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On-Balance Volume (OBV): How It Works and How to Use It

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Credit: Investopedia / Dennis Madamba

What Is On-Balance Volume (OBV)?

On-balance volume (OBV), developed by Granville, is a technical trading indicator that tracks price movements. Granville proposed that significant price shifts will occur based on changes in volume. If volume rises sharply without a corresponding price movement, it is like a 'spring being wound tightly' effect.



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indicator that uses trading volume to anticipate changes in stock

prices. It signals potential price movements based on volume shifts, as volume typically precedes price action.

- **Smart Money vs. Retail Investors:** OBV helps distinguish between institutional investors—often referred to as "smart money"—and retail investors. When large institutions begin buying, OBV rises even if prices are flat; eventually, prices tend to follow the volume.
- **Cumulative Volume Calculation:** The OBV is calculated by adding the volume to the previous OBV if a stock's closing price is higher than the previous day, subtracting the volume if it's lower, and keeping it unchanged if the price is identical.
- **Limitations and Considerations:** As a leading indicator, OBV can produce false signals and may require confirmation from lagging indicators. Sudden volume spikes, due to events like earnings reports, can distort OBV readings.
- **OBV vs. Other Indicators:** While OBV focuses on volume relative to the direction of price changes, other indicators like Volume-Price Trend (VPT) factor in the magnitude of price changes, offering different insights into market dynamics.

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Understanding the On-Balance Volume (OBV) Formula

$$OBV = OBV_{prev} + \begin{cases} \text{volume,} & \text{if close} > \text{close}_{prev} \\ 0, & \text{if close} = \text{close}_{prev} \\ -\text{volume,} & \text{if close} < \text{close}_{prev} \end{cases}$$

where:

OBV = Current on-balance volume level

OBV_{prev} = Previous on-balance volume level

volume = Latest trading volume amount

How to Calculate On-Balance Volume

On-balance volume provides a running total of volume that indicates whether this volume is bullish or bearish for a price pair. The OBV is a cumulative total calculated using three rules implemented when calculating the OBV.

1. If today's closing price is higher than yesterday's closing price:

$OBV = \text{Previous OBV} + \text{today's volume}$

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2. If today's closing price is lower than yesterday's closing price, then: Current OBV = Previous OBV - today's volume

3. If today's closing price equals yesterday's closing price, then: Current OBV = Previous OBV

Insights Provided by On-Balance Volume (OBV)

The theory behind OBV is based on the distinction between [smart money](#)—namely, institutional investors—and less sophisticated retail investors. As mutual funds and pension funds begin to buy into an issue that retail investors are selling, volume may increase even as the price remains relatively level. Eventually, volume drives the price upward. At that point, larger investors begin to sell, and smaller investors begin buying.

Although plotted on a [price chart](#), the specific numerical value of OBV isn't important. The indicator itself is cumulative, while the time interval remains fixed by a dedicated starting point, meaning the real number value of OBV arbitrarily depends on the start date. Instead, traders focus on OBV movements over time; the slope of the OBV line

Analysts use OBV volumes to track divergences between volume and price. OBV interacts with regular investors, institutional investors, and trends. For example, institutional investors then sell after other investors jump in.

Practical Application: Using OBV in Trading

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1. Day one: closing price equals \$10, volume equals 25,200 shares
2. Day two: closing price equals \$10.15, volume equals 30,000 shares
3. Day three: closing price equals \$10.17, volume equals 25,600 shares
4. Day four: closing price equals \$10.13, volume equals 32,000 shares
5. Day five: closing price equals \$10.11, volume equals 23,000 shares
6. Day six: closing price equals \$10.15, volume equals 40,000 shares
7. Day seven: closing price equals \$10.20, volume equals 36,000 shares
8. Day eight: closing price equals \$10.20, volume equals 20,500 shares
9. Day nine: closing price equals \$10.22, volume equals 23,000 shares
10. Day 10: closing price equals \$10.21, volume equals 27,500 shares

As can be seen, days two, three, six, seven and nine are up days, so these trading volumes are added to the OBV. Days four, five and 10 are down days, so these trading volumes are subtracted from the OBV. On day eight, no changes are made to the OBV since the closing price did not change. Given the days, the OBV for each of the 10 days is:

1. Day one OBV = 0
2. Day two OBV = 0 + 30,000 = 30,000
3. Day three OBV = 30,000 + 25,600 = 55,600
4. Day four OBV = 55,600 - 32,000 = 23,600
5. Day five OBV = 23,600 - 23,000 = 600
6. Day six OBV = 600 + 40,000 = 40,600
7. Day seven OBV = 40,600 + 36,000 = 76,600
8. Day eight OBV = 76,600
9. Day nine OBV = 76,600 + 23,000 = 99,600
10. Day 10 OBV = 99,600 - 27,500 = 72,100

Comparing OBV and Accumulation

On-balance volume and the [accumulation distribution line](#) are similar in that they are both momentum indicators that use volume to predict the movement

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The formula used to create the accumulation/distribution (Acc/Dist) line is quite different than the OBV shown above. The formula for the Acc/Dist, without getting too complicated, is that it uses the position of the current price relative to its recent trading range and multiplies it by that period's volume.

Challenges and Limitations of Using On-Balance Volume

One limitation of OBV is that it is a leading indicator, meaning that it may produce predictions, but there is little it can say about what has actually happened in terms of the signals it produces. Because of this, it is prone to produce false signals. It can therefore be balanced by lagging indicators. Add a moving average line to the OBV to look for OBV line breakouts; you can confirm a breakout in the price if the OBV indicator makes a concurrent breakout.

Another note of caution in using the OBV is that a large spike in volume on a single day can throw off the indicator for quite a while. For instance, a surprise earnings announcement, being added or removed from an index, or massive institutional block trades can cause the indicator to spike or plummet, but the spike in volume may not be indicative of a trend.

What Is Average Daily Trading Volume?

Average daily trading volume (ADTV) is the average amount of shares traded each day for a given stock. It can be a useful metric because high or low trading volume attracts different types of traders. Traders and investors can use ADTV to assess liquidity, analyze volatility, and manage risk. ADTV can be used alongside other indicators to gauge market's activity.

What's the Difference Between OBV and Volume-Price Trend?

Volume-Price Trend (VPT) is similar to OBV, as it uses the cumulative volume and provides a visual representation of money flow. But whereas OBV looks at volume just according to whether the

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On-Balance Volume is a leading indicator: it produces predictions, but it doesn't provide specific information on exactly what happened or why. This can lead to wrong interpretations. OBV should be used alongside lagging indicators for better effectiveness.

The Bottom Line

On-balance volume (OBV) is a technical indicator that measures positive and negative volume flows and analyzes the trading direction. It appears as a single line that helps investors make trading decisions and identify buy or sell points. However, OBV doesn't provide specific information about the financial asset, which can lead to misinterpretations. Therefore, traders should balance OBV by using lagging indicators.

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