

Technical Indicators

1. Moving Averages

MA7 (7-day Moving Average)

$$MA7 = \frac{P_1 + P_2 + \dots + P_7}{7} \quad (1)$$

where P is the price on each day.

MA20 (20-day Moving Average)

$$MA20 = \frac{P_1 + P_2 + \dots + P_{20}}{20} \quad (2)$$

2. MACD (Moving Average Convergence Divergence)

$$MACD = EMA_{12} - EMA_{26} \quad (3)$$

where a signal line is often plotted as a 9-day EMA of MACD.

3. Volatility Measure

20SD (20-day Standard Deviation)

The standard deviation of prices over a 20-day window shows how far prices deviate from the average (MA20) over time.

4. Bollinger Bands

Upper Band

$$Upper\ Band = MA20 + (2 \times 20SD) \quad (4)$$

Lower Band

$$Lower\ Band = MA20 - (2 \times 20SD) \quad (5)$$

5. Exponential Moving Average (EMA)

$$EMA_{today} = (Price_{today} \times Multiplier) + (EMA_{yesterday} \times (1 - Multiplier)) \quad (6)$$

where

$$Multiplier = \frac{2}{Days + 1} \quad (7)$$

6. Log Momentum

$$Log\ Momentum = \log \left(\frac{Price_t}{Price_{t-n}} \right) \quad (8)$$

where t is the current time, and $t - n$ is the look-back period.