The following models are trading strategies categorized as Examples-1-Models.

Model 1:
HYPOTHESIS: If a company efficiently uses its assets (equipment, patents etc.) to generate sales, its stock may outperform the stock of its peers in the future. Denoted by the asset turnover ratio : sales/assets

IMPLEMENTATION: If company A's asset turnover ratio is better than company B's, stock A may outperform stock B. However, directly using the input (sales/assets) may put unusually large long positions (buy) or short positions (sell) on outlier stocks. Rank operator removes the vast variation of input values by ranking the input and returning float numbers equally distributed between 0 and 1.

IMPROVEMENT: Find and simulate more fundamental ratios that are factors in determining a company's performance and financial health.

Datafields: sales, assets

Operators: rank

Expression:
rank(sales / assets)

Model 2:
HYPOTHESIS: If the stock price of a company has increased over the last 2 days, it may decrease in the future (time series delta of closing price today and closing price 2 days ago).

IMPLEMENTATION: If company A's stock price had increased twice as much as the stock price of another company B, the prices of both stocks may decrease in the future. In this reversion example, stock A may not fall double stock B, though it may fall more than stock B (rank operator).

IMPROVEMENT: Can different neutralizations and decay settings improve this signal? Under what neutralization would a reversion idea work best?

Datafields: close

Operators: rank, ts_delta

Expression:
rank(-ts_delta(close, 2))

Model 3:
HYPOTHESIS: If today's stock price is higher than the geometric mean price of the week [time series product of price over 5 days raised to power (1/5)], then the stock price may fall in the future.

IMPLEMENTATION: Directly using the input (close-ts_product(close,5)^0.2) may put unusually large long positions (buy) or short positions (sell) on outlier stocks. Rank operator removes the vast variation of input values by ranking the input and returning float numbers equally distributed between 0 and 1.

IMPROVEMENT: How do you handle outlier values? Under what neutralization would a reversion idea work best?

Datafields: close

Operators: ts_product

Expression:
ts_product(close, 5) ^ 0.2 - close

Model 4:
HYPOTHESIS: If a company ranks high in earnings-to-price ratio, compared to its competitors in the subindustry (e.g. airlines, footwear), then the company is undervalued today and its price may increase in the future.

IMPLEMENTATION: [eps/close] denotes how much an investor earns for every dollar he invests to buy the company [close price].

IMPROVEMENT: Can the same idea be written in another way to improve the alpha? Find and simulate more such fundamental ratios that are factors in determining a company's performance and financial health.

Datafields: eps, close, subindustry

Operators: group_rank

Expression:
group_rank(eps / close, subindustry)

Model 5:
HYPOTHESIS: Stocks that give high returns today could give low returns tomorrow (-returns) : This occurrence is known as reversion.

IMPLEMENTATION: Reversion is observed more profoundly in stocks showing high volume trading activity or high 'volatility' in stock returns. Thus use the above logic only when the number of stocks traded today is higher than the monthly average [trade_when(volume>adv20]

IMPROVEMENT: Can more favorable conditions for reversion under the trade_when operator improve the raw idea?

Datafields: volume, adv20, returns

Operators: rank, trade_when

Expression:
rank(trade_when(volume > adv20, -returns, -1))

Model 6:
HYPOTHESIS: If the stock is currently trading above the predicted value from the regression, sell the stock and vice versa.

IMPLEMENTATION: For 120 days, calculate the regression between two variables: Returns of one day vs returns of previous day. Ts_regression operator returns the residual error of regression (y-ŷ) when you do not input a rettype (by default return type of the operator is 0 and outputs residual error of regression).

IMPROVEMENT: Given that this is a reversion idea, can you devise some conditions under trade_when operator to reduce the turnover of the signal?

Datafields: returns

Operators: ts_regression, ts_delay

Expression:
-ts_regression(returns, ts_delay(returns, 1), 120)

Model 7:
HYPOTHESIS: If the stock price of a company has increased over the last 2 days, it may decrease in the future.

IMPLEMENTATION: Reversion is observed more profoundly in stocks showing high volume trading activity or high volatility in stock returns. Multiplying by rank(volume/average volume over the last 30 days) puts more long/short (buy/sell) positions on stocks having higher volume today compared to the last 30 days.

IMPROVEMENT: How would you increase returns? Is there a better way to use rank?

