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1 Dynamic Strategy description

Compared to the basic static strategy, our approach here only uses data from the previous day, which means it does not rely on any future information. The steps of our strategy are as follows:

1. As an example, we set the trading period to be 10 days. However, we have the flexibility to adjust the investment frequency (e.g., daily, half-monthly, monthly, etc.) in reality.

2. For each stock i with a lasting period of less than 100 days, we calculate the return for a specific period of D/10 days, where D is the lasting period. We then calculate the average return m_i and standard deviation s_i for each stock.

3. We calculate the optimal leverage for each stock based on the Kelly criterion formula, which is given by $f_i = (m_i - R_f)/s_i^2$, where R_f is the risk-free rate of return (set to 0 in this case).

4. We allocate the money to each stock based on the percentage $f_i/\sum f_i$. During transactions, we will set f_i to 0 under two conditions: 1) if $f_i < 0$, indicating a negative excess return, we will not invest, and 2) if the stock does not exist after 10 days, we will not invest.

5. Suppose we have \$1,000,000. We start investing on the 10th day (based on the previous information) and reallocate the money pool every 10 days while running the strategies.

Here is an example of how our strategy runs in the first 100 days:

1. We invest \$1,000,000 on the 10th day, since we already have 10 days of stock price information. We calculate the average return m_i, standard deviation s_i, and optimal leverage f_i based on the period of 1 day. (Note that the Kelly f_i is independent of the time scale.)

2. We reallocate money on the 20th day, and the calculating period is 2 days.

3. Similar until the 100th days.

4. If the days are larger than 100 days, we will set the calculating period to be only 10 days.

2 Results

Invest \$1,000,000 at the first day.

1)trading period=10; $f_i = 0$ if $f_i < 0$ or stock delisted after trading period ; the final cash amount is 2,580,388.38;

2)trading period=10; $f_i = 0$ if $f_i < 1$ or stock delisted after trading period ; the final cash amount is 2,513,139.33;

3)trading period=5; $f_i = 0$ if $f_i < 0$ or stock delisted after trading period ; the final cash amount is 2,574,512.04;

4)trading period=5; $f_i = 1$ if $f_i < 1$ or stock delisted after trading period ; the final cash amount is 2,493,074.90;

3 Analysis

1)In this dynamic strategy, the threshold of f_i is no longer sensitive. In fact, I also tested the threshold at 2, and the final cash amount still remains around 2,500,000.

2)When compared to the static strategy, we do not rely on any future information, resulting in a lower final return.