

1. Verify the efficient market hypothesis (semi - strong form).

According to this hypothesis, the stock price already contains all the information publicly, so naturally when a new information is released, the market should be immediately react to this new information, the price should be adjusted in place, we should not be able to see prices slow and orderly adjustment, but you should see a one-off jump in place (or it will leave arbitrage opportunities). That's why you shouldn't buy stock when you see good news about a company in the newspaper. This property gives us an opportunity to test the efficient market hypothesis.

In fact, public companies release financial reports every quarter, so the cumulative increase from five trading days before the announcement (marked -5) to one trading day after the announcement (marked 1) should already reflect all the information in this quarterly report. 5 days before the announcement because there may have been information leaked began to affect the market, the day after the announcement because the general announcement is announced at the end of the day after the trading. If the cumulative returns over seven trading days (-5, 1) fully reflect the new announcement, we should not see systematic price changes over the next five, 10, 15, and 20 trading days. For example, if we divide all a-shares into 10 groups based on the cumulative gains in trading days before and after the first quarter of 2018 (-5, -1), then if we calculate the cumulative returns over the next (2, 6), (2, 11), (2, 16), (2, 21) trading days, the 10 groups should see no difference. It should be noted here that different companies release quarterly reports at different times, so it is necessary to adjust the impact of different market gains on the results, such as directly subtracting the return of individual stocks from the return of the market on that day (of course, beta can also be estimated with the previous data and adjusted by using CAPM). We use the China securities 800 index return rate as the market return rate. Please use this experiment to test the efficient market hypothesis.

Please use the actual disclosure time of our financial report to test 12 disclosures in total from 2016 to 2018, calculate the cumulative abnormal return (5,10,15,20 trading days) of each 1-10 group of disclosures, and then calculate the average value of the cumulative abnormal return (5,10,15,20 trading days) of each 12 periods of disclosure, draw a graph, and report your results.

The paper is for reference, if you wish, but please note that the Chinese and American markets are different, so the American conclusions may not necessarily apply to China.

2. You are now a junior researcher at a public fund, and your job is to provide trading ideas to senior researchers. Because you are on the buy side, analysts at the seller's brokerage will send you their latest reports at any time. There's no doubt that you always have hundreds or thousands of research papers on hand, and you don't have time to read them. How to use these brokerage research reports to invest? You come up with a way to standardize the recommendation attitudes of different securities brokers to different stocks, which are sorted out in the attached data "standardized recommendation stock advice" and "standardized recommendation stock advice code". This reflects the recommendation strength of different brokers, for different stocks, in different time periods. This reflects the recommendation strength of different securities firms for different stocks in different

periods of time. According to the recommendation strength, it ranges from strong to weak, including buy, overweight, neutral, underweight, and sell, respectively represented by 1,2,3,4,5 in the code. Based on this collated data, you want to design a trading strategy based on the broker's recommendation information, so that this strategy can generate the monthly return of beating the market (we use the return of the China securities 800 index as the market return). In order to prove the effectiveness of the strategy, the return data of all a-shares from 2006 to 2018 should be used to test. A star analyst is an outstanding analyst who has won an industry award (new wealth best analyst award). A broker can choose to continuously publish the research report about a certain stock or can choose to stop publishing at a certain time. If stop publishing, then the effectiveness of their recommendation for a certain stock should not exceed the next three months. Of course, even if the publication continues, how long the recommendation effect of the last research paper can last is also a variable that can be changed when designing the strategy.

If you can devise such a strategy and explain how it works, the fund manager is likely to adopt it. Then congratulations on your promotion to senior research. If you can't, at least keep a careful record of the rationale and test results of the strategies you've tried. Many sound strategies don't necessarily beat the market. This doesn't mean you're incompetent, it probably means that the overall value of the research is low, or that the market is already efficient. Fund managers can also get a lot of valuable information by looking at these failed attempts. Although the report recording failed attempts cannot make money for fund managers, it can help fund managers avoid mistakes and reduce losses, which is also very valuable.