Datafields: close, volume

Operators: rank, ts_delta, ts_sum

Expression:
-rank(ts_delta(close,2)) * rank(volume / ts_sum(volume, 30) / 30)

Model 8:
HYPOTHESIS: If the stock price from 2 days ago is higher than the predicted price today, then the price of stock in future could be lower than today's actual price.

IMPLEMENTATION: Companies ranked based on difference between [closing price from 2 days ago] and [predicted price based on regression of close and vwap for 60 trading days]

IMPROVEMENT: Can different alpha settings improve this alpha? Can different regression durations for predicting close price improve the alpha?

Datafields: close, vwap

Operators: rank, ts_deay, ts_regression

Expression:
rank(ts_delay(close, 2) - ts_regression(close, vwap, 60, lag=0, rettype=3))

Model 9:
HYPOTHESIS: If the price [close] of a stock has fallen [sign of difference of closing price today and yesterday] every day for 4 days, do nothing [0], as the stock may continue to have excessive selling pressure. Otherwise, apply the reversion signal: If the stock price of a company has increased over the last 2 days, it may decrease in the future. [time series delta of closing price today and close pricing 2 days ago]

IMPLEMENTATION: In this reversion example, if company A's stock price has increased twice as much as the stock price of company B, the prices of both stocks may decrease in the future. But the price of A may not fall twice as much as the price of B, though it may fall more than B [rank operator].

IMPROVEMENT: Can different neutralizations and decay settings improve this signal? Under what neutralization would a reversion idea work best?

Datafields: close

Operators: ts_sum, sign, ts_delta, rank

Expression:
ts_sum(sign(ts_delta(close, 1)), 4) == -4 ? 0 : rank(-ts_delta(close, 2))

Model 10:
HYPOTHESIS: If the stock price of a company has increased over the last 2 days, it may decrease in the future. Also if the number of stocks bought and sold today is higher than the monthly average, then the reversion may be twice as strong.

IMPLEMENTATION: In this reversion example, because rank outputs values between 0 and 1, multiplying it with a number >1 can put more long/short (buy/sell) positions on stocks satisfying the condition.

IMPROVEMENT: Can different neutralizations and decay settings improve this signal? Under what neutralization would a reversion idea work best?

Datafields: volume, adv20, close

Operators: rank, ts_delta

Expression:
volume > adv20 ? 2 * rank(-ts_delta(close, 2)) : rank(-ts_delta(close, 2))

Model 11:
HYPOTHESIS: If the stock price of a company has increased over the last 2 days, it may decrease in the future. Also if today's price is more than the average price last month, the reversion signal may be stronger.

IMPLEMENTATION: Because rank outputs values between 0 and 1, multiplying it with a number >1 can put more long/short (buy/sell) positions on stocks satisfying the condition in this reversion example.

IMPROVEMENT: Can different alpha settings improve this alpha? Can different durations for comparing with average price improve the alpha?

Datafields: close

Operators: ts_sum, rank, ts_delta

Expression:
close>ts_sum(close, 20) / 20 ? 1.5 * rank(-ts_delta(close, 2)) : rank(-ts_delta(close, 2))

Model 12:
HYPOTHESIS: If a stock closes below its open price more often in the last month compared to the last year, there could be a reversal in the stock price and it may increase in the short term.

IMPLEMENTATION: Buy more stocks for which such days occur more often (ts_sum) in the last month (20 days), compared to the last year (250 days).

IMPROVEMENT: Can introducing the intensity of daily stock fluctuations of price instability improve the alpha?

Datafields: open, close

Operators: ts_sum, rank

Expression:
a = ts_sum(open > close, 20) / ts_sum(open < close, 20);
b = ts_sum(open > close, 250) / ts_sum(open < close, 250);
rank(a / b)

Model 13:
HYPOTHESIS: If a stock closes below its open price more often in the last month compared to the last year, there could be a reversal in the stock price and it may increase in the short term. However, if the daily stock price instability was greater, there was comparatively more activity in the stock and it might be oversold, thus you can buy this stock.

IMPLEMENTATION: Bar denotes stability. The larger the bar, the less the price fluctuations in a day. a and b check if the price increases or decreases and if fluctuations in the last month are more than in the last year.

IMPROVEMENT: Can implementing technical indicators improve the alpha?

Datafields: open, close, high, low

Operators: ts_sum, rank

Expression:
bar = (open - close) / (high - low);
a = ts_sum((open > close) * bar, 20) / ts_sum((open < close) * (-bar), 20);
b = ts_sum((open > close) * bar, 250) / ts_sum((open < close) * (-bar), 250);
rank(a/b)