On-Balance Volume (OBV)

While traders and investors are primarily concerned with price, volume—the number of shares traded—is also an important element, especially in technical analysis. It provides information regarding the strength (or lack thereof) of price movements. Meaningful trends should have a corresponding increase in trading volume; volume should be relatively higher on “up” days during an uptrend and on “down” days during a downtrend. Price movements—especially breakouts and trend reversals—on heavier-than-normal volume are more apt to follow through than those with lighter volume.

On-balance volume (OBV), introduced by Joseph Granville in 1963, is a momentum indicator that relates volume to price change. It provides a running total of volume flowing into and out of a security. Traders use OBV to confirm a trend: An upward sloping OBV confirms an uptrend, while a downward sloping OBV confirms a downtrend.

Calculating OBV

The value of OBV at any given point in time is dependent on when you start calculating it. For that reason, the trend and direction of the OBV is of primary importance.

To calculate OBV, begin by comparing the closing price of one period to the closing price of the previous period:

- If the current price is higher than the previous period, then *all* of that day’s volume is added to the previous period’s OBV;
- If the current price is lower than the previous period, the current volume is subtracted from the previous period’s OBV;
- If the price is unchanged from the previous period, the current trading volume is “ignored.”

In other words:

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\text{If } C_1 > C_0: \quad \text{OBV}_0 + V_1 = \text{OBV}_1
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\text{If } C_1 = C_0: \quad \text{OBV}_0 = \text{OBV}_1
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\text{If } C_1 < C_0: \quad \text{OBV}_0 - V_1 = \text{OBV}_1
\]

Where:
- \(C_1\) = Current period’s closing price
- \(C_0\) = Previous period’s closing price
- \(V_1\) = Current period’s volume
- \(\text{OBV}_0\) = Previous period’s OBV
- \(\text{OBV}_1\) = Current period’s OBV

Figure 1 shows the OBV for Apple Inc. (AAPL) for November 2012. The volume bars of the chart are color-coded for up (green) and down (red) days. The OBV indicator is in the chart area below the volume. On up days OBV rises, as that day’s volume is added to the previous day’s OBV; on down days OBV falls, as the day’s volume is deducted from the previous day’s OBV.

Interpreting OBV

In developing OBV, Granville theorized that volume precedes price. Rising OBV indicates positive volume pressure that can push prices higher. Alternatively, falling OBV reflects negative volume pressure, which may foreshadow lower prices. Based on his research, Granville noted that OBV would often move before price. If you see OBV rising while prices are moving sideways or downward, expect to see prices eventually move higher. Likewise, expect prices to fall if OBV is falling while prices are flat or are moving up.

Keep in mind that the value of OBV is dependent on the point in time that its calculation begins. Of greater importance are the characteristics of the OBV line, specifically the trend in the OBV line, the relationship of the trend with the trend in price, and potential support and resistance levels. When comparing the OBV line to the trend in price, it is important to use closing prices for the price trend, since closing prices are used in calculating OBV.
Divergences

Divergences, both bullish and bearish, can signal to traders that a trend reversal may be developing. These divergences led Granville to claim that volume precedes price.

A bullish convergence develops when OBV is forming higher highs and higher lows, even though prices are forming lower highs and lower lows or are moving sideways. A bearish divergence forms when OBV moves lower, forming lower lows and lower highs, while prices are moving higher or sideways.

Figure 2 is a daily chart for Target Corp. (TGT) from August through November 2012 that shows a bearish divergence with volume eventually leading prices lower. The blue dotted lines indicate the divergence period. During this time, TGT shares rose from roughly $63.75 to more than $65, achieving higher highs and higher lows, as OBV moved lower, marking lower highs and lower lows. Additionally, in late August, OBV broke below its support. It was the break below this level that marked the reversal in the OBV uptrend, but TGT’s price continued to rise for the next few weeks. Eventually, volume won out and TGT shares reversed course in late September, ultimately bottoming out below $61.

Figure 3 illustrates a bullish convergence for Impax Laboratories (IPXL) that took place between June and July 2012. During this time, IPXL shares moved below their late-June low, eventually bottoming out around $19.50. Beginning in early July, however, OBV was steadily rising. Once again, volume was leading price. IPXL shares broke out in late July and rose to $27 over the next couple of months.

Conclusion

Practitioners of technical analysis need to be aware of the importance of volume when performing their analysis. It serves to confirm the validity of a trend and, as we have shown with the on-balance volume indicator, can provide an early warning of potential changes in the current price trend. 

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