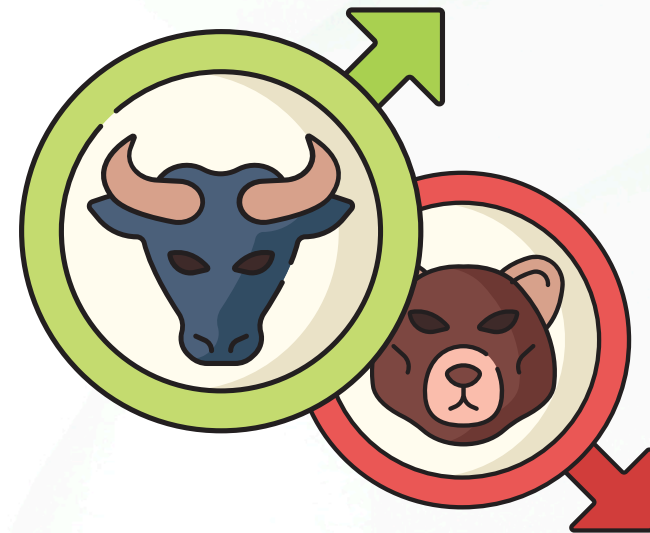NUS
INVESTMENT
SOCIETY

RELATIVE STRENGTH INDEX

INTRODUCTION TO STOCHASTICS

INTRODUCTION

DEFINITION

- The Relative Strength Index (RSI) is defined as calculating using the mean changes in closing prices for a certain period.

- The indicator provides bullish and bearish signals by evaluating overvalued and undervalued conditions.

QUICK INTERPRETATION

- Generally, RSI levels **below 30** are considered low, suggesting that the underlying security is undervalued. This forms a **Buy** signal.

- On the flipside, RSI levels **above 70** are considered high, suggesting that the underlying security is overvalued. This forms a **Sell** signal.

BASIC CASE STUDY

iShares Russell 2000 ETF (IWM) consists of small-cap stocks in the United States, a great opportunity for investors to gain diversified exposure to approximately 2000 small-cap stocks

IN-DEPTH ANALYSIS

MATHEMATICAL DERIVATIONS

$$RSI = 100 - \left[\frac{100}{1 + \dfrac{n_{up}}{n_{down}}}\right]$$

where:
n_{up} = average of n-day up closes
n_{down} = average of n-day down closes
(most analysts use 9 - 15 day RSI)

n_{up} IS DERIVED BY THE AVERAGE POINT GAIN OF ALL GREEN DAYS IN THE LAST 14 PERIODS.
n_{down} IS DERIVED BY THE AVERAGE POINT LOSS OF ALL RED DAYS IN THE LAST 14 PERIODS.

The default setting of the RSI indicator uses 14 periods for calculations.

Using the formula, the period length determines the volatility of RSI with respect to price changes.

INDICATOR PARAMETERS

Period Length

- **Changes the average point change during volatile market conditions**
- **Lower period lengths cause RSI values to reach extremes more frequently. As a result, the RSI may appear unstable and violently choppy.**

Indicator parameters can be adjusted to cater for different trading strategies, but the 14-period RSI is the best gauge for intermediate market analysis.

ADVANCED CASE STUDY

DIVERGENCE STRATEGY

A Divergence is defined as the discrepancy between the price movement of an asset and a momentum indicator (RSI).

Divergences warn investors that a trend is <u>weakening</u>, signalling a potential <u>trend reversal</u>. Divergences can last for a long time, therefore a divergence signal alone may not mean that price will reverse immediately.

Let's dive into a chart analysis to illustrate this strategy.

The underlying security in review is Johnson & Johnson (JNJ), a focused healthcare company listed on the New York Stock Exchange (NYSE)

EXPLANATION

A divergence can be spotted by observing the price structure of the underlying asset.

JNJ's share price forms a lower low in December 2021 and the RSI indicator forms a higher low, forming a positive divergence.

To support the bullish reversal signal, a breakaway gap-up is observed a few days after the divergence formed, confirming a trend reversal.

CONCLUSION

LIMITATIONS

Divergences act as more reliable reversal signals when there is confluence with overall market conditions

- The RSI works best in **range-bound** markets where an asset is lacking momentum in either direction

- **Catalysts** to support reversal signals
  - Breakaway gaps
  - Earnings announcements
  - FDA/CDC approvals