

P/B Ratio to Stock Price and Correlation Analysis of Other Financial Indicators

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Abstract

In recent years, the stock market of Mongolia has become more active than ever with increased number of IPOs and SPOs and addition of number of new products in the market. With the objectives to determine and estimate the relations between P/B ratio to stock rates and other financial indicators. We have conducted the research and analyzed the 2007-2020 trading reports, the dividends distribution, and the financial reports of 42 companies with active trading lists on the Mongolian Stock Exchange identified as I and II classification stocks. We have selected the indicators such as, the size of company, dividend payout ratio, return on assets, return on equity, earnings per share, growth of earnings after taxes to be identified as other financial indicators and we have finalized the estimation. According to the results of regressive analysis, based on 565 monitoring data of 42 companies, the indicators such as, return on assets, return on equity, earnings per share have shown direct correlation to the stock rates; however, other indicators have shown no correlation at all. Thus, further studies on the non-financial factors that have impacts on P/B ratio of stock rates have to be done thoroughly by researchers and analysts.

Keywords

Price to Book Ratio, Return on Assets, Return on Equity, Earnings per Share, Price to Sales Ratio

1. Introduction

Users of financial reports and company management formulate business decisions by determining company strengths and weakness on the financial data bases and ratios. Stock rates ratios are widely employed with the objectives to establish share values by investment consultants and company management.

Thus, it is required to conduct further studies on the correlation of the stock rate ratios to other financial indicators and the factors of the indicators on the rate ratios.

In our research, we have proposed the study the comparative studies on the rate ratios (P/B ratio) and other financial indicators of the companies, trading their stocks on Mongolian Stock Exchange market to determine their correlation and to draw accurate conclusions.

This study consists of 5 sections: literature review, data selection, methodology, results and conclusion. In literature review section, we have reviewed several studies of researchers, such as Wilcox, Fama and French, Agvaral, Harish. Kenneth and so on, related with P/B ratio, price of stocks and influences of other financial ratios on it. After the reviewing these studies, we have selected most active and consistent 42 companies of MSE and their financial data in 2007-2020. We have chosen P/B ratio as dependent variable, and the size of company, dividend payout ratio, return on assets, return on equity, earnings per share, growth of earnings after taxes as independent variables. We have used panel data in the analysis and have done the estimation by fixed effects model. In section results we've explained the results of correlation and regression analysis. At the end we concluded our study and future challenge around this topic.

2. Literature Review

In addition to the ratios of stock market price and rates, the correlation to other financial indicators has always attracted many leading researchers of the sector. Jarrod W. Wilcox (Wilcox, 1984) contend P/B model is more capable to justify stock price than P/E ratio. Fama, E. and French K. (Fama & French, 1991) proved that ratio of stock price gives clearer description on the changes of returns rather than β co-efficient. The researchers proved that price ratio is capable to act for other main ratios. Moreover, Fama, E. and French K. concluded that the companies with high P/B ratios enjoy greater returns on stock than the companies with lower P/B ratios. Surendra P. Agrawal, Reza M. Monem and Mohamed Ariff (Agrawal, Monem, & Ariff, 1996) have conducted the research on the possible means of the price ratio to be applied to the estimation and they determined that P/B ratio has been proved to be the primary factor to have impacts on prices. Harish S. and Abhay T, (Harish & Abhay, 2011) concluded that P/B ratio to be the vital variable to define returns on shares and possesses linear correlation. Kenneth M. and Ambrose J. (Marangu & Jagongo, 2014) concluded that ROA, ROE, EPS are found to have positive relations with P/B ratios; however, DPS has negative relations. Furthermore, I. Shittu, With the study results that were done through analyzing the stock market of Nigeria, A. C. Ahmad and Z. Ishak, (Shittu, Ahmad, & Ishak, 2016) accounted that there has been positive and significant relations between P/B, P/S ratios and stock market prices, and the ratio is not capable of defining the stock market price independently, but with the patterns of other financial ratios. As a result of the study, conducted at the stock market

of North America, Fernandez P. (Fernandez, 2019) has concluded the tendency of the decrease of P/B ratio, when interest goes up, conversely, the increase of P/B ratio, when interest decreases.

