Relationship between Firm's Financial Performance and Stock Returns: Evidence from Oil and Gas Sector Pakistan

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Abstract

This work analyzes the extent to which determinants like net profit margin, return on assets and return on equity influence stock returns with reference to Oil and Gas sector of Pakistan. Five years' secondary panel data from 10 companies has been used from 2010 to 2014. Unit root test, correlation analysis and OLS have been used to estimate the model under study. The findings revealed the data for all variables to be stationary. Also the variables are found to be strongly correlated. However, the variables net profit margin and return on assets have low yet negative influence on stock returns whereas return on equity has small but positive influence over it. The limitations include time constraints as well as difficulty to find data. The benefit of this work is that the data is recent which makes the results also recent and generally applicable. This will help future theorists and will pave way for more works in this field of study.

Keywords: Financial performance indicators, of stock returns, net profit margin, return on assets, return on equity

1. Introduction

This work has been undertaken to assess the impact of the most important and yet simplest financial ratios on the stock returns in Pakistani perspective as only few have researchers have endeavored to work on this geographical part of the world. The reason behind this negligence is more focus on international and developed markets instead of focusing on a developing country and finding indicators that could boost returns and thus help that country to develop. As Pakistan is a developing country, so it is more important to find these predictors here and the best way to find them is focusing on the simplest possible financial ratios that can be understood by ordinary investors also in addition to large firms. The results derived from this work can lead to the well being of the country as it will educate both management and investors.

Chan, Hamao and Lakonishok (1991) were among the first theorists who tried to find the share return predictors for the Japan based companies. Similarly, Griffin and Lemmon (2002) examined distress risk and book to market ratio as predictors of stock returns. Whereas Lewellen (2004) assessed the extent to which dividend yield influences stock returns. Similarly, Tudor (2008) examined the power to explain stock returns of many financial ratios including ROA and ROE for the companies of Rome for a time period of 7 years. Their results depicted very low impact of ROA and ROE over returns. Ebrahimi and Chadegani (2011) examined the impact of earnings and dividends over share prices in Iranian context. They found solid substantiation in favor of the linkages between earnings and stock returns. Kheradyar, Ibrahim and Nor (2011) used three different ratios to predict returns for the stock exchange of Malaysia for a span of 10 years and performed GLS to interpret their findings.

Kabajeh, Nu'aimat, Ahmed and Dahmash (2012) carried out their work in order to find out the impact of returns on assets, equity and investment over the stock prices of insurance firms of Jordan for a five year span. They witnessed a slight yet positive linkage between asset as well as investment returns and their dependent variable. "Past empirical studies used various financial and economic variables to determine their effect on share price but some of the results were not very conclusive and there were some recent results that seemed to contradict previous studies" (Menaje, 2012). Saeidi and Okhli (2012) examined ten years' data obtained from stock exchange of Tehran to determine the extent to which ROA influences stock returns. They used correlation and OLS for data interpretation. Also their findings depict strong influence of ROA over stock returns. Al-Rjoub, Alsharari, Al-Qudah and Alfawaerah (2013) also worked on finding the determinants of stock returns. Ghasempour and Ghasempour (2013) used three different forms of financial ratios and assessed their explanatory power for stock returns. They provided strong evidence in favor of ROA and NPM and thus conclude them to have a highly powerful influence over returns.

"The broad area of financial accounting and reporting offers a number of fundamental measures of a firm's performance for a particular accounting period" (Irungu, 2013). Machfiro and Sukoharsono (2013) explored the impact of multiple variables, including ROA and ROE, on the stock returns of Food and Beverages sector of Indonesia. For this purpose they used regression technique. Similarly, Tahir, Sabir, Alam and Ismail (2013) also selected some financial ratios of their own choice and tested their impact over stock returns for the Pakistan's basic stock exchange i.e. KSE.

Jabbari and Fathi (2014) also employed the use of regression analysis in order to estimate the effects of various financial ratios over stock returns and found that NPM and ROA fall in the category which has highest impact on returns for Tehran based companies for a span of 6 years. Also, Muhammad and Scrimgeour (2014) used ten performance indicators, including both financial as well as market ones, in order to determine the causes

of fluctuations in share prices of the companies of Australia for a ten year time period. For this they used panel data and found out that market based indicators explain far more than financial ones but still ROA also explain these share price fluctuations. Har and Ghafar (2015) investigated that how much asset and equity returns control stock returns for the Malaysian based companies using OLS. They concluded in their findings that ROA and ROE have a highly positive control over stock returns. Hamidah (2015) focused on the banking sector of Indonesia by using multiple financial ratios like ROE and ROCE, etc and evaluating their impact on stock returns. For analysis and interpretation, they used regression analysis that was carried out using Eviews 7. They found strong evidence that ROE is negatively associated with shareholders' returns.

