

# *The Analysis on the Factors of the Stock Yield*

Chengpu Li<sup>1, a, \*</sup>

<sup>1</sup> *The High School Attached to Hunan Normal University, Changsha, 410000, China*

*a. ningbowu@asu.edu*

*\*corresponding author*

**Abstract:** The stock yield has been widely focused and concerned in the society. Some researcher found that the stock yield is influenced by different kind of economic or even political factors. However, the research in factors of stock yield is still blank in unified explanation. Therefore, the author is devoted in unifying and clarifying the relationship between stock yield and different factors. The method is described underneath: collect the data of different stocks (for example: SSE), using FF model, a common model based on triple-factor model, to analyze the data after the collection. After several trials and experiments, the answer to the research gradually emerged. Eventually, it is found that the stock yield is tightly connected with macro or micro factors, the volatility depends on even a single wave of a single factor. None of the factors could be ignored or gave up. Carefully watch the waves and changes of different probable factors is what the governments, the entrepreneurs, the investor or civilians have to do.

**Keywords:** FF Model, Stock Yield, Influence Factors

## 1. Introduction

Recently, many domestic and foreign scholars have made a lot of empirical research on stock market. They have achieved a lot of scientific research achievements with empirical value and practical significance. However, the change of stock market is difficult to predict, many situations have changed in the years' developments. With the continuous development and improving regulation of China's stock market, the factors which influence investors' behaviors and stock returns have also become more and more complex and unpredictable. All of these suggests that a correct understanding of characteristics and factors of China's stock market will provide a reliable basis and scientific guidance for the establishment of a safe operational mechanism of stock markets. It would also improve the level of investor decision-making. The essay both theoretically and empirically analyzes the factors affecting stock returns from several aspects and summaries research methods and research status on investment analysis from domestic and abroad. On this basis, we have an empirical research on the possible factors which may influence stock yields of our listed companies mainly from macro and micro aspects. We select many highly controversial factors which obtain not only those commonly concerned from domestic and abroad, but those rarely considered in domestic empirical research. We make use of one-dimensional and two-dimensional grouping method on empirical study and select a amount of shares of listed companies to analyze the various factors on the impact of stock returns from Shanghai stock market in last years. Empirical study finds that there is not liquidity effect, but there is big firm effect as well as the

phenomenon of strange volatility puzzle on China's stock market. It is hoped that the conclusion can provide some basis and reference for the establishment of a safe operational mechanism of stock markets and improve the level of investor decision-making.

Stock, a kind of property of the joint-stock company, contributed much to the inflation of the economy. In the 17th century, the world's first stock corporation was founded. Stock began to get close to human's life. After that, capitals accumulated rapidly, greatly pushed the global economy forward. Stock has become the currency of investment, but under the capitalist market economic system, financial crises have occurred in about tern-year term. In contrast, the stock history in China is much more later. Since the Shanghai Stock Exchange launched in 1990, China's securities market has begun to get rid of institutional constraints and embark on the track of sound development. It has become the core place for enterprise financing and capital investment, playing an irreplaceable role in promoting the development of the socialist market economy. It contributed in establishing and improving the market system, optimizing resource allocation, transforming the enterprise management mechanism and establishing a modern enterprise system [1]. The number of the corporations which launched in the Shanghai Stock Market reached 864 by the late October in 2008 [2]. However, stock witnessed the deflation of Chinese economy. For example, the first great bear market was the first influential economic crisis after 1990. The "327" event in 1995 harmed the Chinese stock market severely. Then, the second great bear market in 1997, the subprime mortgage crisis which threatened Hong Kong in 2008 brought great damage to the stability of stock prices to a certain extent. The bursting of the foam in the GEM stock market in 2015 fully exposed some problems in China's GEM market. Then, due to the outbreak of the COVID-19, there were four circuit breakers in the US stock market between March 9, 2020 and March 18, 2020. Therefore, the yield of stock would rise or fall under the circumstance. But with the continuous deepening of research, through a large number of empirical and observation, people found that the stock yield in the market has some rules to follow [3-5].

