IOC LIQUIDITY INDICATOR
Gaining insight from cancelled orders

Contents

Going beyond visible information in the order book

─────── If an exchange's order book were a cash register in a shop, it would show transactions at the counter, but not customers who came into the store wanting to buy something but then left without doing so. At least this is the case when it comes to 'immediate or cancel' orders (IOCs). Those lost opportunities for transactions – not filled immediate or cancel orders – are not recorded in the order book, yet represent real potential liquidity. Deutsche Börse Market Data + Services has launched a new product within its real-time analytics product family that allows traders to gauge those potential transactions in the options market and trade accordingly, resulting in fewer 'empty shopping baskets'.

As the options market today is characterised by increasing electronification, there are several new dynamics at play: potentially higher volumes and an increased emphasis on time sensitivity in trading strategies. This offers opportunities for increased high-frequency trading, electronic market-making or simply highly responsive news-tracking algorithms. Data that can reveal the evolution of the order book is therefore crucial in order to generate a picture that will support the trading strategy.

Deutsche Börse's new analytics product, the 'Eurex IOC Liquidity Indicator for Options' supports options traders at all levels, providing real-time analytics for the options market that go beyond the normally visible spectrum of information in the order book. MV
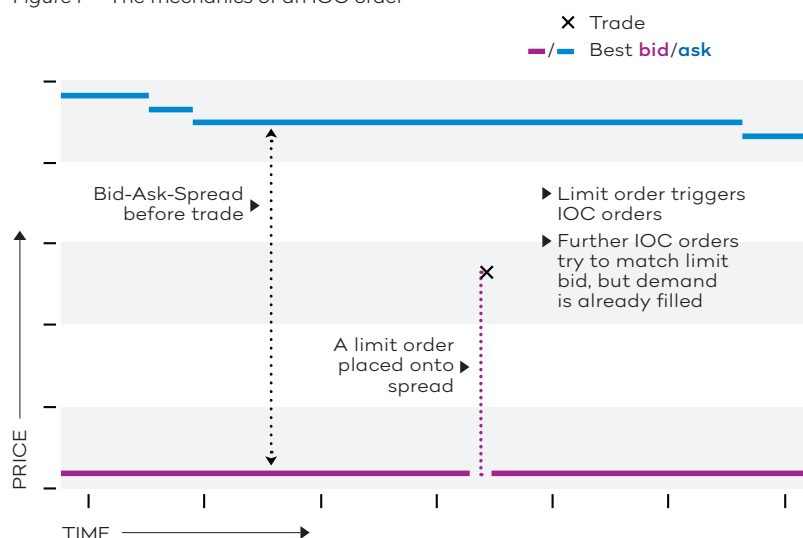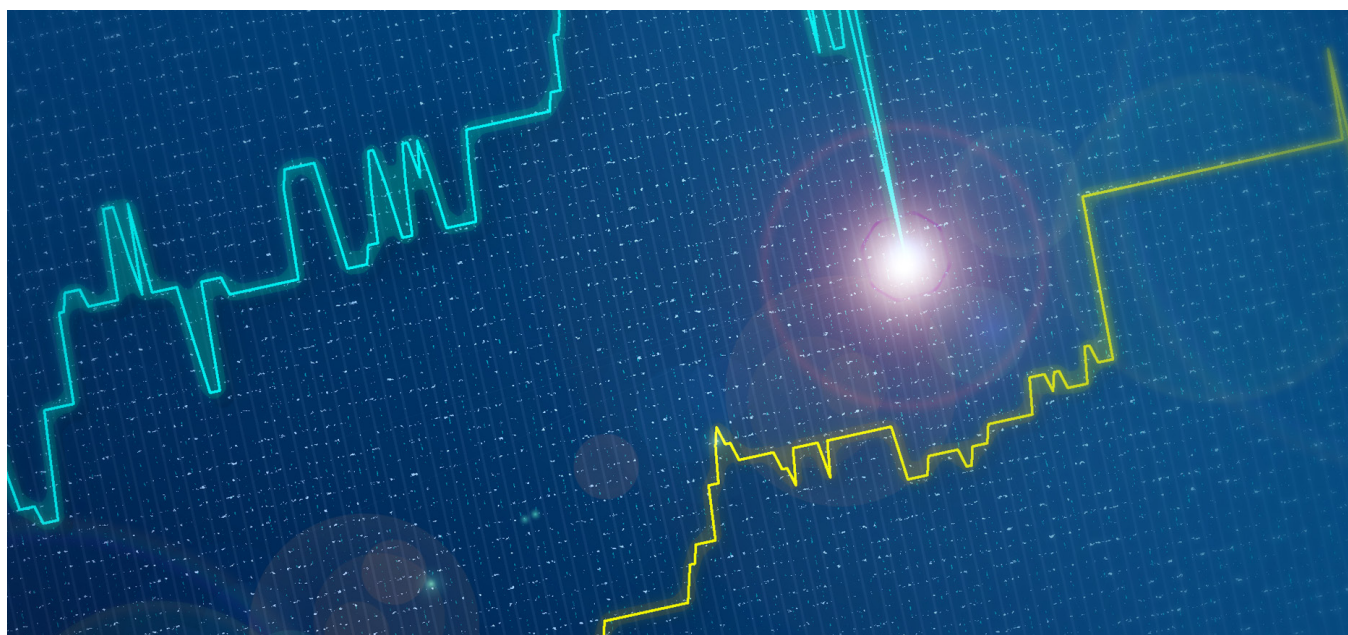
Immediate or cancel (IOC) orders

