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Research on the Influence of Interest Rate Regulation on A Share Market Price

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Abstract: In recent years, interest rate of our country has experienced frequent regulations. Five increases in 2007 intended to cool the over-hot economy and the second half of the year 2008 witnessed four successive decreases of deposit interest rate by the Central Bank of China. It is evident that interest rate is quite popular as an important currency policy instrument. Stating from June 8th of 2012 when RMB loan and deposit benchmark rate of financial institutions was reduced, one-year term deposit rate went down by 0.25% and loan rate 0.25%, the fist reduction since the end of 2008. Besides, interest rate regulation influences currency supply, capital expected rate of return, and enterprises' capital situation, etc. It will also exert some certain influence on the active stock market.

Keywords: interest rate regulation; stock market; stock price; nominal interest rate

I. Introduction

Interest rate is defined as "interest ratio promised to return to the creditor by the debtor". The Fluctuations of interest rate signify the changes of market supply and demand. It is a barometer of financial market, directly influencing people's economic life and further the overall operation of national economy. In a market economy country, base rate is usually in line with the rediscount rate of the Central Bank. Interest rate studied in this paper is fixed as one-year term deposit interest rate, for in China's financial market, one-year fixed-term interest is taken as the core rate in financial institutions.

II. Fluctuations of Interest Rate Influencing Stock Prices through Listed Companies

The fluctuations of interest rate can change companies' business environment, affecting their operating cost and therefore influencing the business performance, causing changes of capital value and investors' anticipation, and resulting in changes of stock prices. This phenomenon will be discussed from the following two aspects.

The regulation of interest rate changes the entire social supply and demand, the enterprises' outer business environment and in turn changes their performances and profits. On one hand, the changes of interest rate as the price of currency capital affect the investment cost. When the interest rate decreases, the investment cost is reduced, the earnings are raised, and the investment is encouraged. On the contrary, an increase of the interest rate will raise the cost, lower the earnings and result in negative influence on investment. On the other hand, as citizens' opportunity cost of current consumption, interest rate can affect people's consuming behavior. When the rate is

reduced, the opportunity cost of current assumption will go down, thus stimulating current consumption. This reduction will encourage effective demand and improve market environment through stimulating investment and consumption. It contributes to the enterprises' business performances and the increases of business interest, resulting in the rise of stock prices.

However, the positive influence by the decrease of interest rate is at the same time affected by other economic factors, because interest rate is not the only factor that affects effective demand.

Firstly, positive influence of interest rate reduction on effective demand is subjected to currency supply, inflation rate, investors' anticipation and real interest rate level and other macro-economic factors. If the reduction of interest rate is not accompanied by relative currency supply, or the anticipation of investors is pessimistic, resulting in the decrease of anticipated investment earnings; or if the extent of price reduction is larger than that of nominal interest rate, therefore the real interest rate goes up, then the effects of stimulating investment by interest rate reduction and expanding effective demand by investment multiplier will be weakened. Secondly, besides interest rate, investors' future anticipation is influenced by other economic factors and their personal factors. So the reduction of interest rate does not necessarily cause a high anticipation and thus affects investors' investing behavior. Thirdly, people's anticipation for the future affects their marginal propensity of consumption. If consumers have a pessimistic anticipation, the interest rate reduction may reinforce this tendency. Accordingly, marginal propensity of depositing will be raised and marginal propensity of consumption will be lowered, therefore, the stimulating effect of interest rate reduction on consumption will be weakened.

Interest rate regulation will affect enterprises' business cost and performances. As usual, interest rate reduction can reduce their interest expenditure, relieve their burdens, improve business results, and raise the capital value and the stock prices. However, the effect of improving enterprises' performances by interest rate reduction is affected by other macro-economic factors, for example inflation rate, real interest rate, tax system and so on. When the Central Bank of China reduces the interest rate and the currency inflates, the debt cost is reduced and business cost is raised for some companies. Obviously, the total cost may not be reduced and the net profit may not be raised, and neither is the stock price. Therefore, without those factors mentioned above, the reduction of interest rate cannot guarantee stimulating companies' performances effectively.

