

The Impact of Financial Performance on Stock Return in China's High-Tech Industry

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Abstract

As China's stock market continues to grow and develop, the proportion of high-tech industries in the manufacturing industry was growing, and more and more investors want to invest in high-tech enterprises. The research was the impact of financial performance on stock return in China's high-tech industry. The sample used the high-tech companies' quarterly data in the Shanghai and Shenzhen exchanges from 2013 to 2017. There were 15 independent variables and one dependent variable. earnings per share, net assets per share, ROA, ROE, operating profit margin, current ratio, quick ratio, asset-liability ratio, operating income growth rate, net asset growth rate, net profit growth rate, total asset turnover rate, accounts receivable turnover, fixed-asset turnover ratio, CSI300 Index's return as the independent variable. The stock return as dependent variable. Used multiple regression models to analysis data, the results showed that a low correlation between financial performance and stock return. there were positive relationship between ROE, operating income growth rate, CSI300 index's return and stock return. There were negative relationship between ROA, net asset growth rate, total asset turnover rate and stock return. There were insignificant relationship earnings per share, net assets per share, operating profit margin, current ratio, quick ratio, asset-liability ratio, net profit growth rate, accounts receivable turnover, fixed-asset turnover ratio and stock return.

Keywords

Stock return; Profitability; Solvency; Grow ability; Operation ability.

1. INTRODUCTION

China's stock market was an increasingly grown in size, play an important role in the national economy. The total value of China's stock market transactions increased from 752.583 billion in 2000 to 17.223 trillion in 2017. China's securities market has become the first-person stock capital market outside the US, and its position in the global capital market is increasing. China's high-tech industry' size was maintaining growth, and its share of manufacturing has continued to rise. From 2005 to 2015, the share of the main business income was a dynamic trend. Follow the high-tech industry's listed companies' rapid development, the investors started to pay attention to high-tech industry listed companies. So as to understand the company operation development and make investment decisions, and the company finance report was an important source of information. Therefore, the disclosure of financial information was important for investors in high-tech industries.

The short-term speculation was still strong in the Chinese securities market, and blind investment was serious. Investors ignore the role of financial information in investment decisions, and had a low utilization rate of financial information. In China's securities market,

investors pay attention to the indicators of reflect profits, but ignoring the value indication function of other financial information. The level of utilization of financial information was not good enough. Therefore, it was necessary to strengthen investors' understanding and utilization of financial information of listed companies.

2. LITERATURE REVIEW

Before the 1960s, the study of finance theory in western countries was mainly of a normative nature. After the 1960s, appeared empirical research on the financial information value, later accounting research methods gradually became the mainstream method. Ball and Brown (1968). The study proved that accounting earnings information affect investors' investment decisions. Since then, the more scholars start to research the impact of financial performance on stock return. Fama, Fame(1970) made an important contribution to the effective market hypothesis theory. He found in the study that if useful information is reflected in securities price, then the market is effective. Ball and Brown, Barth, Beaver and Landman (1993) found that the impact of financial earnings information on stock price, and the assets and liabilities in the balance sheet also affect stock prices, and the concluded that assets and stock prices are positively correlated, while liabilities and stock prices are negatively correlated. Collins, Maydew and Weiss (1997) also did related research.

William Sharpe, John Lintner, Jack Treynor, and Jan Mossin (1964) proposed capital asset pricing model, this model explains the relationship between asset risk and expected return, and when the two were balanced, the equilibrium price was obtained as the stock price. Feltham and Ohlson (1995), Lev and Thiagarajan (1993), Bernard (1995), Amir and Lev (1996) have conducted relevant studies.

Zhao Yulong (1998) used 123 Shanghai-listed companies as the sample, did research that the relationship between the earnings per share and stock price. Therefore, the unanticipated accounting earnings was significantly correlated with the non-policy return on stock.

