How to know the rate of change

Rate of Change (ROC)

Fact checked by
HANS DANIEL JASPERSON

What is Rate of Change (ROC)

The rate of change (ROC) is the speed at which a variable changes over a specific period of time. ROC is often used when speaking about momentum, and it can generally be expressed as a ratio between a change in one variable relative to a corresponding change in another; graphically, the rate of change is represented by the slope of a line. The ROC is often illustrated by the Greek letter delta.

Understanding Rate of Change (ROC)

Rate of change is used to mathematically describe the percentage change in value over a defined period of time, and it represents the momentum of a variable. The calculation for ROC is simple in that it takes the current value of a stock or index and divides it by the value from an earlier period. Subtract one and multiply the resulting number by 100 to give it a percentage representation.

ROC = (\frac{\text{current value}}{\text{previous value}} - 1)*100*ROC*=(previous valuecurrent value−1)∗100

The Importance of Measuring Rate of Change

Rate of change is an extremely important financial concept because it allows investors to spot security momentum and other trends. For example, a security with high momentum, or one that has a positive ROC, normally outperforms the market in the short term. Conversely, a security that has a ROC that falls below its moving average, or one that has a low or negative ROC is likely to decline in value and can be seen as a sell signal to investors.

Rate of change is also a good indicator of market bubbles. Even though momentum is good and traders look for securities with a positive ROC, if a broad-market ETF, index, or mutual fund has a sharp increase in its ROC in the short term, it may be a sign that the market is unsustainable. If the ROC of an index or other broad-market security is over 50%, investors should be wary of a bubble.

Rate of Change and Its Relationship With Price

The rate of change is most often used to measure the change in a security's price over time. This is also known as the price rate of change (ROC). The price rate of change can be derived by taking the price of a security at time B minus the price of the same security at time A and dividing that result by the price at time A.

\begin{aligned} &\text{Price ROC} = \frac{B - A}{A} \times 100 \\ &\textbf{where:}\\ &B=\text{price at current time}\\ &A=\text{price at previous time}\\ \end{aligned}

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