The New Law of International Investment with Physical Potential Economic Model

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Abstract. Physical potential economic model is to use the physical motion phenomenon in the nature as the physical model of financial market. It deeply reveals the natural motion property in the world economy, it applies the physical scientific achievements to the financial sector, obtains a good academic support for the quantitative analysis, and also provides a quantitative basis to make business investment decisions and formulate national policies. Physical potential economic model first proposes the financial investment potential, argues that the pursuit of potential energy maximum is the decision target of financial investments, and thus creates a potential investment concept based on multi-factor analysis; potential investment also integrates with securities, futures, exchange rates and other different types of financial data into one for comprehensive analysis. It makes all the previous analysis concept absorption and utilization information fold increase, and thus judges all previous ambiguous and unclear phenomenon.

Preliminary Design of Physical Potential Economic Model

General Motion Law Simulation of the Financial Markets Motion Simulation

With the motion of nature, various objects are in motion, all kinds of motions are different, but there are many similarities in the overall law: The nature has ebbs and flows, the financial markets are also up and down, this cycle of extremes meet law exists everywhere. Law of interaction between various objects in nature often appears in the financial market. There is inertia in the moving object. Because of inertia, it is difficult to start the static objects, it is also difficult to stop the moving objects, and this law is often shown in the financial market. Therefore, there is reason or possibility to take some natural physical motion law as a model, in order to make a preliminary study of establishment of single-factor model and multi-factor composite model.

Establishment of Single-Factor Mode. Single-factor model is the most basic model. Just as many phenomena in nature having similar common motion law, the financial market also has similar laws of motion, and single-factor model is thus adopted, as shown below:

As shown in Figure 1, single-factor operation model studies the individual financial instrument, and it might be a stock, or a bond, or an exchange rate pair.¹* Single instrument operation itself has a certain inertia, so this paper uses mass block for simulation; due to the fluctuation of single instrument operation, this paper simulates with a spring; since the single instrument moves in a background of local macroeconomic environment, this paper simulates with a floor slab; since this instrument moves on a time axis, this paper simulates with a sliding car. Therefore, basic single instrument model is established.

In Figure 1, the weight block is similar to the mass in physics, which is equivalent to a financial
instrument. It might be a stock index, or a stock, or a currency, or a commodity future. Owing to motion motion characteristics and inertia property, it shows motion and motion prevention forces, and thus the motion of such financial instrument may be simulated by weight block. F1 is the downward motion force, F2 is the upper motion force, and this force is simulated by spring physically. V represents velocity. In practice, this force is usually a long-term upper or downward driving force caused by policy changes, economic problems or promising economy. t stands for time, and A stands for fluctuation range, similar to physical vibration amplitude. or is used to indicate an alternative in English. Deceleration or top start means to reduce the speed or start at the top <both stages are likely to occur>. 0 represents the origin of coordinates, and it is the starting point of time.

Suppose this paper only discusses Shanghai Composite Index in the stock market, the weight block is Shanghai stock index, the upper force represents the most recent favorable factors, such as stamp duty decrease, RMB appreciation, reduction of interest rates, credit easing and so on; the downward force represents a large number of issued shares, increase of interest rates, increase of stamp duty and so on. Under the two forces, the stock index may rise, decline or move forward. In the figure, the car can move with time).

Establishment of Multi-Factor Composite Model. Multi-factor composite model is the organic composite of single-factor models. It is not a simple composite, but instead, it is a correlative, interactive and cause-and-effect composite. Such composites interact with each other, and this paper uses a resilient coupling road for simulation.

The US stock market and the Chinese stock market belong to two different models in different regions, and they are mutually correlated. Sharp fluctuation of the US stocks will affect the Chinese stock market, which is the basis of multi-factor model.
Model Validation Steps

Step 1 Modeling. Establish a mathematical model close to reality according to the motion relationship corresponded by the model, preparing for further analysis;

Step 2 Historical analysis. Analysis of historical events is to classify by large fluctuation cycle and small fluctuation cycle from the time, study the macro financial market index quantity and micro specific financial instrument price, and find out the specific model parameters within a confidence range by using the probability and statistics mathematical tool.

Step 3 Data comparison. Reestablish the mathematical model according to the above parameters, feedback to the actual historical data for comparison, and find the difference between the remodeling and actual historical data.

Step 4 Feedback Correction. Adjust the correction parameter according to the difference between the remodeling and actual historical data.

Step 5 Remodeling. Reestablish the mathematical model according to the corrected parameters.

Step 6 Cycle Correction. Repeat Step 2 to Step 5 until the model data is satisfactorily fitted the actual data.