Wang Xiaonan (2008) study of the correlation analysis financial position and stock price. The sample was 138 manufacturing companies listed on Shanghai stock exchange over the time 2006 and 2007. It was found earnings per share, net asset growth rate, and quick ratio were positively correlated with stock prices. ROE, operating cash flow per share were negatively correlated with stock price. Quick ratio, inventory turnover, net asset growth rate, asset-liability ratio were not highly correlated with stock prices.

Zhou Xin (2013) revealed that the correlation between accounting information and enterprise value of listed companies in different industries in China. Analysis of data from 13 industries from 2000 to 2011. Different factors affect the stock price in different industries. For example, the current ratio was positively affect the stock price only in manufacturing. The quick ratio was positively affect stock prices just in the information technology industry.

Qi Huaijin, Dinhe (2015) explored the Influence of Accounting Information on Stock Market. Select all the companies listed on the Shanghai Stock Exchange from 2011 to 2013 as research sample. Through linear multiple regression analysis, the results found net profit margin, net profit/total operating income, earnings per share growth rate, total profit growth rate, sustainable growth rate significantly positively affect stock return.

3. CONCEPTUAL FRAMEWORK

In the light of the relevant literature, the author found that most papers chose regression model to study the impact of various financial information on stock returns. Financial information was usually divided into four categories: profitability, solvency, grow ability, operation ability. Wang Xiaonan, Wang Guannan (2015) putted the framework theory.

Control variables based on CAPM. The beta coefficient in the CAPM formula was a measure of systemic risk. The market price will affect the stock price, and the market return positive effect the stock return.

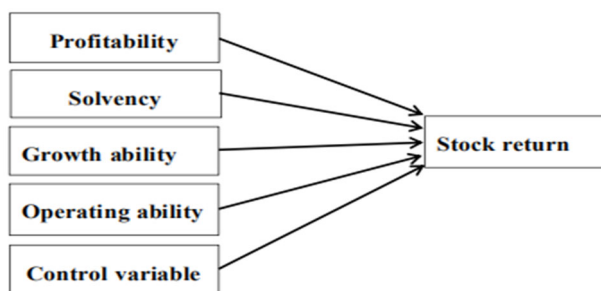


Figure 1. Conceptual Framework

3.1. Hypothesis of the Study

Table 1. Hypothesis

	Hypothesis	Reference
H1	Earnings per share significant positive affect stock return in the high-tech industry.	Wang Xiaonan, Wang Guannan (2015), Wang Yinlu (2012), Huang Yinhui (2003), Wu Liansheng (2000)
H2	Net assets per share significant positive affect stock return in the high-tech industry.	Liu Jun (2008) and Liu Cheng (2010), Yu Qin (2016)
H3	ROA significant positive affect stock return in the high-tech industry.	Mu Liangping, Shi Daimin(2002), Li Wen(2018), Maryyam Anwaar(2016)
H4	ROE significant positive affect stock return in the high-tech industry.	Yu Qin (2016), Wang Yinlu (2012), Wang Xiaonan (2008), Wang Guannan (2015)
H5	Operating profit margin significant positive affect stock return in the high-tech industry.	Wang Yinlu (2012), Wu Liansheng (2000) and Wang Guanna (2015)
H6	Current ratio was significant moderate affect stock return in the high-tech industry.	Wang Yinlu (2012), Wu Liansheng (2000), Wang Guanna (2015), Dai Yuping (2004)
H7	Quick ratio significant moderate affect stock return in the high-tech industry.	Yinlu (2012), Wu Liansheng (2000), Wang Guanna (2015), Yu Qin (2016)
H8	Asset-liability ratio significant moderate affect stock return in the high-tech industry.	Dai Yuping (2004), Liu Jun (2008), Yu Qin (2016)
H9	Operating income growth rate significant positive affect stock return in the high-tech industry.	Wu Shinong, Li Changqing and Yu Wei (1999), Liu Cheng (2010), Yu Qin (2016), Xu Yihong, Li Shuang (2016)
H10	Net asset growth rate was significant positive affect stock return in the high-tech industry.	Liu Jun (2008), Yu Qin (2016), Xu Yihong, Li Shuang (2016)
H11	Net profit growth rate significant positive affect stock return in the high-tech industry.	Liu Jun (2008), Yu Qin (2016)
H12	Total asset turnover rate significant positive affect stock return in the high-tech industry.	Liu Jun (2008), Xu Yihong, Li Shuang (2016)
H13	Accounts receivable turnover significant positive affect stock return in the high-tech industry.	Chen Zhaodong, Yang Wenjing (2012), Yu Qin (2016), Wu Liansheng (2000)
H14	Fixed-asset turnover ratio significant positive affect stock return in the high-tech industry.	Wang Guannan (2015), Yu Qin (2016), Wu Liansheng (2000)
H15	CSI300 Index's return significant positive affect stock return in the high-tech industry.	based on CAPM

