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The Predictors of Stock Returns of Manufacturing Companies Listed on the Chinese Stock Market: An Econometric Analysis

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Abstract: This research examines the relationship between financial ratios such as profitability, leverage, liquidity and stock returns. A sample of 943 manufacturing corporations listed on the Chinese stock market was selected. The financial data from 2008 to 2022 was sourced from the CSMAR database. The signalling theory was employed as the underpinning theory. The analysis involves the utilization of three separate panel multiple regression models to examine the influence of predictors on the stock returns, encompassing pooled ordinary least squares (pooled OLS), the fixed effects model, and the random effects model. The data analysis involved various diagnostic tests including the Breush-Pagan test, Hausman test, Modified Wald Test, Lagram- Mutiplier Test, and the Robust test. The study found that return on assets, return on equity, and earnings per share have a positive and significant effect on stock returns, whereas net profit margin, debt-to-equity ratio and current ratio have a negative effect. The study outlines some policy recommendations.

Keywords: Stock Returns; Manufacturing; Signalling Theory

1. Introduction

The goal of this research is to deepen the understanding of the signalling theory in explaining the predictors of stock returns of manufacturing enterprises listed on the Chinese stock market. Since the signalling theory has been confirmed to effectively explain the stock returns models in several nations' stock markets, it is critical for stakeholders and investors to understand how a firm's financial success affects its stock returns in Chinese stock market. The findings of empirical research on an emerging market like China, can contribute to the advancement of the signalling theory. Numerous researches have been conducted in the field of finance on the topic of stock markets (Rasiah, 2010). It is critical for providing more accurate advice to market stakeholders to help them make decisions regarding investments (Ismail et al., 2020). Knowledge about the relationships between the financial ratios and stock returns is useful for policy makers analyse and execute effective measures to stabilize stock markets, as well as assist investors in making prudent investment decisions (Lee et al., 2023). Therefore, this study is in the right direction as it investigates the relationship between several financial ratios and stock returns based on 943 manufacturing companies' financial information from 2008 to 2022, in China.

2. Literature Review

2.1. Signalling Theory

The underpinning theory for this research is the signalling theory (Ross, 1977), which posits that firms send messages/signals to customers through their financial statements. According to the signalling theory, when one firm has excellent financial reporting, it sends a positive signal to the investors about the firm's future prospects. When stakeholders receive a signal, they translate the communication into perceived information and respond differently based on their perception. The better the profitability, the higher the stock returns. This implies that increased profitability provides a good signal to investors, causing stock prices to rise. As a result, stock returns may increase (Sanusi, 2023).

2.2. Stock Returns

One of the key factors influencing an investor's decision to invest is the stock returns, as stock returns are the outcomes of investing. Stocks with high expected returns are among the most appealing to investors. Stock returns serve as an investor's assessment of the degree

of performance in getting returns from their investment. Return realization is crucial because it serves as one of the metrics for gauging a company's performance. High stock returns increase risk and force investors to make wise decisions and mitigate risks (Rahmawati & Putra, 2022).

2.3. Independent Variables

A substantial net profit margin indicates a significant capacity of a firm to generate net profit, thereby attracting investors. The more net profit margin a firm has, the more productive its performance will be, which will give investors more confidence to invest in it (Hosea et al., 2020).

Return on assets is one way to assess profitability, which demonstrates the firm's capacity to profitably use the assets. Organizations have an excellent return on assets is beneficial to investors as they can make substantial earnings when they invest in the company's stock (Harimauwan & Lukman, 2023). High earnings are a favourable sign for investors.

The return on equity ratio is utilized to calculate net income post taxes from one's own capital. The efficiency of using the capital is demonstrated by this ratio. This needs to be as high as possible. If a corporation has no debt, both its return on assets and its return on equity will be equal. This is a resemblance between return on assets and return on equity. However, if the business is using leverage, return on equity will surpass return on assets (Rahmawati & Putra, 2022).

The earnings per share measures an organization's capacity to generate profits for every outstanding share and is computed as the book profit per share as a measure of management success (Harimauwan & Lukman, 2023). A higher ratio indicates more shareholder welfare and the anticipation of a high returns. If earnings per share have climbed year after year, the business is said to be solid and rising. According to the signalling theory, high earnings per share is a good indicator for business investors.

The debt-to-equity ratio is utilized to determine how much leverage (the usage of debt) a firm is using in relation to the total amount of shareholder equity that it owns. Leverage is the utilization of assets with fixed costs in an effort to increase the potential returns for shareholders (Hosea et al., 2020). From the standpoint of the investor, it signifies that the company's performance will be poor if it must finance its operating needs with loans or larger debts.

The current ratio is a way to evaluate a corporation's overall capacity to fulfil short-term commitments which come due right away. The greater the current ratio, the better its capacity to meet the short-term commitment is greater (Rahmawati & Putra, 2022). When a corporation is liquid, it can fulfil all of its commitments by the maturity date. When current assets outnumber current liabilities, that ability can be realized.