Opportunities and crises in China suggested that in order to stabilize stock yield in China, it is necessary to analyze different factors of the changes in stock yield. At present, China's stock market has included more than 2000 companies, forming a large market structure with the organic combination of the main board, the small and medium-sized board, and the growth enterprise market. Despite all these achievements, there are still many problems in China's stock market, such as low dividend payment ratio, imperfect information disclosure, corporate governance structure and agency problems, which are known as the "policy market" [6]. With appropriate policies, the whole nation could reduce the influence of the great economic crash necessarily. What's more, appropriate economic policies can guide Chinese economy in some questions: where to go, how it can go and why it can go. Speaking more widely, the different tendency between domestic and international stock markets suggests the advantages and disadvantages of both markets, destining what will the businessmen do. With buy or sell in businessmen' mind, they will be the direct factor to destine the tendency of the economy. Therefore, in order to better protect the interests of investors, it is necessary to analyze various factors that affect returns, which is the focus of this paper. The research and analysis on the influencing factors of the rate of return is also helpful for investors to fully understand the market and avoid falling into the mistake of irrational investment [7, 8]. The factors of stock yield have been a topic that almost all of the economists in different generations wanted to find out. After stock came to the market, analyzes about stock price never stopped. Eventually, they used what they knew to guide the economy of their nations. Countries got their interests and standards in international society.

## 2. Methods

According to the existing research on the stock return rate, there are many factors that affect the stock return rate, including various publicly disclosed information, undisclosed insider information, and irrational behaviour without analysis [9]. Analyses cannot leave data and diagrams. In order to get better understandings in these fields, using historical data and connecting them with main events could be the best way. Initially, get about ten samples each from famous stock exchanges, such like Shanghai Stock Exchange, Hong Kong Exchanges and Clearing Limited, Tokyo Stock Exchange, New York Stock Exchange, NASDAQ and Dow Jones. As the stock market is based on the issuance market, it is also called the secondary market [10]. Then profoundly research on some probable factors, such like economic policies, CPI (Consumer Price Index), CCI (Consumer Confidence Index), amounts of turnovers or even volatility (can be indicated in amplitude). Eventually, establish a blank connecting the tendency of stock yield and its probable factors. By searching relative information on eastmoney website or CSMAR database, get the data directly. For example, by inputting SSE on these websites, we can get various information such like the price, the rate of increase, the volatility or other details.

Next, use information of linear regression model. With data in different aspects, it would be easier to calculate different coefficients, such like sample correlation coefficient, coefficient of determination (or R-square in abbreviation), root mean squared error of independent variable (or Std.Error in abbreviation), t-Statistic, covariance, root mean squared error of dependent variable, standard error of regression coefficient (or S.E. of regression in abbreviation), sum squared residual and residual. After that, draw the tables in order to summarize the numbers clearly. Fill the data in the blanks.

After that, compare each coefficient and compare the size of the absolute values. For example, despite the sample correlation coefficient ranges between -1 and 1, however, even the distances at the three decimal places decide different extent of correlations empirically. What's more, R-square indicated the fitting effect of the linear regression. Std.Error indicated the discrete extent of the variable. Through comparing, it would be much less difficult to get the final conclusion. It would also be much clearer to observe the correlation. But, as it known, contingency is usually occurred in the experiments and trials. Sometimes, different extents of errors can lead experimenters to the wrong results and conclusions. The amount of data needs to be increased. More data can reduce the contingency of the experiment.

The statement above only fits the research in the macroeconomic factors and the micro economic factors. As for the political factors and speculation, the data could be directly used in the research because it is unnecessary to set up another linear regression in these fields and factors. Furthermore, the percentages of the stock yields and its changes are so obvious that they can prove the hypotheses and the inferences of political factors and speculation.

## 3. Results and Discussion

After experiments and trials, the results and discussions are indicated underneath.