The IOC order offers a way for firms trading in large size to avoid having their orders filled at prices that are suboptimal from the trader's point of view. The order has to be immediately executed or it is cancelled. It can also be partly filled and then the rest cancelled, which makes it more flexible than a 'fill or kill' order.

For options with larger spreads, limit orders are placed within the spread with a degree of estimation about the 'true' price. A limit order can be targeted by IOC orders and if it is at the price that the IOC order picks out, it will be filled. Clearly, the wider the spread, the greater the chance of misjudging the 'true' price and the less appetite for using an order type that could expose the trader.

Cancelled IOC orders represent lost opportunities"

Figure i — The mechanics of an IOC order

× Trade
─/─ Best bid/ask

Bid-Ask-Spread before trade

Limit order triggers IOC orders

Further IOC orders try to match limit bid, but demand is already filled

A limit order placed onto spread

PRICE

TIME

Figure ii — The IOC Liquidity Indicator displays liquidity potential
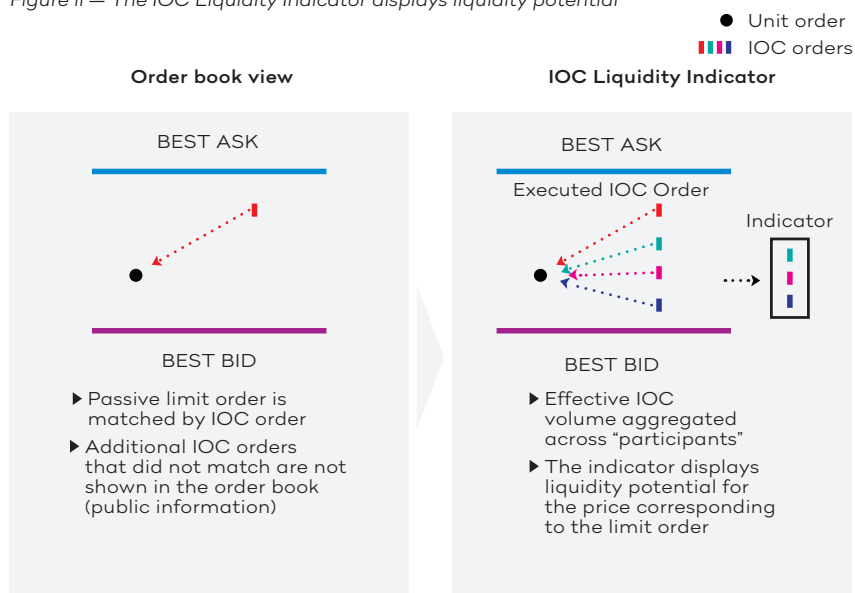
● Unit order
▮▮▮▮ IOC orders

How the IOC Liquidity Indicator works

Deutsche Börse's Eurex IOC Liquidity Indicator for Options provides traders with the aggregated volume of cancelled IOC orders that did not match within a defined time period and the details of the order execution (price, quantity and execution ID) that prevented the remaining IOCs from being filled.

In doing so, it gives users information on liquidity for orders at the price that corresponded to the limit order placed, potentially improving market quality.

The indicator is calculated for more than 70 Eurex options, including options on Euro-Bobl Futures, Euro-Bund Futures, Euro-Schatz Futures, as well as DAX options, EURO STOXX 50 and KOSPI 200 options.

Order book view

BEST ASK

BEST BID

▶ Passive limit order is matched by IOC order
▶ Additional IOC orders that did not match are not shown in the order book (public information)

IOC Liquidity Indicator

BEST ASK

Executed IOC Order

Indicator

BEST BID

▶ Effective IOC volume aggregated across "participants"
▶ The indicator displays liquidity potential for the price corresponding to the limit order

What does the IOC Liquidity Indicator show?

——— Observing the transaction information displayed in an order book gives the user details of successful transactions but does not indicate the depth of book by potential fills. As IOCs that are not executed simply disappear, market participants typically have no information about additional IOCs that could have been interacted with.

Deutsche Börse's IOC Liquidity Indicator is calculated by an analytical engine that sits on top of the exchange's internal real-time market data streams. This engine extracts the relevant non-public information and aggregates it according to a published algorithm in the form of the IOC Liquidity Indicator. The information is pumped out in the same manner as real-time market data and other real-time analytics (order book cancel rates and order flow statistics) already offered by Deutsche Börse. While the aforementioned real-time analytics are calculated on the basis of publicly available data only, the Eurex IOC Liquidity Indicator has an 'exclusive' component. The volume of unexecuted immediate or cancel orders, otherwise invisible for traders, now gives them knowledge of the IOC liquidity that is available around a trade triggered by an IOC order.

