SIX Swiss Exchange

Trading InfoSnack #16: Take Half the Spread – Go Lit or Go Dark?

4 March 2026

Take Half the Spread – Go Lit or Go Dark?

Summary

- **Two-tick spread regimes – characterized by a single empty tick within the spread – are the most prevalent order book state on SIX Swiss Exchange. In these regimes, traders can post at the empty tick in the lit book, or target the corresponding price level in the dark book.**
- **Posting a lit price-setting order generally outperforms the dark midpoint for execution certainty and completion; lit orders achieve higher fill rates – especially when contra-side displayed depth is strong – and larger fill fractions.**
- **Dark midpoint orders are typically larger in size, suggesting footprint-management considerations as a key driver for dark venue selection.**
- **Venue-level performance differs for lit EBBO price-setting and immediate price-mirroring orders: SIX Swiss Exchange offers the best overall balance between fill probability and mark-out resilience, whereas Aquis delivers the strongest mark-outs at the cost of lower fill probability.**
- **For traders seeking high execution likelihood and high volume completion with controlled post-trade risk during two-tick spread regimes, lit price-setting and immediate mirroring can be a compelling alternative to a dark midpoint order.**
- **Go lit or go dark? Don't mind the dark, but don't be afraid to turn the lights on.**

Introduction

In electronic trading, coordinated use of lit and dark order books is integral to algorithmic execution, as both venue types are embedded in a unified optimization framework. For passive limit orders on SIX Swiss Exchange and BME Exchange, options available to market participants differ between tick-constrained and non-tick-constrained order book states.

In a tick-constrained state, characterized by the absence of an empty tick within the bid–ask spread, participants may either join the existing queue in the central limit order book (CLOB) or route to the midpoint dark book. In a non–tick-constrained state, participants may additionally submit a price-setting lit order.

When the bid–ask spread equals two ticks, so that one empty tick exists within the spread, the midpoint coincides with that empty tick in the CLOB. In this state, participants have two routing choices at the same price level on SIX Swiss Exchange and BME Exchange:

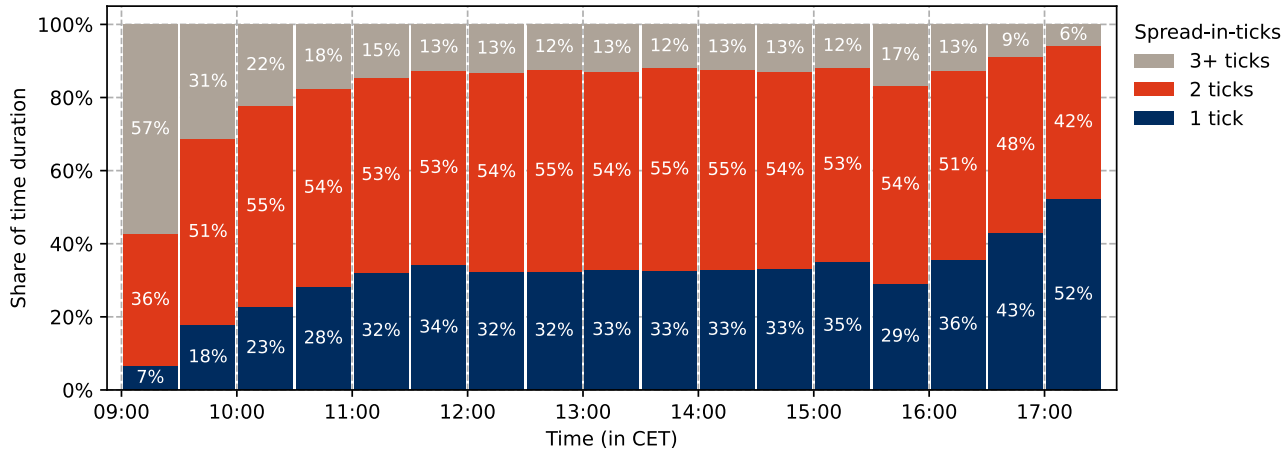
1. Submitting a displayed price-setting limit order at the empty tick in the CLOB, or
2. Submitting a non-displayed midpoint order to SwissAtMid / SpainAtMid

As both orders are placed at the same price in this scenario, it offers a like-for-like comparison of routing decisions and execution outcomes between lit and dark orders.

Tick by Tick – Intraday Distribution of the Bid-Ask Spread

Chart 01 shows intraday spread dynamics for Swiss Blue Chips on SIX Swiss Exchange. It depicts the proportion of time the spread is at one tick, two ticks, or three or more ticks within each half-hour of continuous trading.

