Analysis on Factors Affecting Fluctuation of Price of Financial Stock of Pharmaceutical Enterprises

Ying Meng[1]* **and Yuan Zhao**[2]

[1] *School of Economy, Shandong Women's University, Ji'nan, Shandong 250300, China*
[2] *School of Business Administration, Shandong Women's University, Ji'nan, Shandong 250300, China*

The change of stock price can reflect the changes in development of an industry, and there are many factors that affect the fluctuation of the stock price. This study analyzed the factors affecting the stock price of pharmaceutical enterprises, earnings per share, net assets per share, growth rate of net asset, quick ratio and total assets turnover rate and carried out testing of the hypothesis. After the significance test, the growth rate of net asset and total assets turnover rate were excluded from the regression and the regression was carried using the remaining three factors. The results showed that when the earnings per share increased by 10 yuan, the stock price rose by 152.36 yuan, when the net assets per share increased by 10 yuan, the stock price rose by 52.26 yuan and when the quick ratio increased by 1%, and the stock price rose by 0.521 yuan. It indicates that earnings per share has the greatest impact on the stock price, which provides some theoretical basis for pharmaceutical enterprises to formulate their development strategy.

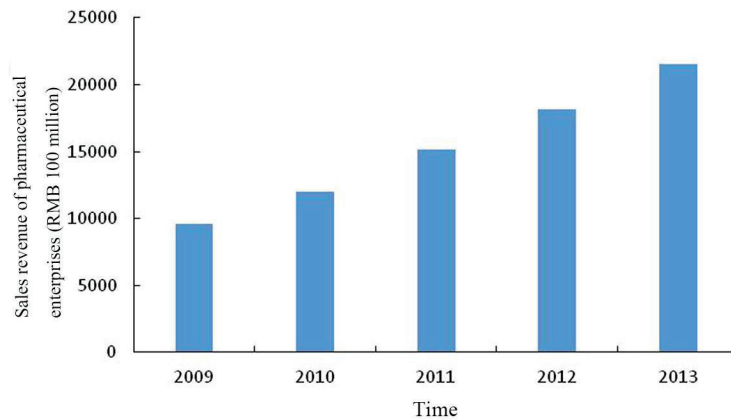Keywords: pharmaceutical enterprises, stock price, influence factors, financial indicator, regression model

1. INTRODUCTION

The development of an industry needs the support of external capital, and the value of the securities market can reflect the industry situation. With the development of the domestic securities market, the factors that affect investors' investment decisions and the changes in stock prices need to be analyzed. Correct analysis of the factors influencing the stock price plays an active role in stabilizing the stock market, improving enterprise value and promoting decision makers to make correct decisions. The factors that influence the stock price have been previously studied widely.[1] Hussein et al.[2] selected five variables to establish a regression model to analyze

the UAE stock market. The study found that earnings per share had the greatest impact on stock price. Mireku et al.[3] studied the influence of macroeconomic variables on Ghanaian stocks. Through the use of the co-integration test and vector error correction model analysis, it was found that interest rate and exchange rate have negative effects on stock price. Alam et al.[4] analyzed the factors influencing stock prices in the stock market of Bangladesh. Studying seven cement companies as the objects, the ordinary least squares regression model (OLS) was used to analyze the six factors of earnings per share, net asset value per share, price earnings, GDP, consumer price index and interest rate spread. It was found that earnings per share, net asset value per share, price earnings and consumer price index have important an influence on the stock price in the cement industry. Ahmad et al.[5] studied the influence of dividend yield on shares of

*Corresponding address: School of Economy, Shandong Women's University, No. 2399, Daxue Road, Changqing district, Ji'nan, Shandong 250300, China. Email: yingmym@126.com

Figure 1 Sales Revenue of Pharmaceutical Enterprises in 2009–2013.

pharmaceutical companies on the Tehran stock exchange. Regression analysis of 31 pharmaceutical companies showed that dividend yield had no effect on stocks. Heidari et al.[6] studied the impact of inflation rate, oil price shock and monetary growth on the pharmaceutical industry. Impulse response and variance decomposition analysis showed that monetary growth and inflation rate are powerful factors affecting the pharmaceutical industry. With the development of the economy, pharmaceutical enterprises show a good development trend. Studying the influence factors of stock price fluctuation of pharmaceutical enterprises can allow one to understand the development of this industry. This paper analyzes the influencing factors of pharmaceutical enterprises. Five factors were chosen to establish a regression model to understand the degree of influence of different factors, so as to provide some basis for providing an understanding of the stocks of pharmaceutical enterprises.

