

Power of Trade Automation and TCA

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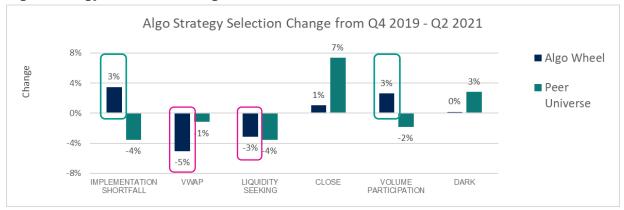
Growth and Strategy Usage Algo Wheel vs non-Algo Wheel strategy distribution over time



Algo Strategy Selection: 1Q 2022 - 2Q 2023



Algo Strategy Selection Change: 4Q 2019 - 2Q 2021



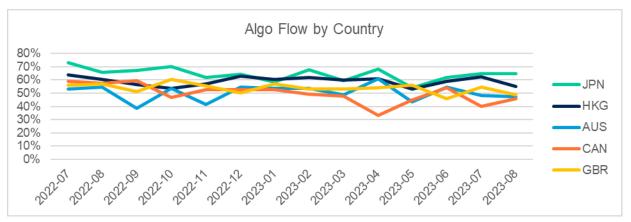
- Algo Wheel strategy usage has shifted back to Implementation Shortfall and Volume Participation
- Notable drop in usage of VWAP and Liquidity Seeking strategies
- Shift to Volume Participation was driven primarily by usage patterns in the US
- Shift to Implementing Shortfall was driven by APAC and US
- Non-Algo Wheel strategy distribution shifted to Close and Dark strategies, at the expense of Implementation Shortfall and Liquidity Seeking

Source: Virtu Analytics, Global Algo Peer Universe

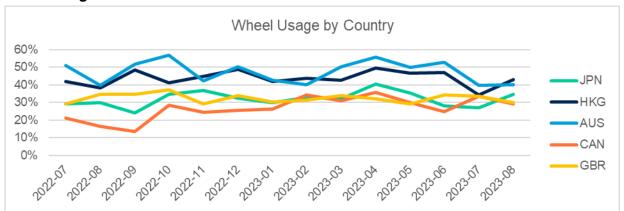
Algo Usage Electronic Trading Trends by Country



Algo Usage



Wheel Usage



- Nearly two-thirds of trading in Japan is traded via algo
 - Most in APAC and higher than the UK and Canada

- Wheel usage in Japan is in line with the UK and Canada, but well below Hong Kong and Australia
 - Opportunity for increased automation to allow traders to focus on higher MDV orders.

Source: Virtu Analytics, Global Algo Peer Universe

Broker Evaluation ProcessVirtu Algo Wheel performance measurement suggested best practices



Define benchmarks and other performance criteria

e.g. completion rates

Compare brokers based on costadjusted performance within relevant order groups using performance tiers

Iterate process quarterly engaging brokers and analytics for optimal outcomes

Consider allocation changes or broker removal after two quarters of no improvement

Remove outliers and brokers with insufficient flow

e.g. 300 orders

Schedule broker review

- Discuss performance gaps
- Evaluate algo settings and expected behavior based on trading style / objective
- Brokers to fine tune algo settings

Define relevant order flow groups

e.g. order size, market cap, PM strategy

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