### 3.1. Macroeconomic Factor

First of all, macroeconomic factors could influence stock yields. Macroeconomic factors include CCI(x1), CPI(x2), Enterprise CPI(x3), money supply(x4), national foreign exchange reserves(x5), interest rate(x6) and exchange rate(x7). By using multiple linear regression model, we can get formula:

$$Y = \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_7 X_7 + c \quad (1)$$

In the formula,  $Y$  represents SSE index, while  $C, \beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6, \beta_7$  represents different constants. After several trials, the results showed that  $x_6$  and  $x_7$  are hardly connected to SSE index, indicated that the approximation of  $\beta_6$  and  $\beta_7$  is 0. After that, it was calculated that the sample decision coefficient  $R \sim 0.79$ . What's more the tables downwards show the result of both  $x_3$  and  $x_4$  specifically:

**Table 1.** The results of experiment in factor X3 and X4.

Variable	Coefficient	Std.Error	t-Statistic	Prob.
C	-108.124	20025.753	-5.401	0.0004
$x_1$	10.105	10.230	2.011	$\sim 0.0002$
$x_2$	9.012	11.001	1.302	$\sim 0.0001$
$x_3$	997.346	174.069	5.740	0.0003
$x_4$	0.013	0.003	4.384	0.002
$x_5$	6.824	2.028	1.203	0.0001
$x_6$	7.970	31.815	1.778	0.0005

**Table 2.** The data of the coefficients in the experiment.

$R^2$	Mean	Adjusted $R^2$	S.D.	S.E.	Akaike info criterion
0.793	3659.448	0.747	516.726	260.066	14.175

**Table 3.** The data of the coefficients in the experiment.

Sum squared	Schwarz criterion	Log likelihood	Hannah-Quinn	F-statistic	Durbin-Watson	Prob(F-statistic)
608704.683	14.292	-82.035	14.128	17.215	1.687	0.0008

What's more, the sample correlation coefficient is necessary to be calculated. Note that correlation coefficient  $r$  is easily to be gotten with covariance and variances. Eventually, for example,  $rx_3$  equals 0.809, while  $rx_4$  equals 0.645. Which means, the linear correlation between  $Y$  and these variables is strong enough to prove their tied relationship. All of our trials look meaningful and essential.

Clearly, the coefficients of  $x_3$  and  $x_4$  are positive. It indicates that the change in the price index of corporate commodity transactions and the money supply is in the same direction as the SSE index, specifically, the corporate commodity trading price index has a greater impact. When the corporate commodity trading price index rises by 1 unit, the SSE Composite Index rises by 0.26 percentage points. Besides, there are GDP, basic interest rate in RMB savings, MPI (Macroeconomic Prosperity Index), CCI and else. All of the factors above will influence the SSE index, while the SSE index also influences the stock yield of SSE.

### 3.2. Micro Economic Factor

Deeply, macroeconomic factors are influenced by micro economic factors, such as price (could be sorted in four parts: the price of goods, the price of relative goods, the price of production factors

and price expectation), consumer (could be sorted in two parts: the number of consumers and the preference of consumers), market and outer circumstance. For example, CPI depends on PPI (Producer Price Index), current price and basic price. CPI would change in the same direction as current prices; CCI means people's satisfactory on employment status, national economy, fixed income, stock market and quality of life, which "0" represents "the most pessimistic", "100" represents "the most optimistic". Furthermore, Enterprise CPI and money supply are also influenced by these factors. So, micro economic factors also influence stock yield.

### 3.3. Political Factor

Another factor is the political factor. Since the relationship between China and USA was broke down, many China concept stocks, like Fangduoduo, Xingyang get negative stock yield, separately -0.06 and -3.11. Besides, even Baidu and BEKE got their yields dropped to -15.04 and -16.51. These are corporations who got their stocks sold in American markets. That is to say, political factors may influence the yields of stocks profoundly.