Step 7 Future Prediction. Predict the future according to the corrected remodeling.

Step 8 Specific Practice. Apply the predicted results to financial investment and policy making.

Through the validation calculation, according to the modified model and new similar economic events, this paper makes a quantitative analysis of the theoretical calculation results in the current environment; compares the theoretical calculation results with the financial markets specific data; finds out the difference data; uses the differential data to correct the model parameter and makes it closer to practical law. In practical operation, the above method goes in cycles, becomes a dynamic negative feedback closed-loop model correction system, and reaches the actual result most appropriate to the reality.

Design Basis for Physical Potential Economic Model

In the global financial investment history, there is not a decision basis that can be compared with the value investing. Same as its numerous glorious past history, its significant role in leading the global corporate bankruptcies in the financial crisis also shocks the world. The shortcut of reform and opening up is to introduce foreign advanced technology, but unfortunately, the past “guiding concept” in the financial investment field turns into today’s “bankruptcy tips”. Even more unfortunately, due to the absence of a new decision basis as an alternative, $1.95 trillion foreign exchange reserves fall into crisis and suffer from severe devaluation losses, causing incalculable financial investment companies to continue repeating the same mistake and go bankrupt, and a wider range of disasters are taking place. In such a situation, what should the Chinese economic theorists do? - The most meaningful work is to find the right decision basis.

To prevent this situation from indefinitely continuance, this paper first creates a new decision basis - potential investment, which is characterized by a combination of globalized integrated way of thinking and multi-factor analysis method, in order to enable it to adapt to the current economic situation, respond to the global financial crisis, and substitute the invalid decision basis that is still in use.

Definition and Explanation of Potential Investment

In the financial investment sector, the biggest concern is the present price of a specific financial instrument: such as the exchange rate of US dollar against other currencies or corresponding gold price in the foreign exchange reserve, the current price of a stock and so on; and as a decision maker, the biggest concern is the future price of a specific financial instrument: in order to expect future appreciation or non-depreciation. This paper expresses the potential price increase ability as a term: financial potential (referred to as potential energy).

Financial potential (referred to as potential energy) is a potential variable energy of financial instrument (such as a particular currency or specific securities). As the compressed spring, the
energy will be released sooner or later and become a location movement (price change). The spring compression force can come from factors in different countries (such as China and the United States), different industries (such as industry and agriculture) and different markets (such as exchange rates and gold). Each factor can increase or decrease the potential energy of the designated financial instrument. Under certain circumstances, these factors reach the same direction, their combined action makes the spring compress the tightest, and the future instrument release energy makes the biggest change of data, which is the most worthwhile investment opportunity - this is the way of thinking and decision principle with pursuit of maximum potential. By definition, potential investment considers all the economic data rather than a few economic data.

**Case Analysis**

Losses caused by the failure of financial investment project is only confined to the project itself. For example, Buffett acquired Goldman Sachs and General Electrics with 8 billion dollars in September 2008 and lost 3.8 billion dollars a month. The maximum possible loss of this decision will not exceed 8 billion dollars. However, if these decisions are large-scale group action guided by the same concept and all participants are top domestic and international investment agency, then such losses would overrun. The group business losses shake the economic foundation of China. Unfortunately, this fact has not only occurred but also continues. For example, China Ping An acquired Fortis with 23.838 billion Yuan and lost 44%; Chinese government holds long-term bonds (Fannie and Freddie) with 376.3 billion dollars, and becomes the largest bondholder of Fannie and Freddie in the world; currently China Merchants Bank holds 900 million dollars of Fannie and Freddie and Lehman bonds, its losses are uncertain, and it is conservatively estimated to be hundreds of billions of dollars. There are many nondisclosure enterprises, and it can be even said that almost all of Chinese major listed financial institutions have lapsed into the crisis.

Like many boats as the sea, some boats are called the US dollar, British pound and euro, and some are called gold and oil. Now every country has the goods named foreign exchange reserves. There is no warehouse to place it, so it can only be placed on the boat, and the boat can be freely selected. The key to avoid sink losses is the selection of boat.

In fact, the investment direction choice of foreign exchange reserve is not a good luck or a tool for international politics. When involving the most fundamental national interests, there is no reason to take a chance or trade with national fundamental interests. Therefore, the foreign exchange reserves must be a method under the guidance of certain financial decision basis. Over the past decade, China has chosen dollar, the US government bonds and corporate bonds, but did not choose euro and gold. Today, the boat of US dollar bond s slowly sinking, people just watch it sink, and continues to load this sinking ship.