4. METHODOLOGY

According to the model of Olsen-Feltam, the reference is made to Yu Qin (2016), Wang Xiaonan (2008), Wang Guannan (2015). There are two categories of information affects the listed companies stock return in the high-tech industry, one is the financial information and the other one non-financial information. this thesis uses the classical multiple regression model:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 \dots + \beta_n X_n + \lambda \quad (1)$$

Y selected the last trading day's closing price minus the first trading day's closing price in a quarter. The independent variable X selected the quarterly report.

The data chose the A-share high-tech listed companies in Shanghai and Shenzhen stock exchange for the 20 accounting quarters from 2013 to 2017. excluding issue B shares or H shares companies. Excluding ST, * ST listed companies and data disclosure was not complete listed companies. At the end, there were 288 listed companies as samples, of which 89 were listed on the Shanghai Stock Exchange and 197 were listed on the Shenzhen Stock Exchange.

The research data mainly came from SINA Finance and YAHOO Finance. The data of CSI300 Index's return came from Shenzhen Stock exchange. Obtained data first with EXCEL software screening, and then SPSS 13 software for statistical analysis.

Table 2. Variable table

	Variable	Formula
Y	Stock return	$(P_i - P_{i-1}) / P_{i-1}$
X ₁	Earnings per share	Net income/Outstanding shares
X ₂	Net assets per share	Net assets/Common stock number
X ₃	ROA	Net income/Total assets
X ₄	ROE	Net income/Average shareholders' equity
X ₅	Operating profit margin	Net Profit /Revenue
X ₆	Current ratio	Current assets /Current liabilities
X ₇	Quick ratio	$(\text{Current assets} - \text{inventory}) / \text{Current liabilities}$
X ₈	Asset-liability ratio	Total liabilities/Total assets
X ₉	Operating income growth rate	Revenue growth/Total revenue
X ₁₀	Net asset growth rate	Net asset growth/ beginning net assets
X ₁₁	Net profit growth rate	$(\text{Current net profit} - \text{Last period net profit}) / \text{Last period net profit}$
X ₁₂	Total asset turnover rate	Net operating income/Average total assets
X ₁₃	Accounts receivable turnover	Main business income/Average accounts receivable
X ₁₄	Fixed-asset turnover ratio	Revenue/ PP&E
X ₁₅	CSI300 Index's return	$(P_i - P_{i-1}) / P_{i-1}$

5. DATA ANALYSIS

From Table 3. The sample collected total had 5700 data sets. Among the mean values of each group, the maximum value was Accounts receivable turnover (15.247). The smallest is the CSI300 index's return (0.003). The standard deviation results showed that the lot of variables have a large difference between the real value of data and the average. Operating profit margin (24.8), Current ratio (14.16), Quick ratio (13.31), Net profit growth (50.16), Accounts receivable turnover (256.22) and fixed-asset turnover ratio (25.1).