### 3.4. Speculation

Furthermore, speculation also contributed a lot. On the stock market, businessmen and investors play the leading role in speculation. Generally, the highly speculative market has a greater opportunity to obtain differential income, but also faces a greater risk. It is found that products came from the same corporation exist price differences on different markets. Speculators will get the opportunities to earn their profits. Actually, speculation will lead to fluctuation and big amplitude to stocks. For example, as to BEKE, its amplitude has reached 11.43%. Compare to 515J's 4.33%, its activity is much stronger. However, high amplitude means that the stock is riskier than other stocks. Since non risk preference investors is more than risk preference investors in the market, high amplitude would harm the yield of the stocks, even cause economic downturn on market. It is shown on the website, BEKE's stock yield is -16.51, while 515J's yield is -10.39, higher than BEKE. The phenomenon is seen in other places. To speculators, high fluctuation means opportunity. But to ordinary investors, high risks do not attract them.

## 4. Conclusion

The details and data clarified the relationship between stock yield and different economic factors. To summarize, according to the results of researches and experiments, it is clear that the stock yield is truly connected with the factors above, such like policies and diplomacy, macroeconomic factors and even speculation. Countries, corporations, investors or even speculators can decide the eventual yield of stocks. Stock yield is data that resulted in many probable events. The last results are not just plus them up or minus them each other, because they influence the yield profoundly or hardly. Stock market is a volatile market, not a rigid place to earn money. The ups and downs could not be described by few forces.

The research has impacts on stock yield in many fields. It is of great importance to develop the market economy system in a socialism country like China. The ideas and hypotheses are beneficial to prevent foreign forces and big capitalists to seize the control of Chinese market. Furthermore, it can even offer China's advice to further countries, let foreigners feel our great courage and determination. As the determination is set up, the country needs brilliant tactics and a proper plan to be executed. More importantly, developing economy comprehensively and properly is the key to make a developing country prosperous. It can also help China to get rid of global economic crisis gradually.

Suggestions are also needed to influence the stock yield. To central government, keeping attention to the national foreign exchange reserves (Make a long-term plan cannot be avoided. Also, increase the CCI is beneficial to rise the stock yield. Control the market prices in appropriate ranges, do not increase or decrease CPI too rapidly, or it would cause severe unbalance of markets. What's more, prevent speculators controlling the market is of great importance because making the economic situation volatile is risky. Punish the speculators like judge or arrest them so that the number of speculators would reduce in a relatively short time. It will also show that the country has ability to take control of the domestic market. As to corporations, enterprise CPI is essential to increase yields. Found the most proper way to earn funds legally, try to clarify markets in one's own. Chasing the biggest interest without thinking twice is disallowed. Furthermore, investors should pay more attention than ever before. Do not try to speculate or follow the trend blindly. To much following would cause price differences between markets. Make one's own decision to invest, sponsor or help. Only this would help the individuals and societies to get rid of economic crises.

## References

- [1] Li H and Wang Y 2007 Empirical analysis of factors affecting shanghai stock price *Shandong economy* 82-86
- [2] Wang F 2010 Analysis and empirical research on influential factors of shanghai a-share stock return *Nanjing University of Finance and Economics*
- [3] Gao G, Huang Y 2017 Empirical analysis of factors affecting the stock yield of the growth enterprise market--based on the ff improved model *Economic and Management Review* 83-87
- [4] Xu W and Hu R 2021 Research on the impact of the comprehensive reduction of reserve requirements on stock returns *National Circulation Economy* 148-150
- [5] Wang M 2012 Empirical study on the relationship between investor sentiment and stock market returns *Nanjing University of Technology*
- [6] Yang G 2016 Research on factors affecting stock return rate *China Accounting for Township Enterprises* 33-35
- [7] Zhang R 2021 Empirical analysis of factors affecting stock returns based on multiple linear regression model *Science and Technology Information* 235-237
- [8] Wang X 2015 An empirical analysis of the factors affecting china's a-share market yield *Central China Normal University*
- [9] Zhou X and Fu N 2013 Empirical analysis of factors affecting individual stock returns in china's a-share market *Technical Economy* 113-117
- [10] Guo M 2018 Empirical analysis on the impact of macro factors on stock prices *Economic Outlook around Bohai Sea* 11-12