Whether it is correct to choose the US dollar bonds? The results have come out today: compared with Euro or gold losses at least 30%, equivalent to $500 billion or more than 3.5 trillion Yuan, or equivalent to the loss of 3,000 Yuan per Chinese.

This shows that: the root of the problem is whether there is a new concept as a proper basis for the right decisions, there is a new correct decision only with a new correct decision basis, and then old decision can be stopped.

Objectively, the value investing indeed creates numerous brilliance in the latter part of last century, becomes the recognized most advanced and most operational decision basis in the international financial investment field. However, just as the truth is always relative, the so-called "truth" fails in the tide of the global financial crisis, it leads us to be caught in Waterloo, and brings great disaster to national economies and companies.

Now, regardless in the Chinese financial investment field or international finance and investment field, a new decision basis that can inherit the advantages of previous operating concept, abandon its disadvantages, more accurately reflect the objective reality, determine future new decision basis more efficiently, lead the Chinese financial investment field and even the world financial investment field to get rid of financial crisis, and wind the initiative of financial operation.
Features of Potential Investment

This paper first proposes the concept of financial investment potential, demonstrate the pursuit of greatest potential is the decision goal of financial investments, and thus create a potential investment concept based on multi-factor comprehensive analysis;

The guiding concept of financial market operations should meet the reality of global economic integration, and the potential investment shall comprehensively analyze the industries in different fields and different countries and regions;

The potential investment attribute all factors affecting the financial markets to be an inherent potential analytic method, the positive potential will eventually transform into a potential for display of the operation trend of financial market. This idea has fundamentally established an internal mechanisms with advanced prediction, and make this idea to be more forward-looking and practical;

Potential investments also integrates securities, futures, exchange rates and other financial data of these different categories into one for comprehensive analysis. Compared with all previous analysis concept, it absorbs and uses the multiplied information, and thus this paper may judge the previous ambiguous and watch-and-wait phenomena;

It uses the natural common physical movement as a physical model of financial market, and further reveals the natural movement property in the world economy;

Potential investment transforms major events and major policies into financial data for the first time and becomes one of the bases for quantitative analysis.

Market Applications of Physical Potential Economic Model

The Key to Respond to Global Financial Crisis Is to Seek Correct Decision Basis

When responding to the global financial crisis, the key issue need to be addressed is to build the correct investment concept, change the way of thinking, make the correct argument towards the financial market form, and thus give the right decision according to correct reasoning. Potential investment is such an investment concept. When being applied to national foreign exchange decision-making, it can avoid huge foreign currency devaluation losses; when being applied to the business investment decision, it can minimize business losses and find profitable opportunities.

Change the direction of foreign exchange management, and offer the decision support basis for the Chinese government to prevent more serious damages to foreign exchange reserves.

Offer Decision-Making Basis to Prevent More Investment Losses of Large Chinese Companies

The shortcut of reform and opening up is to learn the advanced experience from other countries. However, experience from other countries are not necessarily all the advanced experience, and the advanced experience at a period is not necessarily permanent advanced experience. If all the experience are used without thinking, it is inevitably to make the same mistakes and fall into traps.

Enterprise is the basic unit of the Chinese economy. For the main body in the Chinese financial investment field, the representative is large listed companies with huge substantial investment. Every move of these companies affects the investment interests of numerous investors. As listed above, Ping An Insurance and similar enterprises suffer from dozens or even hundreds of billion Yuan in a few months, which is distressing.

To correct this error, the key is to find a possible concept in response to the global financial crisis., offer the guidance concept and operation tool cope with the global financial crisis for the financial investment of Chinese enterprises, avoid further loss and find profitable opportunities.

Provide Basic Theory and Practical Tools for the World to Go Through the Global Financial Crisis

Some people may think that the best way is to wait for foreigners finding out new and better
investment concepts for reference. However, there are two facts that must be admitted. First, the global financial crisis is originated from foreign countries, and it is foreign concepts that lead to collective insolvency of global investors; secondly, the Chinese people is not stupid, so it is unnecessary for the Chinese people to wait.

Potential investment has changed the past single-factor analysis model, which is superimposed by multi-factor linkage and single-factor; physical model calculation is combined with the statistical analysis modification, involving global commodity, exchange rate and securities that get closer to the actual operation law and reflect the future trend more accurately, so that short-term investors can grasp the pulse more accurately, make large institutional investors and government investment in particular to judge the market more accurately, in order to reduce risks and increase revenues; more importantly, the analysis results can be the quantitative policy formulation basis for national foreign exchange reserve management direction, foreign investment and exchange rate.

References