Table 3. Descriptive Statistics

	Mean	Std. Deviation
Stock return	0.063	0.295
Earnings per share	0.217	0.311
Net assets per share	4.497	2.479
ROA	3.886	4.478
ROE	0.043	0.160
Operating profit margin	8.553	24.798
Current ratio	3.408	14.159
Quick ratio	2.768	13.307
Asset-liability ratio	0.362	0.189
Operating income growth rate	0.270	2.145
Net asset growth rate	0.263	1.863
Net profit growth rate	0.731	50.162
Total asset turnover rate	0.407	0.555
Accounts receivable turnover	15.247	256.224
Fixed-asset turnover ratio	4.303	25.054
CSI300 index's return	0.030	0.127

From Table 4, did a rough correlation analysis. When the significance was less than 0.05, only the ROE, CSI300 index's return was related to the stock returns. ROE can explain 2.8% of stock returns, and the CSI300 index's return can explain 23.7% of stock return. Other financial performance variables didn't affect stock return.

Table 4. Pearson Correlation

	Stock Return	Significance
Stock return	1	-
Earnings per share	0.005	0.349
Net assets per share	0.001	0.483
ROA	0.006	0.315
ROE	0.028	0.019
Operating profit margin	0.018	0.086
Current ratio	0.002	0.436
Quick ratio	0.002	0.431
Asset-liability ratio	0.001	0.474
Operating income growth rate	0.019	0.078
Net asset growth rate	0.006	0.328
Net profit growth rate	0.013	0.172
Total asset turnover rate	-0.016	0.113
Accounts receivable turnover	-0.012	0.188
Fixed-asset turnover ratio	0.005	0.346
CSI300 index's return	0.237	0.00

Table 5 was the model summary. R-square was 0.062, meant that independent variables explain 6.2% of dependent variable.

Table 5. Model Summary

R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
0.249	0.062	0.060	0.286	2.274

Table 6 showed ANOVA. The significance value $0 < 0.05$, meant 15 independent variables had least one affect the stock return.

Table 6. ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Regression	30.805	15	2.054	25.076	0
Residual	465.669	5686	0.082		
Total	496.474	5700			

Table 7. Coefficients

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	0.066	0.015		4.311	0		
Earnings per share	0.009	0.022	0.01	0.421	0.674	0.3	3.335
Net assets per share	0	0.002	-0.002	-0.149	0.881	0.619	1.615
ROA	-0.005	0.002	-0.07	-2.632	0.009	0.232	4.312
ROE	0.071	0.037	0.039	1.945	0.049	0.417	2.401
Operating profit margin	0	0	0.03	1.767	0.077	0.581	1.721
Current ratio	-0.002	0.007	-0.115	-0.33	0.742	0.001	737.647
Quick ratio	0.003	0.008	0.118	0.338	0.735	0.001	734.569
Asset-liability ratio	-0.002	0.023	-0.001	-0.093	0.926	0.731	1.369
Operating income growth rate	0.01	0.004	0.076	2.769	0.006	0.218	4.595
Net asset growth rate	-0.009	0.004	-0.059	-2.139	0.032	0.217	4.607
Net profit growth rate	9.27E-05	0	0.016	1.223	0.222	0.993	1.007
Total asset turnover rate	-0.022	0.008	-0.041	-2.619	0.009	0.684	1.462
Accounts receivable turnover	4.49E-06	0	0.004	0.258	0.797	0.722	1.386
Fixed-asset turnover ratio	8.14E-05	0	0.007	0.5	0.617	0.863	1.159
CSI300 index's return	0.575	0.03	0.248	18.982	0	0.966	1.036

Dependent Variable: Stock Returns

Table 7 showed the regression coefficients. When the significance value was less than 0.05, the independent variable enter the equation. Therefore, ROA (significant=0.009), ROE

(significant=0.049), the operating income growth rate (significant=0.006), net asset growth rate (significant=0.032), total asset turnover rate (significant=0.009), CSI300 index's return (significant=0.000), so the six variable can enter the regression equation. From the regression equation been rewritten was:

$$Y=0.066-0.05X_3+0.071X_4+0.01X_9-0.009X_{10}-0.022X_{12}+0.575X_{15}$$

6. CONCLUSION

From Table 8 showed that the hypothesis 4, hypothesis 9, hypothesis15 are accepted. The other hypotheses are rejected.