Chart 01: Intraday distribution of the PBBO spread expressed in number of ticks



Analytics: SIX | Data source: BMLL, SIX | Security universe: Swiss Blue Chips | Sample period: 05 Jan 2026 - 27 Feb 2026

The share of 1-tick states rises toward the close, while 3-or-more-tick states mostly disappear in the afternoon. Throughout most of the day, 2-tick spreads are the prevailing condition, accounting for more than half of continuous trading on average. This highlights the economic importance of the 2-tick regime, in which a price-setting order in the CLOB and a dark midpoint order can be placed at the same price upon submission.

Order Submission Characteristics in the Two-Tick Spread Regime

Different drivers exist for choosing between a lit price-setting order and a dark midpoint order when the target execution price is the same in two-tick spread scenarios. Chart 02 illustrates potential differences along two dimensions: the state of the order book at the time of submission (Chart 02A) and the order size (Chart 02B).

Chart 02: Order characteristics of lit and dark orders submitted at midpoint during two-tick PBBO spreads

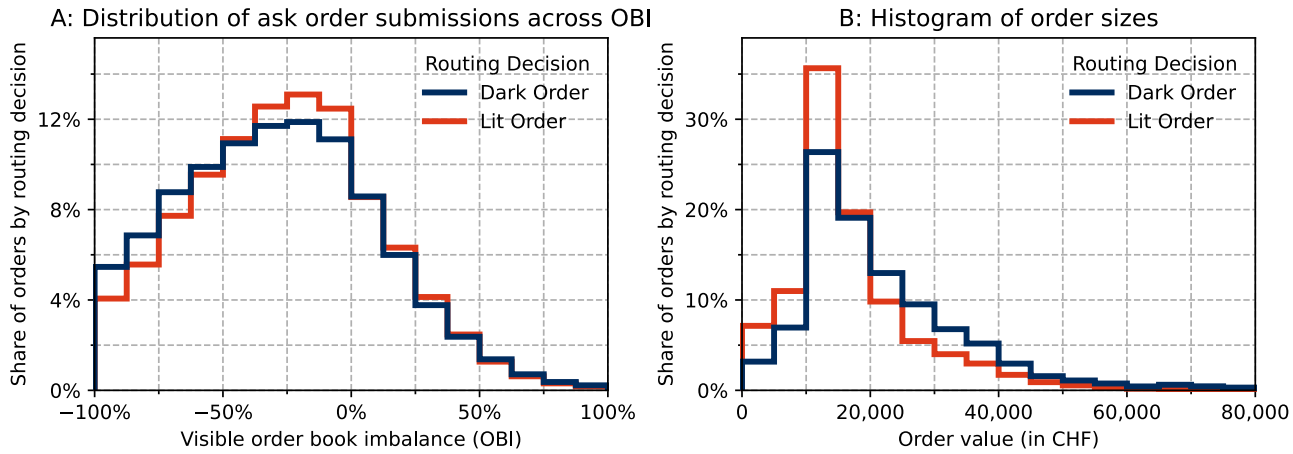


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Chart 02A shows the distribution of ask order submissions across levels of visible order book imbalance (OBI)[1] states on SIX Swiss Exchange, measured immediately before submission, i.e., at the routing decision. Lit and dark orders are submitted under similar OBI conditions. Approximately 40% of orders in both samples are submitted in balanced order books (OBI between -25% and +25%). This suggests no strong unconditional difference in visible OBI at submission between lit and dark orders, implying that any performance differences are not systematically driven by different imbalance states at the decision point.

Chart 02B presents order-size histograms for lit price-setting orders and dark midpoint orders. To account for expected discrepancies, conditional dark orders (SwissAtMid Block Orders) and orders with a minimum execution quantity above CHF 10,000 are excluded.[2] Even after removing these orders, dark midpoint orders are larger: the median is approximately CHF 20,000 compared to CHF 13,500 for lit, and the 90th percentile is roughly CHF 45,700 for dark compared to CHF 28,900 for lit. Dark midpoint orders are therefore typically larger than lit price-setting orders in two-tick regimes, suggesting size as a driver for going dark.

Execution Profiles of Lit and Dark Orders Submitted in a Two-Tick Spread Regime

Chart 03A illustrates fill probabilities[3] across OBI states and Chart 03B the distribution of fill volume ratio for lit price-setting and dark orders submitted at the midpoint in the two-tick regime. Together, they describe the certainty of execution once an order is placed.