2.4. Propose Framework

Figure 2.1 presents a summary of the hypothesized link between stock returns and the explanatory variables used in this research, in which stock returns is the dependent variable and the rest variables are the variables affecting stock returns.

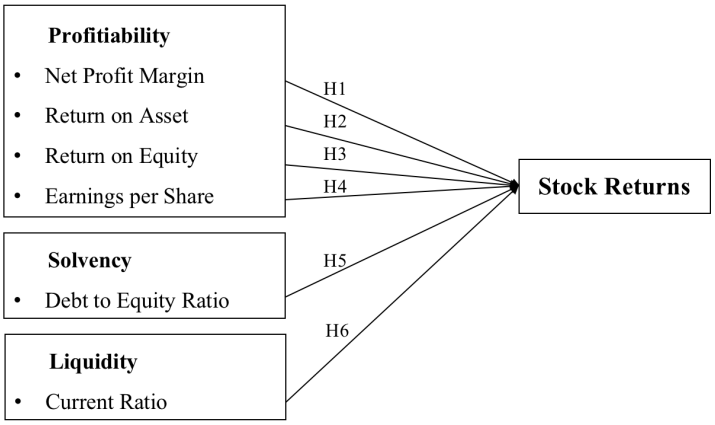

Figure 2.1 The Research Framework.

All 6 hypotheses are shown as follows:

Hypothesis 1: Net profit margin has a significant and positive influence on stock returns.

Hypothesis 2: Return on asset has a significant and positive influence on stock returns.

Hypothesis 3: Return on equity has a significant and positive influence on stock returns.

Hypothesis 4: Earnings per share has a significant and positive influence on stock returns.

Hypothesis 5: Debt-to-equity ratio has a significant and negative influence on stock returns.

Hypothesis 6: Current ratio has a significant and positive influence on stock returns.

2.5. Research Contributions

We added to the body of knowledge about the association of a firm's financial information and its stock returns. In this context, the synergy implies the Matthew effect. Our findings reveal that profitability, leverage, as well as liquidity have a significant influence on stock returns of Chinese-listed manufacturing enterprises. The results could be beneficial to investors. Understanding the relationship between business-specific characteristics and stock returns is critical for making sound stock-investment decisions.

3. Research Methodology

The hunt for models that accurately predict returns in stocks has been an interest topic (Ismail et al., 2020). This research employs a quantitative approach to fully explain the research objective using a statistical scheme. This study makes use of secondary data. To examine the association between financial ratios and stock returns, this study draws annual data on 943 manufacturing organizations listed on the Chinese stock market spanning from 2008-2022. We choose the panel multiple regression approach and Stata is used to analyse the data. The pooled OLS model, the fixed effects model, and the random effects model are recommended. Regarding the fixed effects model and random effects model regression tests, it is worth noting that by running a test developed by Hausman (1978), it is possible to determine which test is better suited to the data in this thesis.

4. Data Analysis

This thesis will use two different models for each regression test (basic model and extended model). These various models are characterized by the inclusion and exclusion of debt-to-equity ratio and current ratio variables to determine the impact on regression coefficients. To estimate the models, we collect the data from CSMAR containing 943 companies and time period is covering from 2008 to 2022.

The Basic Model

Model 1: $SR_{it} = \beta_0 + \beta_1 NPM_{it} + \beta_2 ROA_{it} + \beta_3 ROE_{it} + \beta_4 EPS_{it} + e_{it}$

The Extended Model

Model 2: $SR_{it} = \beta_0 + \beta_1 NPM_{it} + \beta_2 ROA_{it} + \beta_3 ROE_{it} + \beta_4 EPS_{it} + \beta_5 DER_{it} + \beta_6 CR_{it} + e_{it}$

Then, we'll go through Pooled OLS regression, fixed and random effects regression. We arrived at estimation findings for manufacturing companies utilizing these models. The findings for panel analysis dependent variable (stock returns) are shown in the following table:

Table 1 Panel Data Estimation of manufacturing companies (Basic Model).

Method Variables	Pooled OLS	Random Effects	Fixed Effects
Constant	.1386584**	.1386584**	.1371469**
ROA	.2694974**	.2694974**	.2615031**
ROE	.0078338	.0078338**	.0075882**
NPM	-.0004298**	-.0004298**	-.0004376**
EPS	.0186521**	.0186521*	.0237952**
Breusch - Pagan LM test	x2=0.00 (1.0000)		-
Hausman test	-	x2=2.77 (0.5964)	

Observations	14123	14123	14123
Heteroskedasticity (x2-stat)	-	x2= 11624.06 (0.0000)**	-
Serial Correlation (F-stat)	-	F (1, 942) = 236.232 (0.0000)**	-

Note: *, ** indicate the significance at 95% and 99% respectively

The random effects model showed that return on assets is still statistically the most significant and has a positive relationship with stock returns. The pooled OLS and the random effects results revealed that return on assets and earnings per share have the greatest influence on stock returns when compared to the other independent variables in table 1. This assumption was reached by comparing the coefficient values of the four variables. ROA and EPS have the greatest coefficient value of 0.2694974 and 0.0186521 respectively, which is statistically significant at the 1% level and has a positive relationship to stock returns. This implies that a 1% increase in return on assets results in a 0.269% rise in stock returns, whereas a 1% increase in earnings per share results in a 0.02% increase in stock returns. However, the net profit margin has a statistically significant and negative influence on stock returns, which do not support the signalling theory.