❯❯ The IOC Indicator is derived from non-public, aggregated order information."

From this volume, together with the price level of the trade which is also available within the IOC Liquidity Indicator data package, the user can gain some information on the attractiveness of a trade price level.

For example, an analysis of the bid and ask sides can reveal potential demand at a certain price level and the attractiveness of that price level (see figure 3). Here the ask volume provided via IOC orders at trade 'A' is much

Figure iii — The IOC Liquidity Indicator reveals additional liquidity available
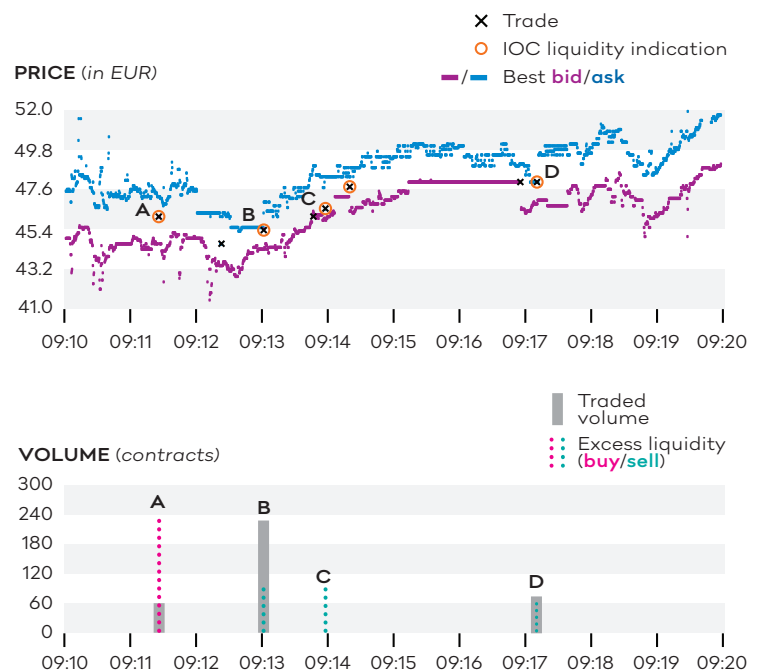
higher than at trades 'B', 'C' or 'D', which are closer to the bid or ask.

For options with a fairly wide spread, the total volume of IOCs can significantly exceed the actual traded volume. For example in January 2015, the IOC volume for these options was on average eight times the traded volume. ᴍᴠ

Unlocking potential alpha gains across strategies

——— The IOC Indicator unlocks potential alpha gains for firms across multiple strategies. A market maker, observing that a lot of IOCs being put in the stream are cancelled, could ramp up their throughput by adjusting their bid/ask spread so it reflects those orders.

An algorithmic trader wishing to deal in certain options can get an indication on the true liquidity of an option and can use the indicator to adjust the frequency of their orders. A trader can also use the IOC Indicator to gauge the potential size of trades, even for illiquid options, by observing the amount of surplus liquidity in the game after an order has been filled. They could then increase their trade size accordingly. Investors wishing to hedge their portfolio with options could employ that strategy.

For options with fairly wide spreads, a trader could look at the frequency of executed IOCs to evaluate if the spread is going to narrow. If the frequency of IOCs is increasing, they are effectively reducing the spread. So the IOC Indicator could be used as an effective spread measure.

The value to institutions is not just in real-time data. By looking at historical data and running an analysis on top of the distribution they find, they can see how the order book evolves. A historical analysis of the Indicator shows if and how much additional liquidity is available for an option. Comparing the real-time value of the Indicator with the historical value lets traders determine if they can expect interest in the option at this very moment.

When combined with the real-time feed, a trader could therefore potentially employ the IOC Indicator as a signal generator. If the historical data indicates that an option is traded in bursts coming in every 5 to 10 seconds, and then the real-time feed shows the frequency rising or falling, the trader can identify that something is happening in the market and decide whether they want to be part of it or get out of it.

Historical IOC Liquidity Indicator data is also a crucial ingredient for back-testing and designing option strategies as it solves two problems: Firstly, it allows users to make more realistic assumptions about potential prices in the past. Strategies based on less liquid options could look significantly more profitable when including cancelled IOC information than they would if only historical bids and asks were taken into consideration. Secondly, it makes it easier to estimate the impact that a simulated order would have had on the order book. Had it been matched by an IOC, the order would have had no impact on the order book. MV

Conclusion

The IOC Indicator provides important new liquidity information to option traders, creating the potential for improved price discovery and signalling opportunities.

For more information on the **Eurex IOC Liquidity Indicator** please go to:

www.mds.deutsche-boerse.com/ioc