

AI INVESTMENT IN STOCKS AND CURRENCIES, RELIABLE OR NOT?

(Machine – or computer translated from Chinese with minor proof reading.)

Let me write down some thoughts on my researches and investigations over the past ten years to inspire others:

1. Why Using Artificial Intelligence (AI), Quantitative Investment (QI) and Automated Trading (AT) in Stocks & Currencies?

Many people have a "*book of blood (a record of blood bleeding or great losses in stock trading)*" and tears in the stock and foreign exchange market, and so did I. In addition to blaming information asymmetry and other objective conditions, we should reflect on ourselves and ask ourselves, what causes us to miss the big market and to fail to make money in the bull market, and to jump into the fire pit with our eyes closed, not knowing that danger is around us in the bear market? My experience is that in addition to poor technical skills, psychological factors are also a major reason for failure. Individuals have human weaknesses, such as greed, fear, hesitation, bad luck, worry about gains and losses, etc. Apart from anything else in life, each of us has experienced countless lessons. Many times we have already chosen an answer before answering questions, but it is not the same. Pretty sure, after thinking about it, crossing it out, and choosing another one, it turned out that the one I crossed out was the right one. Answering a question incorrectly is just a deduction of points. Choosing the wrong target in the stock market means losing money. Even if you choose the right target but choose the wrong time to enter the market, you will still lose money, and you will be helping others carry the sedan chair while you're losing money. I feel bitter... This kind of psychological trials come at the cost of money. By the time we think that I have mastered the "*Nine Yin Manual*" and my ability to withstand blows is off the charts, the money has long been gone. Who hasn't experienced the torture of dishwashing? Not to mention retail investors, how many of the big investors can remain calm and quiet when faced with a market washout or a warehouse shakedown? Under the pressure and temptation of greed, fear, hesitation, bad luck, worry about gains and losses, etc., decision-making is likely to deviate from the rational track. The original right idea will be given up at the last moment of "*pulling the trigger*", and you will regret it later after choosing incorrect operation actions consistently.

Over and over again, until I collapse and give up.

Who in the world can "*keep unmoved while mountain Tai is collapsing in front of him*"? At the same time, who can "*sit back and relax*"?

Humans are unreliable, but not machines.

After experiencing several collapses, I "*waved my hand and took away not a single cloud*". Eleven years ago, I bid farewell to the human investment camp with tears and resolutely converted to the machine (human) investment camp.

Before discussing the use of artificial intelligence AI, quantitative investment QI and automated trading AT to manage my stocks, foreign exchange and other scenarios, we might as well clarify these three concepts to avoid any ambiguity.

What Is Artificial Intelligence?

Artificial intelligence has today been elevated to the level of "*those who manipulate artificial intelligence will conquer the world*" and has become the commanding heights of science and technology strategy for major

countries to compete. As for the definition of artificial intelligence, various schools have their own opinions, and it is difficult to say which one is the most correct. Based on my understanding, the essence of artificial intelligence seems to be this:

It is a scientific method and technical means that converts human thinking and decision-making patterns into codes that computers can recognize and execute, so that computers can simulate human thinking and decision-making processes and greatly improve their speed, intensity and accuracy.

A more vivid way of saying it is: humans give intelligence to machines (computer).

What Is Quantitative Investing?

The traditional investment methods in the financial securities market are mainly value investment and trend investment, that is, the method represented by Warren Buffett the God of Stocks, which studies the company's fundamentals, financial statements, policy environment, etc., and relies on experiences and human subjective judgment, to buy and hold for a long time when you think the market price of the company's stock is lower than its deserved value.

Quantitative investment uses mathematics, statistics, information technology and other methods to manage investment portfolios. Represented by Simons the great mathematician, after collecting and analyzing a large amount of data, with the help of the powerful information processing capabilities of computer systems, advanced mathematical models are used to replace human subjective judgments to overcome the impact of investor mood swings and ensure that risks are controlled. to maximize revenue.

What Is Automated Trading?

The so-called automatic trading is to use computers to replace human traders. Based on the trading logic and mathematical models given to the computer by computer programmers, the computer captures investment opportunities in the entire market according to the program and implements them. All trading actions are made based on models, algorithms and logic, which can overcome the weaknesses of human nature, such as greed, fear, bad luck, etc.

