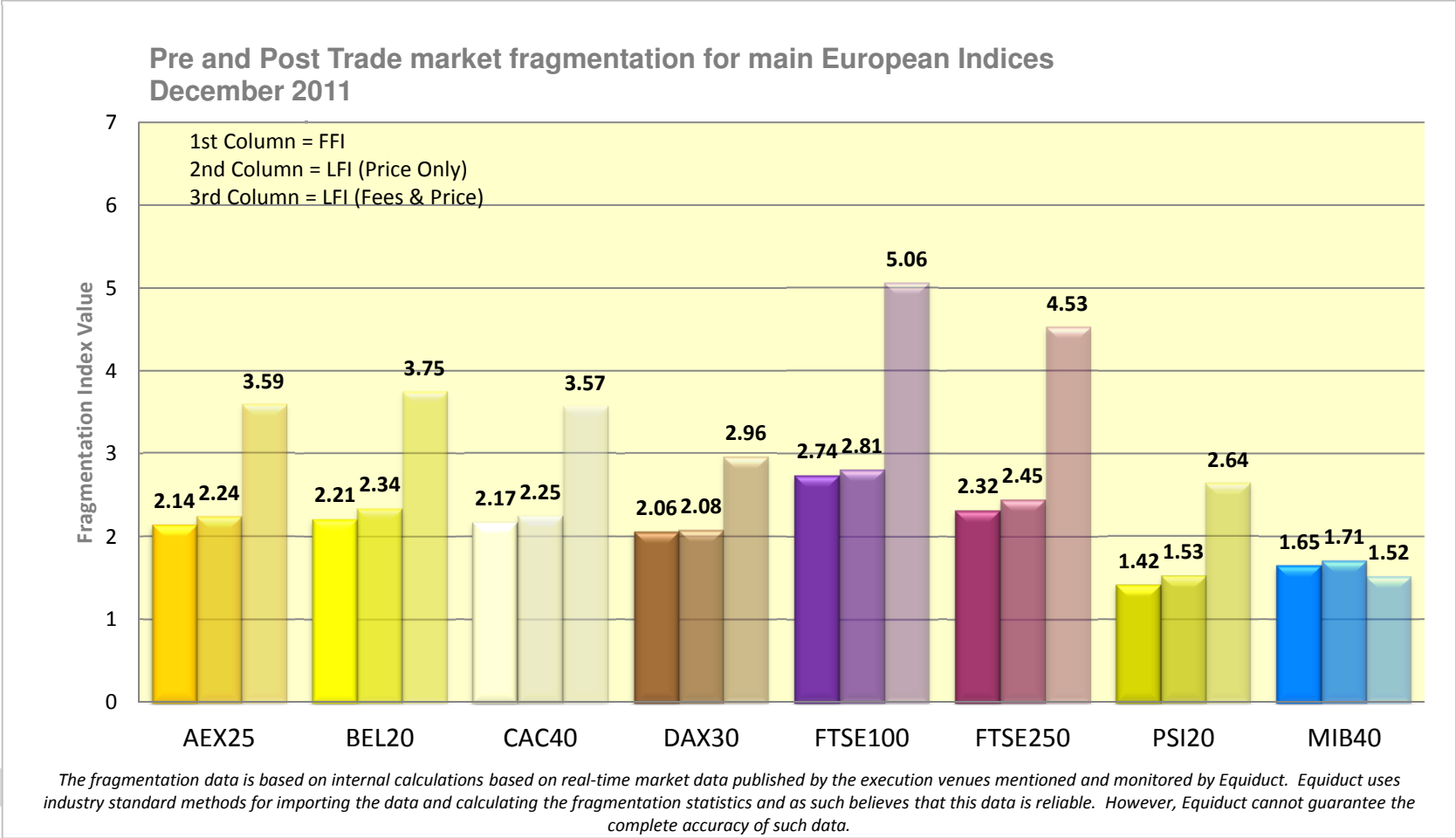


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