Table 8. The summary for all hypothesis

NO.	Hypothesis	sig.<0.05	Conclusion	Result
H1	Earnings per share is significant positive effect stock return.	0.674	No effect	Reject
H2	Net assets per share is significant positive effect stock return.	0.881	No effect	Reject
H3	ROA is significant positive effect stock return.	0.009	Negative effect	Reject
H4	ROE is significant positive effect stock return.	0.049	Positive effect	Accept
H5	Operating profit margin is significant positive effect stock return.	0.077	No effect	Reject
H6	Current ratio is moderate significant effect stock return.	0.742	No effect	Reject
H7	Quick ratio is moderate significant effect stock return.	0.735	No effect	Reject
H8	Asset-liability ratio is moderate significant effect stock return.	0.926	No effect	Reject
H9	Operating income growth rate is significant positive effect stock return.	0.006	Positive effect	Accept
H10	Net asset growth rate is significant positive effect stock return.	0.032	Negative effect	Reject
H11	Net profit growth rate is significant positive effect stock return.	0.222	No effect	Reject
H12	Total asset turnover rate is significant positive effect stock return.	0.009	Negative effect	Reject
H13	Accounts receivable turnover is significant positive effect stock return.	0.797	No effect	Reject
H14	Fixed-asset turnover ratio is significant positive effect stock return.	0.617	No effect	Reject
H15	CSI300 Index's return is significant positive effect stock return.	0.000	Positive effect	Accept

7. RECOMMENDATION

Recommend to investor, general investors just focus on the listed company's profitability variable, but in the high-tech companies the growth ability and operation ability also will is significant impact on investors' return. Investors can focus on the five indicators of financial performance (ROA, ROE, operating income growth rate, net asset growth rate and total asset turnover rate) to select invest stock. Suggested that investors should consider the overall index of the entire stock market when investing in high-tech companies. When the index rises, it is more conducive to investment.

The impact of financial performance on stock return was low. Because the precondition of traditional finance hypothesis is rational person hypothesis, it indicates that in the market,

there are irrational investment behavior. Therefore, it is suggested that investors should have a comprehensive understanding of investment enterprises in multiple directions, and then make the rational investment; In addition, investors should also strengthen investment education, learn more investment professional knowledge, and establish rational and correct investment decisions.

Recommend to corporate manager, The manager of high-tech enterprises can maximize corporate return by reducing ROA, net asset growth rate, total asset turnover rate and increasing ROE and operating income growth rate.

And managers should realize that only by strictly regulating their own behaviors and publicizing true and accurate operating conditions can enterprises obtain long-term benefit, it is the long-term sustainable development of enterprises.

Manager should to improve the listed company's internal governance structure, to make it more suitable for the needs of corporate performance growth, improve the company's own quality, strengthen the vitality of enterprises, and maintain the continuous growth of corporate performance. To increase the impact of company financial performance on stock return.

Recommend to securities regulatory, The impact of financial performance on stock returns is very low, indicating that there may be imperfect financial information disclosure or fraud. Recommend below:

According to the specific status of information disclosure, to further refine and supplement the existing laws and regulations on information disclosure, and strengthen the practicality of laws and regulations.

Strengthen the implementation of laws and regulations, enhance the enforcement of penalties and the supervision of regulatory authorities. And impose stricter restrictions, supervision and punishment on listed companies' violations of information disclosure.

Further improve and develop the current accounting system, improve accounting standards, minimize loopholes in the accounting system, improve financial reporting authenticity, and improve financial reporting timeliness through reforming the accounting system. Make the financial performance data closer to the company actual operating status.

8. LIMITATION AND SUGGESTION

The conclusion just applies to Shenzhen and Shanghai stock exchanges, and did not apply to other stock exchange or B-share market.

The findings just covered 5 years, collect data as much as possible will improve the accuracy of the results. advantageous to improve the accuracy of conclusions.

The hypothetical variables can only explain 6.2% of the stock returns. Add the more factor to explain more stock return change. For example, add investor sentiment indicators to explain investors' speculative behaviors. Add macro environment variables.

Change the research model to use principal component analysis. Changed the Person test to the Granger causality test, to test the causal relationship between financial performance and stock returns.

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