It is mentioned here that James Simons the mathematician is a god-like quantitative investment expert. The "Chen-Simons" form of mathematical laws is named after the Chinese mathematician Chen Shengshen and his name. In 2005, Simons became the world's highest-paid hedge fund manager, with a net income of US\$1.5 billion, almost twice that of Soros. Since 1988, his Medallion Fund has achieved an average annual return of 34%. Over the past 15 years, its assets have never diminished.

Simons is great, too great a mathematician, and too tall that he is too far away from me. What really prompted me to convert to the machine (human) investment school was another god-like figure. A Bulgarian programmer, the champion of the 2008 Automated Trading Championship (Forex Programming Automated Trading World Championship, referred to as the ATC Competition, which is the world's highest level Forex Programming Automated Trading Competition), his record is so incredible (a net increase of 16 times in three months times!), no one can break it so far. I also participated in that world competition and truly felt the power of quantitative investment and automated trading. It was also the first time I experienced the power of artificial intelligence ! It was just that at that time, the term "artificial intelligence" was not yet popular. From the few words revealed by the Bulgarian programmer, we learned that the core algorithm of his champion program was based on a then-mysterious word - "**neural network**", which is the foundation and predecessor of today's artificial intelligence AI and machine learning.

Artificial intelligence was still at a low point in 2008, but as soon as the competition ended, I decided to try to learn more about this mysterious "neural network" and learn a little bit. Anyway, from now on, I said goodbye to the human investment camp without looking back. I have joined the robot (human) investment camp with all my might.

2. How Effective Are AI, QI, AT in Stock and Currency Markets?

It has to be said that there are very few actual reports in the media about artificial intelligence, quantitative investment, automated trading and other methods in the stock market and foreign exchange market. There are probably three reasons for this:

a. In the eyes of many people, artificial intelligence is a high-end scientific and technological concept, while stock trading and foreign exchange trading are "low-level fun" for ordinary people and traffickers. They cannot be put on the stage. AI stock trading is really degrading to politeness. Even if someone makes achievements in AI stock trading, they will not be able to publish papers, win awards, or make news headlines. A very famous returnee professor from the School of Life Sciences of Peking University once ridiculed the public in CCTV's youth open class: "People who engage in finance live like pigs"...

b. Well, since you live like a pig, "people are afraid of being famous and pigs are afraid of being strong." Few people who use any means to get rich will take the initiative to show off their wealth. People and forces from all walks of life are eyeing you, and the consequences are difficult to predict. Regardless of China or foreign countries, the principles of "making a fortune silently" and being wise and prudent to protect one's life are the same;

c. The stock market is a zero-sum game arena, where someone wins while someone else loses. The original intention of using AI systems is to "hit humans with robots", just like in "MechaCop", the machine cannons "pop, pop, pop", and the flesh and blood humans fly away. If everyone uses artificial intelligence, quantitative investment, and automatic trading system to come on stage, it will be a war between **transformed Gold Man**, and no one can win, all in vain. Therefore, if anyone in the stock market really has a "mecha army" in his hands, 80% of them will treat it as a secret weapon and keep it secret.