Chart 03: Fill probability and volume for lit and dark orders submitted at midpoint during two-tick PBBO spreads

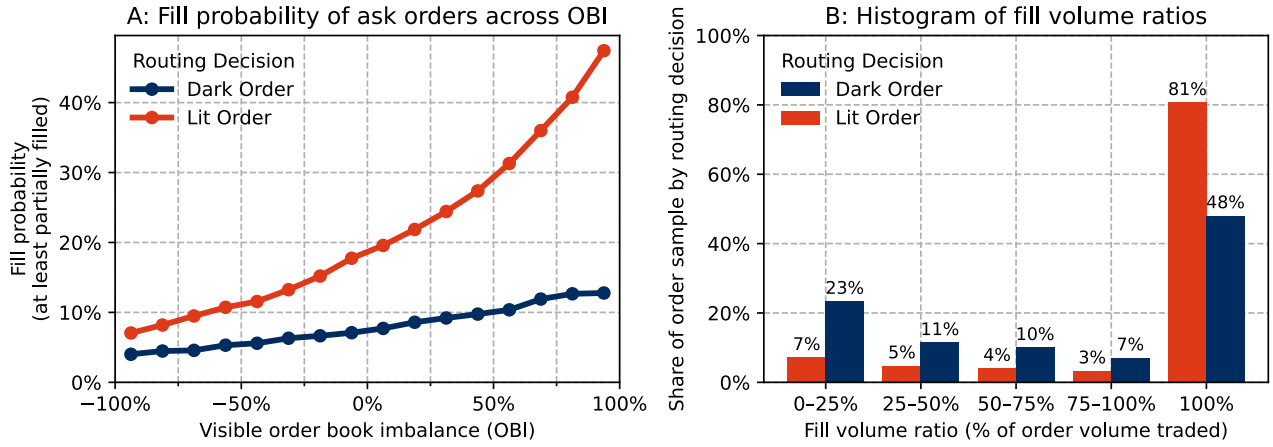

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Chart 03A shows that, in a two-tick spread with an empty midpoint, ask-side lit price-setting orders have higher fill probabilities than dark midpoint orders. Additionally, the fill probability for lit orders rises more steeply as OBI indicates stronger opposing interest, i.e., when liquidity depth on the contra side is high.

[1] OBI is calculated as (bid depth − ask depth) / (bid depth + ask depth), measured at the top of book immediately prior to submission from the trader's perspective (the submitted order is excluded). Changes in the OBI state may occur between order submission decision by the trader and order acknowledgement by the exchange.
[2] Sweep orders and Plus orders are not considered either in this analysis since they are interacting with both order books.
[3] Fill probabilities are derived from Kaplan-Meier estimates of time-to-first fill at a one-second horizon.

Chart 03B provides the conditional view: given an order is executed, it shows the frequency of fill volumes (executed size as a share of submitted size, measured to completion or cancellation). In the sample, 81% of lit orders are fully filled versus 48% for dark midpoint. Despite larger average dark order sizes, executed lit orders achieve higher realized volumes – median fill size is CHF 11,000 compared to CHF 8,300 for dark.

Together, Charts 03A and 03B suggest that lit price-setting orders offer higher execution certainty, that this edge strengthens when visible imbalance favors execution, and that lit orders realize a larger share of intended size once they interact.

Venue Selection for Lit EBBO Price-Setting and Immediate EBBO Price-Joining Orders

Given these advantages of stepping onto an empty tick in a lit book during a two-tick spread regime, a natural follow-up question arises: On which venue should traders target this tick?

Consistent with Trading InfoSnack #15 "Mirror, Mirror on the Wall", according to which immediate price mirroring across venues is a key driver of order book dynamics and largely happens between venues within geo-latency times, the execution performance analysis includes orders that either set a new EBBO or join it within 20ms after its establishment. Starting point is always a two-tick order book situation. Chart 04 presents a view of certainty of execution (Chart 04A) and adverse selection risk (Chart 04B) across lit order books.[4]

Chart 04: Executions of EBBO-setting orders during two-tick EBBO spreads and EBBO-joining (within 20ms) orders

