



**InferTrade**  
PREDICTIVE RESEARCH TOOLS

# Predictive Relationship: Kaufman's Adaptive Moving Average

## Contents

1	Trading Strategy Description	2
2	How to Trade	2
3	Rule Parameters	2
4	Equation	3
5	Glossary	3

# 1 Trading Strategy Description

The Kaufman's Adaptive Moving Average (KAMA), Developed by Perry Kaufman in 1998 is a moving average designed to account for market noise or volatility. The powerful trend-following indicator is based on the Exponential Moving Average (EMA) It closely follows price when noise is low and smooths out the noise when price fluctuates. A bullish crossover is indicated by the fast moving average crossing above the slow moving average. And a bearish crossover is indicated by the fast moving average crossing below the slow moving average.

## 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 Bullish and Bearish Crossovers.

Bullish Crossover: When the fast moving average cross above the slow moving average.

Bearish Crossover: When the fast moving average cross below the slow moving average

## 3 Rule Parameters

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

Parameter Name	Default Value	Description	Symbol
Slow Look Back Length	30	Look back length used to compute slow MA.	$L_s$
Fast Look Back Length	2	Look back length used to compute fast MA.	$L_f$
Number of periods	10	Number of periods used to compute $\sigma$ and $\Delta_t$ .	$n$

## 4 Equation

Below are the equations which govern how this specific trading rule calculates a trading position.

$$\Delta_t = C_t - C_{t-n} \quad (1)$$

$$\sigma = \sum_{t=1}^n |C_t - C_{t-1}| \quad (2)$$

$$ER_t = \frac{\Delta_t}{\sigma} \quad (3)$$

$$SC_t = \left[ ER_t \times \left( \frac{2}{L_f + 1} \right) - \left( \frac{2}{L_s + 1} \right) + \left( \frac{2}{L_s + 1} \right) \right]^2 \quad (4)$$

$$KAMA_t = KAMA_{t-1} + SC_t \times (P_t - KAMA_{t-1}) \quad (5)$$

where:

$C_t$ : is the close price of at time t.

$\Delta_t$ : is the change in close price at time t.

$\sigma$ : is the sum of the absolute value of last  $n$  changes in close price.

$ER_t$ : is the efficiency ratio at time t.

$SC_t$ : is the smoothing constant at time t.

$KAMA_t$ : is the Kaufman's Adaptive Moving Average at time t.

## 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>