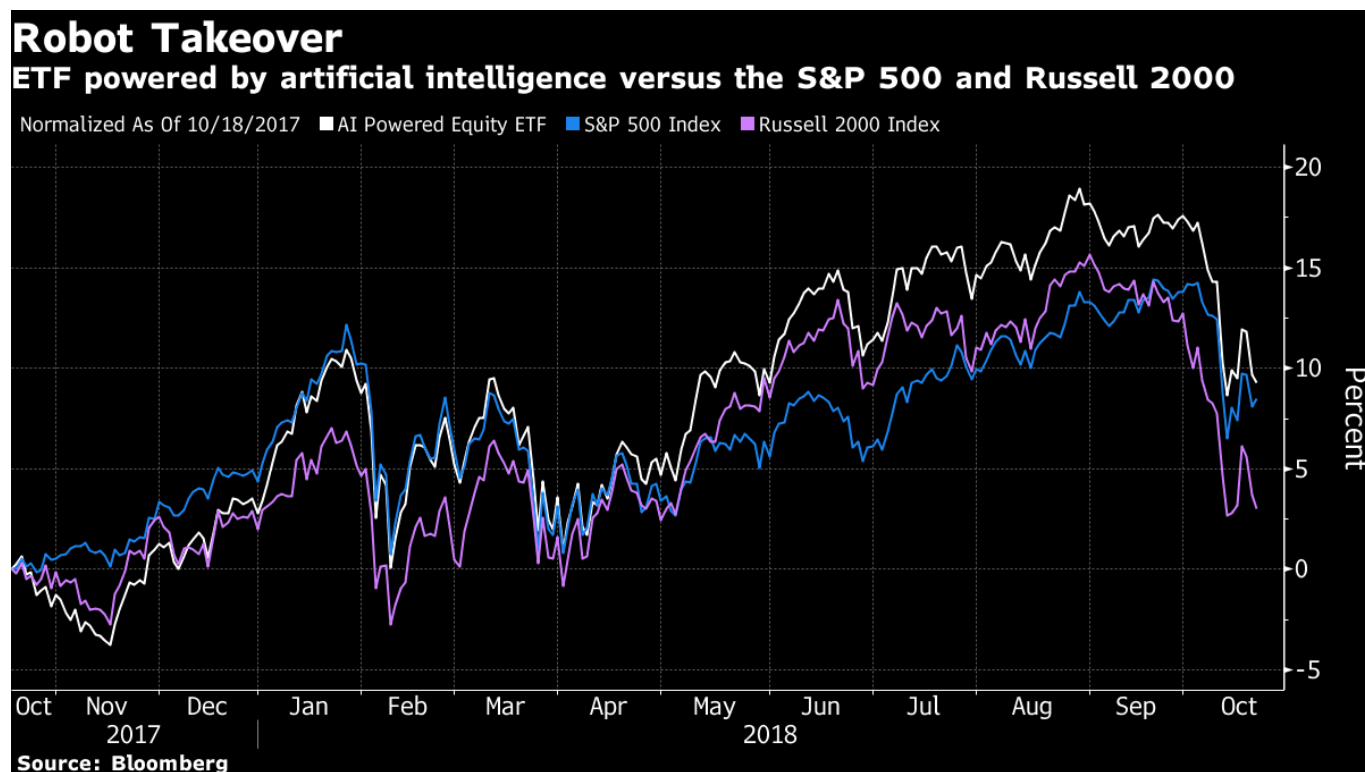
But we can't say it too absolutely. In a low-key industry background, there are still people who stand out and excel over others. There is no way, they are too powerful and cannot hide even if they want to. No matter how low-key a male lion is, there is no way to disguise himself as Hello Kitty. Here we can give three chestnuts:

A. James Simons, mathematician and hedge fund king. From 1989 to 2009, the average annual return rate of the Medallion Fund he led was about 35%; in 2008, the annual income was as high as 2.5 billion US dollars (don't forget what happened this year - the financial crisis), and its performance has been outperforming for a long time big names in the investment world such as Fit and Soros. He is so famous that there is no need to go into detail here. I just want to say that he is a master of quantitative investment with a very high seniority (now retired). In his era, artificial intelligence had not yet emerged. The old man himself is a great mathematician who is unparalleled in the world, and his brain is enough to overwhelm the wisdom of the Zentraedi people. Even so, the Medallion Fund he founded was closed early (in 1993) and was not open to public subscriptions. This means: His quantitative investment strategies and models have never been known to the outside world. People in the world call his model a "black box", and it is the blackest of all black boxes on Wall Street. This confirms what was said before: if you really have a unique skill in the financial market, you must "hide your clumsiness" to avoid embarrassing scenes like Optimus Prime vs. Decepticons or "Six-eared Macaque vs. Monkey King";

B. Time came to 2017. Shortly after "Alpha Dog" killed Li Shidol, an ETF alpha (active) fund led by artificial intelligence turned out. This is AIEQ, which is powered by IBM's WATSON AI platform (i.e. the most advanced artificial intelligence computer system of International Business Machines Corporation, a century-old computer company in Citigroup, serves as hardware support, as well as the "Emperor Ama" of Google (who plays the Go robot "Alpha Dog" that swept the top human players). The artificial intelligence platform is supported by software and has blue blood genes. Almost every investment institution on Wall Street has used artificial intelligence technology, but they are in a cooperative and subordinate position. They dare to clearly mark prices, hold fire, and openly say that they are all dominated by artificial intelligence AI technology in stock selection and investment. Currently, there are only AIEQ and her younger sister AIQ, which was born half a year later, among the funds that humans have stepped aside to play a supporting role. Their working ability is equivalent to: According to their own

statement, they are a thousand analysts, working 24 hours a day, analyzing a total of more than 6,000 stocks in the U.S. stock market, from astronomy to geography, and sweeping them all. Finally, focus on investing in 30 to 70 stocks. The results have just come out:

AIEQ's actual operation one year after its listing: an 11% return, just over the S&P500, significantly better than the Russell 2000 index, overwhelming 87% of active fund managers, and the market value more than doubled from US\$70 million to US\$180 million.