3. Data Selection

Mongolian Stock Exchange have established in 1991, and it has 179 listed companies. The listed companies are classified to 3 classification level. The shares of 62 companies included in I and II classification level trade actively in Stock Exchange. In order to conduct the studies on the relations between P/B ratio and other financial indicators, we have selected the 2007-2020 financial reports and stock trading data of 42 companies with functioning trading lists on the Mongolian Stock Exchange and have actively conducted business activities for latest 15 consequence years.

Graph 1 indicates in 2009 there was decrease of average price of stock market, and the increase of book value was stable. However, in 2011 we saw dramatic fall of the stock book value; conversely, a sharp increase in market price. This tendency could have been related to the boost of the 2011 money supply.

Graph 2 illustrates the states of dividend distribution of the selected companies in 2007-2020, and the data was compiled from MSE websites. We can notice that the number of the companies that have failed to pay out the dividends for 14-year accounts for 26 percent. On the contrary, the number of companies that have distributed the dividends more than 11 times makes up 24 percent. It shows that almost half of selected companies don't pay out dividends yearly. We can conclude that dividends distribution has generally been not steady for the active trading stocks of MSE.

4. Methodology

We have proposed to determine the relation between stock price ratio and other financial indicators. The chosen indicators have been the size of company, dividend payout ratio, return on assets, return on equity, earnings per share, growth of earnings after taxes to be identified as other financial indicators.

We are to analyze the relation between P/B ratio and other financial indicators, applying the following linear regressive models on the data of 42 companies of MSE, selected by the specific requirements.

$$PB = a + b_1SIZE + b_2POR + b_3ROA + b_4ROE + b_5EPS + b_6PS + b_7GEAT$$

Variables description:

PB—price to book ratio (Market capitalization/Net assets)

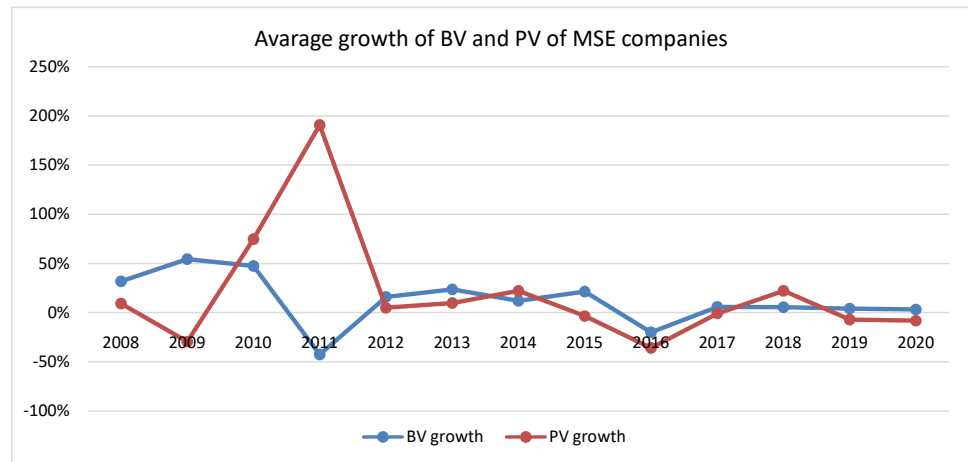
SIZE—size of company (Ln/Total assets)

POR—dividend payout ratio (Dividends/Earnings after tax)

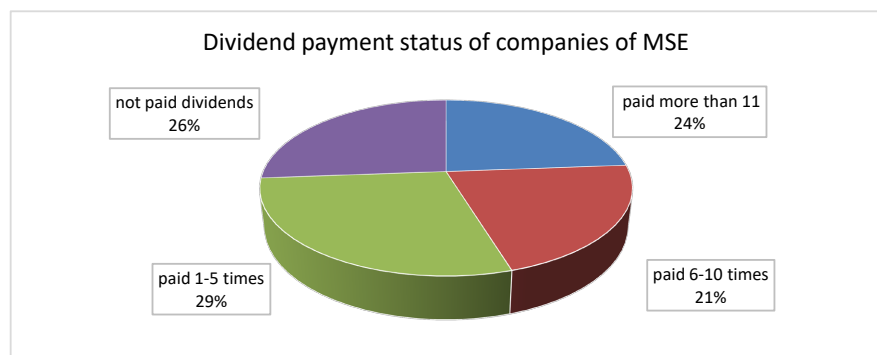
ROA—return on assets (Earnings after tax/Total assets)

ROE—return on equity (Earnings after tax/Equity)

EPS—earnings per share (Earnings after tax/outstanding common shares)



Graph 1. The book value of stocks of selected companies and market price growth trends. Source: Study data.