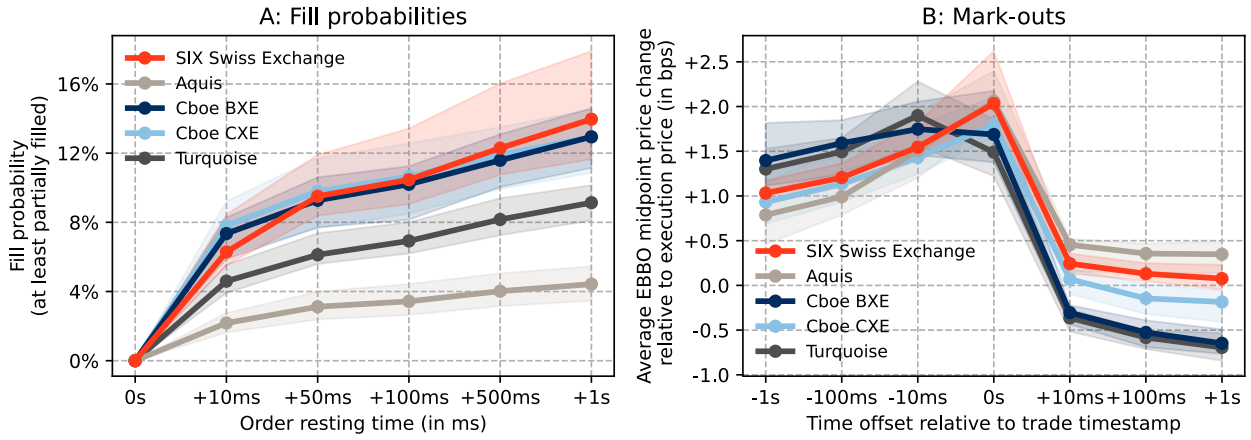

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Chart 04A shows that, for resting times up to one second, SIX Swiss Exchange, Cboe CXE and Cboe BXE exhibit the highest probability of fill, followed by Turquoise and Aquis.

Chart 04B examines how the EBBO midpoint evolves around executions of EBBO price-setting and immediate price-mirroring orders, using mark-outs to capture the post-trade price move relative to the passive order's price. Positive mark-outs indicate movement in the passive order's favor, while negative mark-outs indicate unfavorable price movement.

[4] In both charts, the solid line represents the median across instruments, while the shaded area shows the interquartile range (IQR).

In the pre-trade window (from -1s to -1ms), mark-outs are positive, reflecting the mechanical effect of establishing the price; after the trade, this effect decays and mark-outs move toward zero. The venue-specific profiles differ: Aquis and SIX Swiss Exchange show the strongest resilience against adverse selection, whereas Cboe CXE, Cboe BXE and Turquoise exhibit more pronounced post-trade drift.

Overall, the fill probabilities and mark-out patterns suggest that setting or immediately joining the newly established best price on SIX Swiss Exchange offers a favorable combination of execution certainty and post-trade mark-outs in two-tick EBBO states.

Conclusion

Two-tick spreads dominate large parts of the trading day, making this regime highly relevant for passive routing considerations between lit and dark mechanisms. In this setting, a lit price-setting order at the empty tick and a dark midpoint order both target the same price, allowing for a like-for-like comparison of execution outcomes.

On SIX Swiss Exchange and across Swiss Blue Chips, lit price-setting orders consistently achieve higher fill probabilities than dark midpoint orders. This advantage increases disproportionally when opposite-side liquidity at touch is deep. Combined with higher realized fill fractions, lit price-setting orders deliver higher expected executed volume per submitted order.

Cross-venue results indicate that execution quality for EBBO price-setting and immediate price-mirroring orders varies materially across venues. Within a 1-second window, SIX Swiss Exchange achieves the best balance of fill certainty and mark-out. Aquis delivers the best mark-out over this horizon, but exhibits a lower fill probability.

Overall, in two-tick regimes, lit price-setting and immediate mirroring offers a compelling combination of execution likelihood, completion, and controlled post-trade risk. Go lit or go dark? Don’t mind the dark, but don’t be afraid to turn the lights on.

Food for thought.

Authors

Fabian Ochsner	**Phone** +41 58 399 4212	**E-Mail** fabian.ochsner@six-group.com
Samir Hauser	**Phone** +41 58 399 9411	**E-Mail** samir.hauser@six-group.com
Timon Gehrig	**Phone** +41 58 399 9171	**E-Mail** timon.gehrig@six-group.com
Raphael Steiner	**Phone** +41 58 399 4710	**E-Mail** raphael.steiner@six-group.com

Visit our website: www.six-group.com/trading

SIX Swiss Exchange AG
Pfingstweidstrasse 110
P.O. Box
CH-8021 Zurich
T + 41 58 399 5454
F + 41 58 499 5455
info@six-swiss-exchange.com
www.six-swiss-exchange.com