There is no mythical performance, but it is reasonable. Especially the one that "overwhelms 87% of active fund managers", humans are still embarrassed to look down on it.

AIQ has been on the market for too short a period of less than half a year, so it is difficult to evaluate it.

C. Now let's talk about the Bulgarian programmer that I fought against and was defeated, the champion of the 2008 Automated Trading Championship (Forex Programming Automated Trading World Championship, referred to as the ATC Competition, which is the world's highest level Forex Programming Automated Trading Competition) — —Kiril Kartunov (entry code: Liliput).



ATC competition has been held for six times in total. At the end of September of the season, program submissions are due. From the beginning of October to the end of December, during the three-month finals schedule, the contestants compiled a set of programs using a unified computer language and ran them on the same server and standard platform of the competition organizing committee. Once the program was submitted, human intervention is no longer possible. During this period, foreign exchange transactions completely follow the live conditions of the world's foreign exchange market, and the entire buying and selling process is automated. Each contestant's initial capital is US\$10,000 (using virtual currency, of course), and the winner is the one with the highest net worth at the close of the last trading day. The three-month marathon schedule basically eliminates the possibility of opportunistic one-shot deals. Moreover, as the end of the year approaches, the market fluctuates the most and the test is severe. It is under such a marathon competition system that Kiril Kartunov's net worth has increased nearly 16 times! He is truly a man of God! With this record, he took away a bonus of 40,000 US dollars (this bonus is real money!) The record he set (profit of 1590% in three months) has never been broken by anyone, and this year's competition has become the best to date. The highest level so far.

My record was unsatisfactory. At the time of settlement, the profit was only 76%, and the final ranking was 56th in the world. This result ranks third among all Chinese contestants, second among Canadian contestants, and seventh among North American contestants including the United States, Canada, and Mexico. 2,420 programmers from all over the world signed up to participate in the ATC competition that year. In the end, only 705 people passed the pre-screening and entered the finals. Of the 705 players from various countries who entered the finals, only 128 made a profit in the end. In other words, most of them failed to even qualify for the preliminaries. Although many people entered the finals, their programs went out of control after running. .

Want to know how difficult it is to automate trading? Imagine: hundreds of driverless racing cars running non-stop from Suzhou to Hangzhou, from Hangzhou to Guangzhou, from Guangzhou to Guizhou, from Guizhou to Africa... What would that be like? After a journey of thousands of miles, a hundred days of fierce fighting, rain or shine, day and night, only one sixth or seventh of the survivors finally reached the end. Most driverless vehicles stalled, some rolled down ravines, some fell into swamps, some rushed into rivers, some had flat tires and overturned, some hit trees, some got lost, some caught fire, and some exploded. ...Some broke the rules and were caught by the police and had their driver's licenses revoked... Others escaped unscathed and ran towards Borneo in high spirits, but they ended up in Africa, running in the wrong direction.

Not only driverless, but also driverless navigation. All signals must be recognized by the program itself, and all dangers must be avoided by the program itself. Go when the light is green, stop when the light is red, automatically

accelerate on straight roads, automatically brake and slow down when turning, automatically reverse and exit when entering a dead end...

If I want to find some excuse for this less-than-stellar 56th place of record, I can still find it. The rules of the competition stipulate that the source code of the participating programs must be submitted to the organizing committee for review to ensure that there are no viruses, backdoors, or other malicious code. Although such security checks are indeed necessary, they also mean that no confidentiality can be maintained. If this program is really great, some people with ulterior motives may plagiarize it without even realizing it, put it on the market, and create a six-eared macaque that steals the Monkey King's job. So I played a trick and did not enter the competition with a truly good version of the program. Instead, I took a simplified version with many functions deleted to test the waters... Unexpectedly, this greatly reduced simplified version was actually able to compete in 2008. We survived the baptism of the financial crisis (which happened to happen during this competition). Not only did we not lose control, we also made a slight profit (although 128 out of 705 people made a profit, the only one who could make a profit of more than 30% was the 80th person. I can achieve 76%, I am already snickering, I am contented and happy)...

