

Technical Analysis

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- Collective market sentiment, buying or selling assets
- Assumption
 - Market prices reflect both **rational** and **irrational** behaviour
 - Prices are determined by interaction of **supply and demand**
 - Efficient market hypothesis (EMH) **does not** hold
 - **Historical** information can affect the current analysis
 - Market trend and patterns repeat themselves and are somewhat predictable
- Factors: price, volume
- Identify **trends** and **patterns** that tend to repeat and used for forecasting prices
- Fundamental analysis
 - Use intrinsic value of asset
 - Use financial information
- Advantage
 - Prices are **observation**. Fundamental analysis relies on assumptions
 - Can be applied to assets have **no** future **cash flow** (commodities)
 - When financial statements are **fraud**
- Limitations
 - Prices and volumes might not **truly** reflect supply and demand
 - Illiquid markets and subject to outside manipulation

Charts

- Line chart
 - **Closing** prices
- Bar chart (high, low, open, close)
 - **High** and **low** prices
 - Closing prices indicated as a point or dash on the right side of the line
- Candlestick charts
 - A box bounded by the **opening and closing** prices
 - **Filled** box if the close price is lower than the opening price
- Point and figure charts
 - Identify changes in the direction of price movements
- Volume chart

Trend 趋势

- Trend
 - Uptrend: price increase
 - Downtrend: price decrease
- Trendline
 - Uptrend: connect the **increasing lows**
 - Downtrend: connect the **decreasing highs**
- Breakdown and breakout
 - breakdown: break an uptrend
 - Breakout: break a downtrend
- Level

- Support level: Buying prevents further prices decrease
- Resistance level: selling prevents further prices increase
- Change of polarity
 - A breached resistance level become a support level
 - A breached support level become resistance level

Reversal Pattern 反转模式

- A trend approaches a range of prices but fails to continue beyond that range
- Reversal Uptrend 价格难以上涨，之后会跌
 - Head-and-shoulders
 - Similar to W
 - The top is the head, the bottom is the neckline.
 - If head is 80, neckline is 55, the size of the pattern is $80-55=25$, price target is $55-25=30$
 - Double top and triple top
 - Weakening buy pressure
- Reversal Downtrend 价格难以下跌，之后会上涨
 - Inverse head-and-shoulders, double bottom, triple bottom

Continuation Pattern 持续模式

- A **pause** in a trend rather than a reversal
- Triangles
 - Prices reach lower highs and higher lows over a period of time
 - symmetric (**higher lows** and **lower highs**)
 - Ascending (**higher lows** and a **resistance** level)
 - Descending (**lower highs** and a **support** level)
- Rectangles
 - Trading forms a range between a **support** level and a **resistance** level
- Flags: rectangles appear on short-term price charts
- Pennants: triangles appear on short-term price charts

Indicators 指标

- **Price-based**
 - **Moving average lines 平滑指数**
 - Smooth price, 20-day and 250-day
 - Uptrend: moving average less than price
 - Downtrend: moving average larger than price
 - Short-term and long-term cross
 - Short-term above: buy
 - Short-term blow: sell
 - **Cross**
 - Gold cross: short-term MA cross from underneath a long-term MA
 - Dead cross: short-term MA cross from the above a long-term MA
 - **Bollinger bands**
 - Standard deviation (usually **2**) of closing prices
 - High and low bands above and below the n-period moving average

- Prices close to high band: **overbought** -> sell
 - Price close to lower band: **oversold** -> buy
 - **Contrarian** strategy: buy when most are selling
- **Momentum Oscillators 趋势**
 - Identify overbought or oversold markets
 - Usually between zero (**oversold**) and 100 (high means **overbought**)
 - Identify **convergence** or **divergence** of the oscillator and market prices
 - **Rate of Change (ROC) 与 n 天前比较**
 - $100 * (\text{latest closing price} - \text{closing price } n \text{ periods earlier}) - \text{around zero}$
 - $100 * \text{current price/past price} - \text{around } 100$
 - **Relative Strength Index (RSI)**
 - $RS = \text{Total price increases} / \text{total price decreases}$ 上升/下降
 - $RSI = 100 - \frac{100}{1+RS}$
 - **Moving Average Convergence/Divergence (MACD)**
 - Exponentially smoothed moving average 指数平滑
 - **Stochastic oscillator**
 - Latest closing price and **highest** and **lowest** prices reached in a recent period (i.e., 14 days)
 - %K line (current – low) / (high – low)
 - %D line: 3-period average of %K line
- **Sentiment 情感**
 - **Opinion polls**
 - **put/call ratio**
 - put volume / call volume
 - **Volatility Index (VIX)**
 - Chicago Board Options Exchange
 - Fear index
 - **Margin Debt (higher better)**
 - Amount of margin debt is readily available
 - High -> will buy-> price will increase
 - Low -> cannot buy -> price will decrease
 - **Short Interest Ratio 空头**
 - Short interest # short (sold short)
 - Short interest ratio = short interest / average daily trading volume
 - Increase in short-term indicate strong **negative** sentiment
- **Flow of funds 资本流动**
 - Arms index or short-term trading index (TRIN)
 - 平均下降量 (下降总量/下降家数) / 平均上升量
 - Funds flowing into advancing and declining stocks
 - Margin debt
 - Increase -> want to buy
 - Mutual fund cash position
 - Down market -> keep more cash
 - New equity issuance and secondary offerings

Cycle Theory 周期理论

- Presidential 4-year
- Decennial pattern: 10-year
- Kondratieff wave: 54-year
- Elliott wave theory
 - Up wave: 5 up and 3 down
 - Down wave: 5 down and 3 up
 - Waves correspond to Fibonacci ratios