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CFA LEARNING OUTCOMES DECODED

In our series *Learning Outcomes Decoded* we break down a single Learning Outcome Statement (LOS) from the CFA level 1 curriculum. This article is written by Dave Kaczorowski, CFA. Dave is the Content Manager of the CFA team at the Princeton Review, and teacher of the live online review sessions. He is a professor of finance at the University of San Francisco.

EQUITY INVESTMENTS: MARKET ORGANIZATION AND STRUCTURE

LOS: Compare market orders with limit orders

This LOS is a major concept in the trading section of the learning module. It is a companion to the LOS on trading instructions, which is all highly testable material. Understanding this LOS requires a working knowledge of the order book on both a conceptual and a quantitative level.

The order book

When individual investors buy securities, they generally trade at the *inside quote*. That is the best possible price for the investor, meaning the highest bid and the lowest offer price available in the market. The bids and offers are posted to the market by professional traders, each of whom only has a certain number of shares to trade. All postings are entered into a ledger known as an *order book*:

ORDER BOOK FOR SHARES OF XYZ		
Bid size	**Price**	**Offer Size**
150	125.01	
175	125.05	
100	125.09	
	125.19	150
	125.23	75
	125.65	80

Large investors who intend to trade more than the volume of the inside quote must *roll up the order book*. They trade all the shares of the inside quote and then go to the next best quote to fill the rest of the order. In the example above, an investor who wants to buy 200 shares of XYZ must buy all the shares from the trader who posted the bid of $125.19, then an additional 50 shares from the next trader at $125.23. The larger the order, the more quotes must be filled at a less and less attractive price.

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The market order

If the order placed by the investor is a *market order*, then the entire trade is executed immediately. The investor fills the quotes up the ledger until the order is filled, taking whatever best prices are available. The advantage of this trade is that the investor is guaranteed completed execution. The drawback is that the investor may take prices worse than expected for some of the order.

The limit order

A *limit order* is written with a special instruction only to be executed at a price inside a given threshold. If the price moves too far in the wrong direction before the trade is completed, the remainder of the order is automatically halted. In the order book above:

- An investor enters a *buy-limit order* intending to buy 200 shares of XYZ at a limit price of $125.20. The trade fills the first offer of 150 shares at $125.19. Since the next quote is higher than the limit price, the order is stopped, leaving the investor with 50 shares less than planned.

- An investor enters a *sell-limit order* intending to sell 200 shares of XYZ at a limit price of $125.07. The order fills the inside quote of 100 shares at $125.09. Since the second quote is below the limit price, the order is stopped, and the remaining 100 shares go unsold.

The limit order can prevent the investor from trading too far from the expected price. On the downside, the investor must walk away with a partially filled or unfilled order if the limit is triggered. All the standing orders that appear on the order book are technically limit orders in that they only execute when the counterparty agrees to that price.

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PRACTICE QUESTION

In the order book above, an investor intends to sell 300 shares of XYZ with a limit price of $125.03. How many shares will be sold, and at what average price? Ignore trading costs.

A. 300 shares at $125.0900

B. 275 shares at $125.0645

C. 275 shares at $125.0600

B is correct. The investor fills the inside quote, selling 100 shares at $125.09. The investor then fills the next bid of 175 shares at $125.05. Since the third bid price is below the limit, the remainder of the order goes unfilled, and only 275 shares are traded. The average price is:

$$\frac{125.09 \times 100 + 125.05 \times 175}{275} = 125.0645$$