
# Predictive Relationship: Triple Exponential Average

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# 1 Trading Strategy Description

The triple exponential average, known more commonly as the TRIX is a momentum indicator that is meant to filter out insignificant and unimportant price movements. Many consider it to be similar to the Moving Average Convergence/Divergence (MACD) indicator. The only difference is that the TRIX indicator provides outputs that are smoother due to triple smoothing of the exponential moving averages used to create the indicator. It is an indicator that is usually used for identifying overbought and oversold market conditions.

# 2 How to Trade

In order to trade with the rules InferTrade provides, we calculate allocations for each day. We then allocate that fraction of our total portfolio value (cash and securities) to the market we are trading - to do this we buy or sell securities to reach the target allocation.

### How Allocation Determines Trade Size

The allocation is the fractional amount of the portfolios value used to determine the size of the trading position. For example, if the allocation for Microsoft (MSFT) shares is 50%, and we have $100, we invest $50 so that the value of held stock is the same as the value of held cash.

### Rule Specific Trading Details

The strategy is to identify the oversold and overbought markets and a momentum indicator.
Bullish Momentum: when the TRIX is above zero.
Bearish Momentum: when the TRIX is below zero.

# 3 Rule Parameters

Below is a table summarizing the parameters specific to this trading rule.

| Parameter Name | Default Value | Description | Symbol |
|---|---|---|---|
| Window size for Exponential moving average of series i, i $\in \{1, 2, 3\}$ | 14 | This is the number of time steps over which exponential contributions are sourced. | $L_i$ |
| Smoothing Factor for Exponential moving average of series i, i $\in \{1, 2, 3\}$ | 2 | Smoothing factor represents the weighting applied to the most recent period's value. | $S_i$ |

# 4 Equation

$$EMA_t^1 = \left(V_t * \left(\frac{S_1}{1+L_1}\right)\right) + EMA_{t-1} * \left(1 - \frac{S_1}{1+L_1}\right) \tag{1}$$

$$EMA_t^2 = \left(EMA_t^1 * \left(\frac{S_2}{1+L_2}\right)\right) + EMA_{t-1}^1 * \left(1 - \frac{S_2}{1+L_2}\right) \tag{2}$$

$$EMA_t^3 = \left(EMA_t^2 * \left(\frac{S_3}{1+L_3}\right)\right) + EMA_{t-1}^2 * \left(1 - \frac{S_3}{1+L_3}\right) \tag{3}$$

$$TRIX_t = \frac{EMA_t^3 - EMA_{t-1}^3}{EMA_{t-1}^3} \tag{4}$$

where:

$TRIX$ is Triple exponentially weighted moving average.

$EMA$ is exponentially weighted moving average.

$V_t$ is current stock value.

$L$ is look back length.

$S$ is the smoothing factor.

# 5 Glossary

- **Bullish:** Positive outlook on the market. Expectation of positive returns.
- **Bearish:** Negative outlook on the market. Expectation of negative returns.
- **Allocation:** The allocation is the fractional amount of the portfolios value used to determine the size of the trading position.
- **Parameter:** Value used by the trading rule in the calculation for trading position
- **Trading Rule:** Strategy to determine when to buy, hold or sell a position.

# Further Links

1. InferTrade: `https://www.infertrade.com`
2. Privacy Policy/Legal notice: `https://www.infertrade.com/privacy-policy`
3. InferStat Ltd: `https://www.inferstat.com`