2. STOCK PRICE OF PHARMACEUTICAL ENTERPRISES

2.1 Development Status of Pharmaceutical Enterprises

Along with the economic development and the related policy support, pharmaceutical enterprises are in a steady development stage in China. Pharmaceutical enterprises include the first, second and tertiary industries, which are closely related to national life. It not only protects people's health, but also strongly promotes employment and economic growth. At present, pharmaceutical enterprises have broad prospects for development. With the steady development of the economy, the reform of the pharmaceutical industry has been carried out progressively. The reform of the drug sales system, the drug price and other aspects, as well as the improvement of relevant management regulations, have improved the ability of social security and stimulated consumer demand in the pharmaceutical market. The government's support for pharmaceutical enterprises, especially the investment of capital, has brought good opportunities to the development of pharmaceutical enterprises. The improvement of the medical security system has further driven the demand for medical

consumption, and the GDP of medical enterprises is also growing. Figure 1 shows the sales revenue of pharmaceutical enterprises from 2009 to 2013. It can be seen that the sales revenue of pharmaceutical enterprises shows an upward trend and has good development prospects.

2.2 Influencing Factors of Stock Price

Stock prices can reflect the development of an industry and also have an impact on the company's decisions.[7] There are many influencing factors, such as the change of market supply and demand, the implementation of relevant laws and policies of the government, and the fluctuation of domestic and foreign situations. As well as the economic policies implemented, inflation or deflation[8] could affect stock prices. Different monetary policies can also affect the rise or fall of stock prices. The change of profitability and the fluctuation of total assets will cause the change of stock price. The dividend policy and different dividend distribution methods of the company will also affect the stock price.

3. EMPIRICAL ANALYSIS OF FACTORS AFFECTING STOCK PRICE OF PHARMACEUTICAL ENTERPRISES

3.1 Sample Selection

In order to obtain the specific factors affecting the stock price of pharmaceutical enterprises. In this paper, 142 listed pharmaceutical companies in Shanghai and Shenzhen stock markets in 2016 were selected as samples, and 17 ST or abnormal data companies were excluded. A total of 125 samples were obtained. Relevant financial data was obtained from the Cathay Tai'an Database (CSMAR).

3.2 Analysis of Influencing Factors

(1) Profitability analysis, i.e., the profitability of the enterprise. The rise of profitability will cause the rise of stock

Table 1 Influencing factors of stock price.

Variable symbol	Variable
Y	Stock price
X_1	Earnings per share
X_2	Net assets per share
X_3	Growth rate of net assets
X_4	Quick ratio
X_5	Total asset turnover

prices. Relevant indicators are net sales interest rate, return on equity, earnings per share and so on.

(2) Solvency analysis, i.e., the ability of paying current liabilities with current assets. The more solvent the company is, generally the higher the stock price is. Relevant indicators include current ratio, quick ratio, asset-liability ratio and so on.

(3) Growth ability analysis, i.e., the changing trend of enterprises. It can predict the development condition of enterprises. The better the growth ability of the enterprise, the better the development prospect of the enterprise, and there is a lot of room for the stock value to rise. Relevant indicators include growth rate of main business income, change rate of earnings per share, etc.

(4) Cash flow analysis, i.e., the cash operation condition of enterprises. The better the cash flow of an enterprise, the better its debt repayment ability and the ability to pay shareholders' cash dividends. Relevant indicators are sales cash ratio, cash flow debt ratio, cash flow per share and so on.

3.3 Research Hypothesis

Hypothesis 1: The higher the earnings per share, the higher the stock price.[9]

Earnings per share = (profit margin in the current period / number of common shares at the end of the period) $*100\%$

Earnings per share represents the maximum dividend per share paid to shareholders by an enterprise, which directly reflects the profitability of an enterprise and also reflects the development potential of the enterprise. Therefore, the higher the earnings per share, the higher the investment value of the stock, and the higher the stock price.[10]

Hypothesis 2: The higher the net asset per share, the higher the stock price.

