Q1

OLS Regression Results

Dep. Variable:	monthly P/B ratios	R-squared:	0.133
Model:	OLS	Adj. R-squared:	0.131
Method:	Least Squares	F-statistic:	105.9
Date:	Wed, 27 Mar 2024	Prob (F-statistic):	1.54e-43
Time:	14:20:20	Log-Likelihood:	-2885.7
No. Observations:	1388	AIC:	5777.
Df Residuals:	1385	BIC:	5793.
Df Model:	2		
Covariance Type:	nonrobust		

	coef	std err	t	P>|t|	[0.025	0.975]
const	0.1420	0.289	0.492	0.623	-0.424	0.708
Return on Equity - TTM	1.7530	0.453	3.867	0.000	0.864	2.642
Return Volatility	8.7206	0.629	13.858	0.000	7.486	9.955

Omnibus:	128.844	Durbin-Watson:	1.785
Prob(Omnibus):	0.000	Jarque-Bera (JB):	190.549
Skew:	0.699	Prob(JB):	4.20e-42
Kurtosis:	4.157	Cond. No.	14.6

Notes:
[1] Standard Errors assume that the covariance matrix of the errors is correctly specified.

Focusing on all A-share firms at the end of 2010, the regression is as follows:

$$P/Bi = 0.142 + 1.753 * ROEi + 8.7206 * \text{Stock Volatility}i + \varepsilon i$$

- $\alpha = 0.1420$, p-value = 0.623

Interpretation of α: If both ROE and Stock Volatility are zero, then the P/B ratio predicted to be 0.142.

P-Value: the constant term is not statistical significant.

Explanation: In the absence of ROE and Stock Volatility, the P/B ratio is uncertain.

- $\beta 1 = 1.7530$, p-value = 0.000

Interpretation of β1: If ROE increases by 1 unit, then the P/B ratio predicted to change by 1.753 unit, holding other factors fixed.

P-Value: there is a statistically significant effect of ROE on the P/B ratio at 1% level.

Explanation: to a large extent, ROE represents the profitability of a company and is an important indicator for investors to refer to. The increase in ROE means that more investors can be attracted, so the stock price goes up and the P/B ratio goes up.

◆ β2 = 8.7206, p-value = 0.000

Interpretation of β2: If Stock Volatility increases by 1 unit, then the P/B ratio predicted to change by 8.7206 unit, holding other factors fixed.

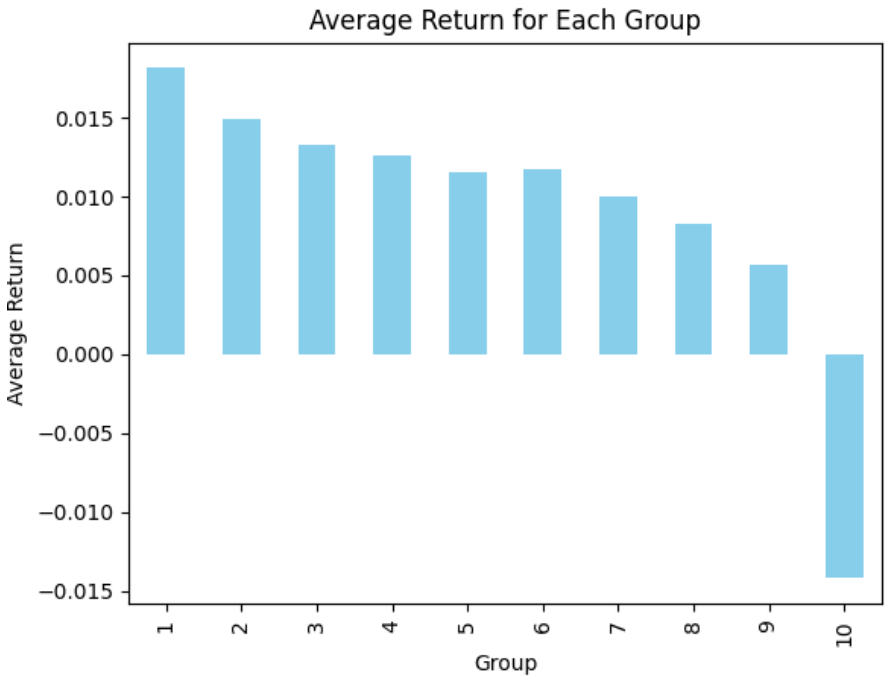
P-Value: there is a statistically significant effect of Stock Volatility on the P/B ratio at 1% level.

Explanation: As the risk of a stock increases, so does the value investors place on a company. This result may be because investors believe that high volatility represents high growth potential, and then high return.

◆ R^2=0.133

The regression explain 13.3% of the total variation in P/B ratio. Considering the complexity of real life, P/B ratio is affected by many factors, the financial regression model we established can achieve such R^2 is already a great result.

Q2



(Group 1 represents the lowest P/B ratio and Group 10 represents the highest ratio)

The bar chart indicates that the lower the P/B ratio last month, the higher the average return

this month, which shows that the company's P/B ratio in the previous month is negatively correlated with its average return in the current month.

That’s because:

1. A low P/B ratio suggests that the company's stock price is relatively undervalued, possibly due to short-term factors such as pessimistic market expectations or negative impacts on fundamental factors. Once the market corrects these misjudgments or fundamental factors improve, the company's stock price is likely to rebound. At this point, investors who bought during the low point of the stock price can achieve relatively higher returns.
2. Low-priced stocks typically attract more investors' interest because they are perceived as having investment potential and being relatively inexpensive. As more investors buy these stocks, market demand increases, further driving up the stock price. In this scenario, investors who bought low-priced stocks early on stand to gain higher returns.

At the same time, we find two deeper point:

1. The sixth set of data has a slight deviation from the conclusion,which is higher than the fifth set. That’s because the P/B ratio is only one of the factors affecting the monthly return, and the complexity of the market makes the two cannot be completely negatively correlated.
2. We also observed that the tenth group, which corresponds to the highest P/B ratio, has negative returns, and the difference with the previous group is significant. We consider this is due to the risk of bubble bursting. Extremely high P/B ratios are often a sign of a bubble forming. When the market becomes overly enthusiastic about certain stocks, investors may develop excessively optimistic sentiments, leading to a rapid surge in stock prices. However, if the market recognizes the issue of excessive speculation, the bubble may burst, causing stock prices to plummet and resulting in negative returns.