The screenshot shows the 'Participants' page of the Automated Trading Championship 2008. The page is viewed in Internet Explorer. The main table lists participants with columns for Rank, Login, Name, Comments, Country, PF, Balance, Profit, and Equity. Entry #56, VDUX, is highlighted with a red box. The table also includes a 'Filter' button and pagination controls. On the right, there are sections for Sponsors (FXCM, IBFX.com, Interbank, FXDD), Media Sponsor (TRADERS), and Organizer (MetaQuotes). The bottom of the page shows the date 2008年12月28日 and the time 18:21.

#	Login	Name	Comments	Country	PF	Balance	Profit	Equity
46	600662	waldivs	30	Palestinian Territory	1.59	22 771.36	0.00	22 771.36
47	600275	higino	1	Brazil	1.52	22 771.22	0.00	22 771.22
48	600175	dvoshid	3	Japan	1.08	22 374.58	0.00	22 374.58
49	600379	Marlboro	0	Russia	1.92	20 452.64	0.00	20 452.64
50	600360	Lovecraft	2	Russia	2.40	19 772.52	0.00	19 772.52
51	600508	riddvrich	14	Indonesia	1.24	19 742.55	0.00	19 742.55
52	600131	Damian	1	Argentina	0.00	18 890.00	0.00	18 890.00
53	600319	kausti	0	United States	2.20	18 834.86	0.00	18 834.86
54	600281	fttrader	1	Afghanistan	3.66	18 498.00	0.00	18 498.00
55	600609	TheThink	0	Russia	1.73	18 383.57	0.00	18 383.57
56	600641	VDUX	11	Canada	1.15	17 670.39	0.00	17 670.39
57	600061	Antitak	0	Russia	2.87	17 532.00	0.00	17 532.00
58	600414	mork	2	Moldova	1.23	17 328.20	0.00	17 328.20
59	600195	Explorer	1	Russia	1.35	16 844.40	0.00	16 844.40
60	600242	Gauss	3	Slovakia	1.16	16 844.31	0.00	16 844.31

The most unexpected thing is that this competition is now suspended. My only world competition has become its swan song. If I had known this was the case, I would have entered the competition with the best version. Although the Bulgarian master Kiril Kartunov is too powerful and cannot be matched by me, it is not completely impossible to enter the top ten (the #56 VDUX was my entry code that year, and the simplified version's highest ranking was No. 37)...

Through the above three examples, we seem to be able to draw a conclusion: AI stock trading or artificial intelligence automatic foreign exchange trading (the data structures of the stock market and the foreign exchange

market are the same, the trading principles are very similar, and most program modules can be transplanted and universal) are not completely unreliable. Those masters really have some secret weapons, and the actual combat effects are indeed outstanding. However, under the thrones of these masters, there are piles of bones and corpses everywhere... In the fight for real money and silver, most of the losers are losers. It is no wonder that they do not understand "black box operations" such as artificial intelligence, quantitative investment, and automated trading. Principle people will be very frightened and stay away from it.

3. AI + QI + AT =? Is There a Long-Term Stable Profit-Making Mechanism, Model, Or Strategy?

Finding a long-term stable profit-making mechanism, model, or strategy is probably the pursuit of all investors, and it is also the instinct of developers of artificial intelligence, quantitative investment, and automatic trading systems. In a market with ups and downs like a roller coaster, your market capitalization curve is always a straight line rising at a 45° angle, or even an exponential rising curve. What a wonderful feeling is that?