Table 2 Panel Data Estimation of manufacturing companies (Extended Model).

Method Variables	Pooled OLS	Random Effects	Fixed Effects
Constant	.1464954**	.1464954**	.1456173**
ROA	.2749603**	.2749603**	.2665693**
ROE	.0079985	.0079985**	.0078047**
NPM	-.0004363**	-.0004363**	-.0004436**
EPS	.0185814**	.0185814*	.0239002**
DER	-.0008202**	-.0008202**	-.0008222**
CR	-.0036535	-.0036535**	-.0040188
Breusch - Pagan LM test	x2=0.00 (1.0000)		-
Hausman test	-	x2=2.92 (0.8185)	
Observations	14123	14123	14123
Heteroskedasticity (x2-stat)	-	x2= 11528.05 (0.0000)**	-
Serial Correlation (F-stat)	-	F(1, 942) = 235.632 (0.0000)	-

Note: *, ** indicate the significance at 95% and 99% respectively

The results of the various diagnostic tests for Model 2 are shown in table 2 above. Hausman test result shows that the random effects model is more suitable than the fixed effects model. However, the results of the Breusch-Pagan LM test show that the pooled OLS model is more appropriate than random effects model. The results of modified Wald test and Lagram-Mutiplier test also show that a heteroscedasticity problem exists and the data contains first order autocorrelation.

Although there are some differences, the basic model is in line with the results of the extended model. The variables return on assets has positive coefficients and is the most significant, however the coefficients in the basic model are not as powerful as they are in the extended model. Return on assets has the greatest coefficient value of 0.2749603, which is statistically significant at the 1% level and has a positive relationship to stock returns. It shows that increasing return on assets by 1% results in a 0.275% increase in stock returns in extended model. The net profit margin has a statistically significant and negative influence on stock returns.

According to the pooled OLS results for basic model, all variables can account for stock returns except for return on equity. Return on assets and earnings per share have a positive and statistically significant impact on stock returns, but net profit margin has a negative and statistically significant impact on stock returns. Whereas, return on equity shows the insignificant and positive relationship to stock returns. The

pooled OLS findings of the extended model showed that all variables have significant impacts on stock returns except return on equity and current ratio.

According to the random effects model results of the extended model, return on assets, return on equity, and earnings per share have a significant positive influence on stock returns, but net profit margin, debt-to-equity ratio, and current ratio have a negative and significant influence on stock returns.

5. Discussion and Conclusion

5.1. Implication of the Findings

The results of this paper showed that return on assets has the most significant effect on stock returns among the indicators of profitability. As a result, for the purpose to boost stock returns, companies should concentrate on how to improve return on assets. Companies can enhance return on assets by looking for ways to increase sales and revenue through marketing, expanding into new areas, or launching new goods. Furthermore, the signalling theory indicated that a high debt-to-equity ratio sends a negative signal to potential investors. Liquidity has a strong negative impact on the corporation's stock returns. As for investors, before investing in a particular stock, they should consider the company's liquidity, leverage, and profitability, and how they affect stock returns.

5.2. Research Limitation

This study's examination period is limited to the years 2008 to 2022 which may have ramifications for the depth and breadth of the findings. A lengthier study period, maybe spanning many decades, would have been better adapted to capture potential long-term patterns and oscillations, offering a more comprehensive understanding of the stock returns. Increasing the number of indicators included could result in a more comprehensive and dependable forecasting framework, improving the model's predictive ability and utility.

5.3. Conclusion

This study investigates signalling theory and its applicability of stock returns in the Chinese Stock market. The objective of this research was to look at the association of financial ratios and stock returns based on the basic and extended model of manufacturing corporations listed on the Chinese stock markets utilizing panel data from 2008 to 2022. The econometric approaches including pooled ordinary least squares, random effects model, and fixed effects model were employed in this study. The findings of this paper showed that return on assets, return on equity, and earnings per share, as predicted by signalling theory, have a significant positive influence on stock returns. The debt-to-equity ratio and current ratio results showed that higher leverage and liquidity lead to lower stock returns, validating the signalling theory. Net profit margin has a significant and negative impact on stock returns. This implies that a higher net profit margin offered by firms sends a negative signal to investors and therefore does not support the signalling theory.

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