Graph 2. Dividend payouts of the selected companies in 2007-2020/times/. Source: <https://www.mse.mn>.

GEAT—growth of earnings after taxes ((Earnings after tax₂/Earnings after tax₁) – 1).

5. Results

Averages of dependent variables and independent variables, standard deviation and maximum and minimum values are shown in **Table 1**. The minimum value is –51.71 and maximum values equals to 98.7.

Table 2 demonstrates Correlation Matrix Results.

It can be concluded from the above table the maximum positive correlation (46%) is observed between earnings per share and returns on equity. The above matrix indicate there are no variables dependable 50 percent or over between; thus, the regressive analysis can be applied. We have used panel data in the analysis and have done the estimation by fixed effects model (**Table 3**).

Regression Results indicate that in the price to book ratio returns on assets have positive effects (12.4953); however, there have shown negative effects on returns on equity (–3.2057) and earnings per share (–0.00007). There is a tendency of the increase of price ratio by 12.5 units if returns of assets increases by 1

percent. However, negative effects of returns on equity and earnings per share imply the negative correlation between share price and company earnings. There have shown no effects for other financial indicators. Thus, the indication is clear that other non-financial factors show more impacts on market price of the stock, traded at MSE than the financial indicators.

Table 1. Descriptive statistics.

Variable	Obs	Mean	Std. dev.	Min	Max
pb	565	1.6653	7.1360	-51.7114	98.6955
size	565	16.1389	1.5768	12.4017	24.3810
por	563	0.2096	0.7339	-0.9721	12.7267
roa	565	0.0315	0.1605	-1.9329	0.8289
roe	565	0.0999	0.4894	-3.9296	6.3696
eps	565	1227.8570	7433.1970	-1600.1020	145,306.0000
geat	521	-0.6336	7.4593	-83.45546	40.6559

Source: Study data.

Table 2. Correlation matrix results.

	pb	size	por	roa	roe	eps
size	-0.0171					
por	-0.0190	0.0548				
roa	0.0704	0.0599	0.1634			
roe	0.1433	0.0456	0.0295	0.2327		
eps	-0.0292	0.1029	0.0609	0.4621	0.1540	
geat	-0.0151	0.0256	0.0352	0.1310	0.1389	0.0317

Source: Study data.

Table 3. Regression results.

Variables	Coefficient	Std. err.	*	t	P > t	[95% conf. interval]	
size	-0.1955	0.3743		-0.52	0.602	-0.9311	0.5401
por	-0.3111	0.3909		-0.80	0.426	-1.0795	0.4571
roa	12.4953	2.4174	***	5.17	0.000	7.7444	17.2462
roe	-3.2057	0.6611	***	-4.85	0.000	-4.5050	-1.9065
eps	-0.0001	0.0000	**	-1.76	0.079	-0.0002	0.0000
geat	0.0034	0.0381		0.09	0.929	-0.0715	0.0783
cons	5.0513	6.0892		0.83	0.407	-6.9158	17.0184
F statistic	7.0447						
Prob.F	(0.0000)						
number of obs	496						
number of company	42						
r ²	0.0874						

Source: Study data. *, **, *** indicates 10% (5 and 1%) significance level, respectively.

6. Conclusion

Regarding the selected companies, we have noticed almost any effects of the dividend distribution ratio on the price ratio since the dividend distribution has not stabilized properly. The indicator that affects the most on the price ratio has been returns on assets from all other financial indicators. Those financial indicators other than returns on assets /ROA/ have almost any influences; thus, the trend indicates that there are other effects such as non-financial and other macro level effects. In this study, we have selected any macro level or non-financial variables, only financial ratios of listed companies. Thus, further studies on other non-financial and macro level effects on price ratio must be identified and done thorough findings by researchers and analysts.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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