Since quantitative investment has become a major trend in the investment community, while many masters have emerged, controversies have also continued. The most criticized thing is that the vast majority of fund managers performed well one year but fell behind the next year. When the market goes up, the performance looks good, but when the market goes down, the losses are terrible. Many fund research institutions have conducted statistics on whether the performance of active funds can be sustained. I once made a note, and the note said this (source of information):

The data shows that the proportion of funds ranking in the top 50% for two consecutive years (2015~2016) is 26.32%; the proportion of funds ranking in the top 50% for three consecutive years (2014~2016) is 14.71%; for four consecutive years (2013~2016) and the proportions of the top 50% in the five years (2012~2016) were 5.33% and 1.84% respectively. At the same time, if we calculate the probability of ranking in the top 50% for two consecutive years, three years, four years, and five years according to completely random (coin tossing) conditions, they are 25%, 12.5%, 6.25%, and 3.13% respectively. There is not much difference between the actual ranking and the coin toss ranking. Judging from the performance of the top ten funds in the past year to the second year, performance declines often occur. For example, among the top ten funds in 2010, 7 fell to the bottom half level in 2011; for example, the top ten in 2012: 4 Only ranked bottom 1/10 in 2013. This shows that the top ten funds of the year have little relationship with the income performance of the second year, and the performance of the top ten funds is closely related to the market style of that year. If there is a sudden change in the style, it will directly affect the fund performance.

Such ups and downs in performance not only reflect the dangers of the investment market, but also reflect how valuable it would be if there were a long-term stable profit-making mechanism, model, or strategy: it would be tantamount to treating the almost "metaphysical" investment, The elusive "small universe" has become a traceable "routine" that can be followed and the rules can be summarized!

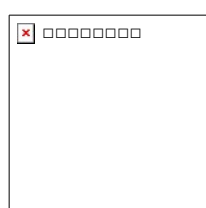
Is this completely impossible...?

Think about it: Is there a system in the world where the input fluctuates greatly and the output is balanced and stable?

There is still such a system in the cars we ride in every day: suspension and shock absorber systems. The more high-end cars are, the more advanced suspension and shock absorbing systems they are equipped with, allowing passengers to feel as if they are on smooth ground even on bumpy and washboard-like roads. This is a mechanical system. If you think of it as a "Black box", commonly known as "stabilizer", its function is to handle large fluctuations in input and obtain a balanced and stable result at the output end.

The most advanced stabilizer systems are not only used in high-end cars to make officials and wealthy people feel comfortable, but they are also used to kill people.

The advanced tanks of China, Russia, the United States and other armies can always point their muzzles directly at the target on the bumpy battlefield. What works is the advanced fire control system, and the basis of the advanced fire control system is the advanced suspension and shock absorber system. With the built-in stabilizer, the level of mechanical performance can basically be achieved through software simulation. Change the scene, from the killing battlefield to the stock and the foreign exchange market (in fact, these two are not killing battlefields?), the software siege lions can always find inspiration by racking their brains and learn from the mechanical siege lions. A masterpiece, to develop various models and systems that generate relatively stable returns in the ups and downs of the roller coaster market. Of course, these two stabilizers are not the same thing, but just like birds and airplanes are not the same thing, this does not prevent aviation pioneers from learning from the flying movements of birds, finding inspiration, developing various spacecrafts, and ultimately invented and created modern aircraft, the reason is the same.



animated cover

Source: Russia Today

Comparing autonomous driving and automated trading is somewhat controversial. Logically speaking, driving is of course much easier than investing, but the context here is "teaching humans to drive", which is easier, but teaching machines to drive is not necessarily the case. On the contrary, teaching a machine to drive is quite difficult. How difficult is it? You can search by yourself. Let me give you an analogy: This is equivalent to asking your friend to cover his/her eyes and plug his/her ears. You sit next to him /her and give orders. Try it. Is it easy? Why is this a metaphor? Because artificial intelligence autonomous driving is about rebuilding the connection and perception system between the robot's vision, hearing and other sensing systems and the brain, this road is still quite long.

What's more, human lives are at stake, and a car accident involving an autonomous driving vehicle is intolerable. But today, in such a rough stage of AI self-driving, there are various big guys live broadcasting themselves sitting in an AI self-driving car without fear, taking off the steering wheel with both hands, and challenging the traffic police. What kind of fearless revolution is this? Spiritual?



Video source

In contrast, if automatic trading goes wrong, the worst result is losing money. Under the stop-loss mechanism, the degree of loss is controllable, but it has become a scourge that everyone avoids. Is money more important than life? This contrast is very interesting.

In fact, investment losses are tolerable and even necessary. It is the price that a long-term stable profit model has to pay to produce stable output. As long as a reasonable stop loss is set, funds are managed properly, and the strategy is effective, the market capitalization curve can be a continuously rising polyline. Even if it is only an angle of 5° , it can be said to be stable and profitable.