Net assets per share = earnings of shareholders at the end of the current period / number of common shares at the end of the current period

Net assets in each period can reflect the net assets contained in each share of the enterprise and can represent the intrinsic value of the enterprise. A high net asset per share indicates that the value of the enterprise is high and has investment value. Similarly, the stock price is high. A high net asset per share indicates that the value of the enterprise is high and has investment value. Similarly, the stock price is high.

Hypothesis 3: The higher the growth rate of net assets, the higher the stock price.

Growth rate of net assets = (total net assets at the end of the period − total net assets at the beginning of the period) / total net assets at the beginning of the period) $*100\%$

The growth rate of net assets can reflect the growth of shareholders' equity. The higher the growth rate of net assets is, the faster the company's net assets grow and expand, and the stronger the development potential is, the higher the stock price will be.

Hypothesis 4: The higher the quick ratio, the higher the stock price.

Quick ratio = quick assets / current liabilities

Quick ratio can reflect an enterprise's ability to pay current liabilities. If the flow proportion of the enterprise is small, it indicates that the liability capacity of the enterprise is poor and there is a risk of capital chain rupture. It shows that the enterprise's operating condition is not good, the stock price is naturally low. On the contrary, the quick ratio is large, the debt capacity of the enterprise is strong, and the stock price is high.

Hypothesis 5: The higher the total asset turnover rate, the higher the stock price.

Total assets turnover = main business income / average assets

The turnover rate of total assets can reflect the contribution of total assets to income, so as to judge the utilization efficiency of the enterprise's assets. The higher the total asset turnover rate, the stronger the enterprise's operating ability, and the higher the stock price of the enterprise.[11]

3.4 Research Variables

According to the hypothesis proposed, five influencing factors are considered, with the as the stock price as the dependent variable (Y) and the influencing factor as the independent variable (X).

Details are shown in Table 1.

3.5 Model Establishment

The regression model[12] was adopted for analysis, and the regression equation was $Y = A_0 + A_1X_1 + A_2X_2 + A_3X_3 + A_4X_4 + A_5X_5 + \xi$, where Y represents the dependent variable, that is, the stock price, Xi represents the independent variable, that is, each influencing factor. $A_i(i = 1, 2, \cdots n)$ represents the regression coefficient, and ξ indicates random error.

Table 2 Descriptive statistical results of each variable.

	Minimum	Maximum	Mean value	Standard deviation
Stock price	4.21	121.34	26.32	16.21
Earnings per share	−0.83	4.29	0.56	0.67
Net assets per share	0.08	19.62	5.31	3.72
Growth rate of net assets	−0.33	0.28	0.09	0.08
Quick ratio	0.21	26.35	3.24	3.89
Total asset turnover	0.05	1.98	0.52	0.27

Table 3 Significance test results.

Variable symbol	The value of T	Significant
X_1	2.325	0.001
X_2	−4.256	0.032
X_3	2.235	0.587
X_4	7.325	0.002
X_5	−0.4210	0.624

Table 4 Goodness of fit test.

R	R^2	Corrected R^2	Standard estimation error
0.867a	0.924	0.895	0.023541

Note: a stand for independent variable

Table 5 Anovab.

	Sum of squares	df	Mean square	F	Significance
Regression	17201.568	3	5632.523	40.152	0.000a
Residual	20865.215	145	142.256		
Total	38066.783	152			

Note: a stand for independent variable

3.6 Variable Analysis

(1) Descriptive statistics

As can be seen from table 2, the standard deviation of independent variables was small, and the data distribution was more uniform and closer to the average value. It can be found from the comparison between the maximum value and the minimum value that the difference between the net assets per share and the quick moving ratio was large and the standard deviation was high. It indicated that the fluctuation of the data for these two variables was large. At the same time, the difference between the minimum value and the maximum value of the stock price was also large, and the standard deviation was also large, indicating that the stock price of pharmaceutical enterprises fluctuates greatly, and the stock market was unstable.

(2) Significance test

The significance of each factor should be tested before regression analysis. The results are shown in Table 3.

