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Shining a light on opening auctions when trading ETFs

Introduction

With the popularity of ETFs on the rise, trading volumes continue to beat records year over year. As a result, those of us on the Capital Markets desk are having numerous conversations about ETF structure and trading dynamics, with our goal being to help as many clients as possible achieve trading success through the best possible execution.

One topic that keeps coming up is the trading of ETFs during the opening and closing auctions. For some of you more accustomed to traditional mutual funds, you find yourself wanting to place trades over the weekend, after the market has closed, or first thing in the morning. While that timing may work for mutual funds that strike a net asset value (NAV) only once a day at 4 p.m., Eastern time, it's not the best for ETFs. Trading ETFs in this manner results in the trade occurring during the opening auction, causing an unnecessary risk of trading the ETF at a larger premium or discount to its fair value, or NAV.

By shining a light on the imbalances that can occur in the opening auction, we hope to provide the keys to help ensure clients have the best possible trading experience.

Understanding the mechanics of opening auctions can lead to better execution

When it comes to trading ETFs, the opening price can be dictated by the volume occurring in the auction rather than the price of the underlying securities that make up the ETF. Any trade submitted after the prior trading session ends but before the next begins is queued up for the opening auction, which can expose the trade to additional risks. If there is a large buy imbalance or large sell imbalance, the ETF price can swing to large premiums and discounts.

You don't have to place a large order to receive a poor execution in the opening auction. If an imbalance exists in the opening auction created by other market participants, even the individual that submits a single-share order will participate in the collective execution that could be at a significant premium or discount to the ETF's fair value.

While exchanges tend to have orderly ETF opening and closing auctions and extreme imbalances with significant price impacts are rare, it's important to understand that the risk does exist, and pricing can be more volatile during ETF auctions without the creation/redemption mechanism. Remember that the creation/redemption mechanism helps ETFs remain close to fair value because new shares can be created or redeemed by liquidity providers who have clear insight into the value of the underlying securities in the fund.

What an orderly opening auction looks like

Here's an example where the opening auction operates in an orderly fashion. There are 10 investors attempting to buy varying share quantities of an ETF valued at $100 using a combination of market orders and limit orders. Simultaneously, there are 10 investors attempting to sell the same ETF. All 20 investors' orders are eligible for the opening auction. This example demonstrates an orderly opening with ETF buy orders perfectly matched against ETF sell orders.

ETF opening auction (example 1)

Buy orders			Sell orders		
Share quantity	Order type	Limit price	Share quantity	Order type	Limit price
15,000	Market	—	12,000	Market	—
3,000	Market	—	8,000	Market	—
2,500	Market	—	3,000	Market	—
1,500	Market	—	1,000	Market	—
1,000	Market	—	8,000	Limit	$ 100.01
500	Market	—	4,100	Limit	$ 101.25
500	Market	—	2,500	Limit	$ 102.00
1,000	Limit	$ 99.99	1,000	Limit	$ 102.50
500	Limit	$ 99.00	1,000	Limit	$ 103.00
200	Limit	$ 98.00	500	Limit	$ 104.00

Total shares: market buy orders	Total shares: market sell orders
24,000	24,000

Opening imbalance

0

Source: Vanguard. This hypothetical example does not represent any particular investment.

The 24,000 ETF shares would execute at an official opening price of $100, which is in line with the fair value of the fund. This happens because the 24,000 shares on the buy side are offset with the 24,000 shares on the sell side (market orders). As a result, there is no imbalance in the opening auction and the exchange is able to execute all orders without an impact on price.

What happens when there is an imbalance in the opening auction

In this example, there are 10 investors attempting to buy varying share quantities of an ETF valued at $100 using a combination of market orders and limit orders. Simultaneously, there are 10 investors attempting to sell the same ETF. Again, all 20 investors' orders are eligible for the opening auction. However, this example denotes an opening imbalance that has surprising price ramifications for the ETF.

ETF opening auction (example 2)

Buy orders			Sell orders		
Share quantity	Order type	Limit price	Share quantity	Order type	Limit price
50,000	Market	—	3,000	Market	—
3,000	Market	—	1,000	Market	—
1,000	Market	—	25,000	Limit	$ 100.05
500	Market	—	10,000	Limit	$ 100.25
100	Market	—	8,000	Limit	$ 100.50
10,000	Limit	$ 99.95	4,100	Limit	$ 101.25
4,000	Limit	$ 99.50	2,500	Limit	$ 102.00
1,000	Limit	$ 99.25	1,000	Limit	$ 102.50
500	Limit	$ 99.00	1,000	Limit	$ 103.00
200	Limit	$ 98.00	500	Limit	$ 104.00

Total shares: market buy orders
54,600

Total shares: market sell orders
4,000

Opening imbalance
50,600

Source: Vanguard. This hypothetical example does not represent any particular investment.

In this example, 54,600 shares would execute at an official opening price of $102.50—250 basis points above the ETF's fair-value price of $100.

The exchange executes all market orders—buy and sell—that participate in the opening auction (with certain exceptions).[1] There are market sell orders for only 4,000 shares to try to offset the market buy orders for 54,600 shares, resulting in an opening imbalance of 50,600 shares.

The imbalance forces the exchange to execute limit orders on the sell side starting at the lowest price until it is able to execute all the market buy orders that are part of the opening auction. Therefore, a single investor trying to buy 50,000 shares of an ETF can cause all other participants in the opening auction to trade at a price above the ETF's fair value.

[1] Auction collars and exchange halts are a few examples when market orders may not receive execution in the opening auction.

Given the risks of trading in the auctions, consider these best practices:

- Avoid trades (especially larger-sized trades) during the opening and closing auctions if possible.
- If you decide to trade in the auctions, consider using a limit order or marketable limit order to avoid unexpected price movements.
- Be mindful about placing orders outside of normal market hours for thinly traded ETFs since the opening prices can be significantly affected.

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