III. Fluctuations of Interest Rate Influencing Stock Prices through Investors

1. Substitution Effect

Interest rate regulation can cause substitution effect of asset portfolio through affecting deposit earnings rate, and has affected the capital reorganization of investors in terms of stocks, bonds and deposits. It also influences the change of supply and demand in capital market, the capital supply and demand, and stock prices in stock market. On one hand, with the rise of interest rate, a portion of capital may flow from stock market to bank deposit and bonds, reducing capital supply in market and the demand for stocks, resulting in reduction of stock prices; on the other hand, the reduction of interest rate lowers investors' lending cost, thus increases the demand for stocks and raises the prices.

2. Effect of Exchange Cost

For investors, the rise of interest rate will largely affect the short-term stock exchange that depends on bank credits for stock mortgage business and margin trade. It increases the exchange cost and reduces the demand for stocks, therefore lowers the stock prices.

3. Accumulation Effect

As the last loan cost, the reduction of interest rate of Central Bank of China lowers the earnings rate of riskless assets. In order to realize the goal of wealth accumulation, investors put more on risky investment of high earnings, causing the rise of stock prices; but as a signifier of macro-economic operation state, the reduction of interest rate of Central Bank of China means an economic recession and a rising risk of investment. The public will be more cautious in entering the market, resulting in a reduction of stock prices. At the same time,

when economic recession limits current public incomes and causes its pessimistic anticipation, eventually the willingness of stock investment is weak and the stock price goes down.

4. **Anticipation Effect**

If interest rate regulation goes beyond the public anticipation, and when the current rate reduces, there will be more investors believe in a rise of interest rate. So they will sell the stocks and keep the currency for future stock purchase, thus reducing the stock prices. If interest rate regulation fails the public anticipation, and when the current rate reduces, people think that it will be lower in the future, so they will buy stocks and wait to sell them in the future, thus raising the stock prices. Whereas the regulation caters to the public anticipation and investors' demand for stocks remains stable, the stock price will not change.

IV. Present Value Theory of Interest Rate–Stock Price Relationship

Present value theory of interest rate–stock price relationship is one that studies stock prices and expected returns of stocks, mutual relationship between interest rates. Stock prices are mainly decided by two factors: expected returns of stocks and current bank deposit interest rate. The stock price is equal to the sum of each future expected stock dividend and present value of the dividend value sold after a certain year. This is expressed by the formula as follows:

$$P= \sum_{i=1}^{n} \frac{D_t}{(1+i)^t} + \frac{M}{(1+i)^{n+1}}$$

In the formula, P stands for present stock price; D is the expected stock interest brought by the stock to investors at the time of t in the future; M is the value of the stocks sold at the time of n+1; i is the discount rate under specific risk, including two parts: market interest rate and stock risk return rate.

It can be seen from the formula above, stock prices and expected stock returns are in positive correlation, while stock price index and interest rate are in negative correlation. The higher the interest rate is, the lower the stock price index goes. That is to say, if the decrease of bank interest rate will bring about the rise of stock prices and vice versa. The extent of sock price change is also closely related to the extent of interest rate regulation. The change of interest rate not only reflects its effect on stock prices, but also causes changes in other aspects, and in turn acts on stock prices.

In addition to stock prices, the influence of interest rate fluctuations on stock market is also reflected in terms of the capital flow in the market. Because of interest rate's powerful guide function over capital, the down-regulation of deposit interest rate will force depositing money to distribute, and considerable amount enters stock market, so to accelerate the flow of capital into stock market. Stock market relies on the unceasing entering of capital, which will cause a rise of stock prices. It is thus clear that the decrease of interest rate is in favor of the long-term prosperity of stock market. Otherwise, the stock market will suffer.