It can be found from Table 3, after correlation analysis, X^1 and X_4 all passed the significance test, and the significance was less than 0.05. X_3 and X_5 failed to pass the significance test. It showed that the relationship between these two factors and stock prices was not obvious enough. So, they were removed, and a regression equation was obtained: $Y = A_0 + A_1 X_1 + A_2 X_2 + A_4 X_4 + \xi$.

3.7 Multiple Regression Analysis

The data was input into SPSS17.0 statistical software, and the output results are shown in Table 4.

It can be found from Table 4 that the determination coefficient R^2 was 0.895. It indicated that the fitting degree of the regression model was general. The explanatory ratio of variable to stock price was 89.5%.

It can be found from Table 5, the model passed the F test and the value of T was 0.000. It showed that there was a linear relationship between the variables of the model, and the linear model was established.

The final regression equation can be obtained from Table 6: $Y = 9.421 + 15.236 X_1 + 5.226 X_2 + 0.521 X_4$. It was found that X_1 has the greatest influence on the stock price and X_4 has the least influence on the stock price. When earnings per share increased by 10 yuan, the stock price rose by 152.36 yuan. When the net assets per share increased by 10 yuan, the

Table 6 Regression coefficient.

	Nonnormalized coefficient		Standard coefficient	t	Significance
	B	Standard error	Trial version		
(Constant)	9.421	1.598		5.698	0.000
Earnings per share X_1	15.236	1.256	0.521	9.421	0.000
Net assets per share X_2	5.226	2.154	0.162	2.598	0.010
Quick ratio X_4	0.521	0.268	0.152	2.452	0.012

stock price increased by 52.26 yuan. When the quick ratio increased by 1%, the stock price increased by 0.521 yuan, which is also consistent with the hypothesis. This result was also consistent with the hypothesis.

4. DISCUSSION

It can be found from the regression results that the three factors studied in this paper: earnings per share, net assets per share and quick ratio, earnings per share, has the greatest impact on stock prices. It showed that these three factors are of high reference value for investors and pharmaceutical enterprises, especially earnings per share. From the perspective of investors, what they value most when making investments is the profitability of the enterprise, and earnings per share is the direct response of enterprise profitability. From the perspective of pharmaceutical companies, the higher the earnings per share, the higher the enterprise value. To increase the value of the enterprise, it is necessary to find ways to increase earnings per share.

The three influencing factors obtained by regression analysis can provide some references for the decision-making of the government, pharmaceutical enterprises and investors, so as to stabilize the stock market of pharmaceutical enterprises and promote their sound development. Here are some related suggestions.

The first suggestion is to strengthen government intervention and improve laws and regulations. Relevant government departments need to strengthen supervision over pharmaceutical enterprises. Enterprises are obliged to disclose information that may have an impact on stock prices.[13] The government should improve the information disclosure system and require pharmaceutical companies to publish real financial statements and indicators to help investors make correct investment decisions. Severe sanctions should be imposed on illegal transactions within enterprises to prevent such phenomena from happening. In addition, the government should create an environment conducive to the development of pharmaceutical enterprises and encourage investment.[14]

Secondly, pharmaceutical companies should focus on improving their profitability. Investors pay more attention to future earnings and stock value when investing in stocks. Enterprises should strive to improve their profitability and solvency, etc. in order to improve enterprise value and attract investment. However, enterprises need to improve their profitability on the basis of disclosing true financial information and should not deceive and mislead investors in order to obtain investment.

The last suggestion is that investors should make rational investment and reasonable judgment in the process of investment and analyze stock prices according to the financial information of enterprises.[15] At present, investors focus on the profitability of enterprises rather than the long-term development of enterprises. Investors should improve their investment concepts, screen enterprises from various aspects, and select investment objects scientifically. According to the research results, earnings per share, net assets per share and quick ratio can be used as the basis of investment.

5. CONCLUSION

The stock prices of pharmaceutical companies are affected by many factors. In this paper, five factors including earnings per share, net assets per share, growth rate of net assets, quick ratio and total assets turnover rate were selected as independent variables for regression analysis. It was found that the growth rate of net assets and the turnover rate of total assets had little impact on stock prices, so they were removed from the regression equation. From the final analysis results, it can be found that earnings per share has the greatest impact on stock price. When earnings per share increase by 10 yuan, the stock price rises by 152.36 yuan. The results of regression analysis can provide some references for enterprise development and investors' investment.

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