Another influence is reflected in terms of listed companies. The decrease of interest rate is favorable in that enterprises can take advantage of financial leverage to lower the capital cost and cut financial expenditure, so as to reduce the debt pressure. Meanwhile the decrease of interest rate will enormously encourage people's consumption enthusiasm and enterprises' investing desire, thus activating the market and demand, reducing the inventory and increasing sales, strengthening the capacity of making profits. All these provide a good environment for raising capital and vitalize the market that is indispensible for the existence of enterprises, and increase enterprise profits. Accordingly, the expected stock dividend in the future is raised and so is the stock price. Otherwise the stock prices are lowered.

In the meantime, the price of stocks is also affected by the supply and demand relationship in the market and by people's confidence to the stock market. Other thing being equal, the higher the anticipated stock price is in the future, the stronger confidence people show to the stock market, and the higher the current stock price is. The business condition of listed companies is another important factor that influences people's confidence to the stock market. If the condition is good, the dividend per share will be high, so will the stock price. It is easily seen that interest rate and stock price are in negative

correlation. That is to say, the rise of interest rate causes the fall of stock prices and vice versa. Interest rate is the very factor that influences stock prices.

V. Pricing Theory of Interest Rate and Stock Price Relationship

According to the pricing method of income capitalization, stock prices are equal to the sum of discounts of dividends (bonus) of all periods in the future.

$$V_t = \sum_{i=1}^{\infty} \frac{D_{t+i}}{(1+R)^i}$$

In the formula above, Vt stands for the theoretical price at the period of t; Dt+ means the stock dividend issued by the company at the period of t+i; R represents investors' investment return rate, usually equal to market interest rate.

The formula above manifests that stock prices go in the opposite direction with market interest rate fluctuations, but in the same direction with company earnings. That is to say, the rise of interest rate is accompanied by the reduction of stock prices, while the reduction of former means the rise of the latter. It is because the reduction of interest rate reduces the enterprise cost, and increases the earnings, in turn increases the stock interest, hence the rise of stock prices. The stock prices will go down vice versa. So it is seen that interest rate is the causing factor for stock price changes. There are short-term and long-term influences exerted by the regulation of interest rates on stock prices.

In the short term, the influence of interest rate regulation on stock prices is simple, and the latter are mainly affected by the former. The two are in inverse directions. If interest rate is up-regulated, enterprises' productivity and supply are short of flexibility over other economic variables in the short term, so due to price stickiness, the income will not change much. However, the rise of interest rate will cause financial burden, and reduce earnings rate in practice. Then the earnings rate of other value securities experiences relative increase. So investors will sell their stocks, and purchase other value securities with higher earnings rate. At this time, the inadequate effective demand of stock market will lower the stock prices. In turn the reduction of interest rate will cause a rise of stock price.

Nevertheless, the long-term effect of interest rate regulation on stock market is more complex. In the long term, there is enough time for an enterprise to regulate manufacture scale to change the output. The productivity and supply have flexibility over other economic variables, and are affected less by price stickiness but more by economic cycle, marginal propensity of consumption, investment substitution ability, and anticipation for the future and so on. The income of enterprises is not stable, and the influence of interest rate regulation on stock prices is not simply inverse.

VI. Conclusion

The Formation of interest rate in China is subjected to the government's political and economical intention which blocks up the supply-demand relationship in markets and causes delayed regulation in case of price increase. The forced band type regulation weakens the adjustment of economic interest rate over financial economy in practice, so there are some but not evident changes brought about by the Central Bank of China's reducing interest rate. Although the nominal interest rate is positive in China, the practical rate is negative due to recent high inflation. As a result, in spite of the rising of interest rate, the increase and decrease of interest rate do not affect stock prices because of limitations from many aspects, such as the inadequate extent of increase and people's anticipation of interest changes.

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Vitae

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