2. Method

2.1 Participants

The focus of this work is the Oil and Gas sector of Pakistan. This sector consisted of a total of thirteen KSE listed companies out of which ten have been chosen on the basis of the ease of availability of their respective financial data. The companies under study include APL, ATRL, BYCO, MARI, NRL, OGDC, POL, PPL, PSO and SHEL.

2.2 Procedure

The data under analysis is secondary in nature. Financial data has been gathered from the annual financial statements of the companies under study whereas the returns have been calculated from the data obtained from Karachi Stock Exchange for a period of five years starting from 2010 and ending on 2014. The variables under study include Net Profit Margin, Return on Assets and Return on Equity. For analyzing the collected data, I used firstly unit root analysis as was also used by Tahir et. al (2013); and then regression as well as correlation analysis as was used by Saeidi and Okhli (2012), to estimate the predicting power of NPM, ROA and ROE for stock returns. The equation to be tested using unit root test is:

$$\Delta Y_t = (\rho - 1)\, Y_{t-1} + \mu_t$$

$$\Delta Y_t = \delta Y_{t-1} + \mu_t$$

Where Y_t is the variable being tested for unit root, t represents time, ρ is a coefficient, μt is the error term and Δ is the first difference. So the model to be tested using OLS is:

$$Returns = \beta_0 + \beta_1 NPM + \beta_2 ROA + \beta_3 ROE + e_i$$

Where the equation has been generalized by dividing the equation by error term in order to obtain unbiased results, returns is the dependent variable whereas NPM, ROA and ROE are independent ones. βo is the intercept whereas $\beta 1$, $\beta 2$ and $\beta 3$ are coefficients for the explanatory variables and age. e_i is the error term depicting other factors influencing stock returns. The pictorial representation of the model has been displayed below:
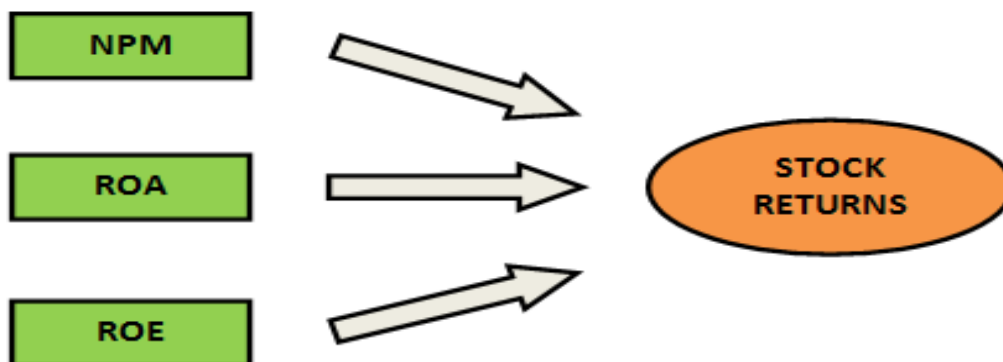
With the help of the topic under study and the literature surfing, the following five hypotheses have been formulated by us:

H$_{o1}$: $\delta = 0$
H$_{o2}$:   NPM does not influence stock returns.
H$_{o3}$:   ROA does not influence stock returns.
H$_{o4}$:   ROE does not influence stock returns.

3. Results

Table 1 demonstrates the descriptive statistics for each of the variables either dependent or explanatory for a total of 50 annual observations taken from 10 companies. The results show high standard deviations for all the variables which mean that there are quite high fluctuations in the values thus obtained. The data for all variables except NPM is highly negatively skewed which is positively skewed which means for all variables except NPM there are

mostly negative values in the data whereas it has mostly positive values. The high kurtosis values for all the variables depict that they all have leptokurtic distributions.

Table - 1

INDEX	N	MIN	MAX	MEAN	STD.DEV	SKEWNESS	KURTOSIS
Stock Returns	50	-301	116	-2.91	46.04	-5.44	291638.612
NPM	50	-847	12007	227.82	1704.27	7.01	49.457
ROA	50	-652252	6774	-12914.55	92267.17	-7.07	49.986
ROE	50	-14770	9142	-115.32	2478.9	-3.33	29.468

Table 2 represents correlation analysis and the results show that stock returns have moderately positive correlation with NPM at 99% confidence level having r = 0.436 and p = 0.002. Whereas stock returns have highly positive correlation with ROA and ROE at 99% confidence level each having r = 0.939 and 0.0982, respectively; both having p = 0.000. However NPM is moderately correlated to ROE at 99% confidence level having r = 0.597 and p = 0.000. Similarly, ROA has high positive correlation with ROE at 99% confidence level having r = 0.858 and p = 0.000.

Table – 2
* and ** indicate significance at 0.05 and 0.01 levels, respectively

	INDEX	Returns	NPM	ROA	ROE
Returns	Pearson Correlation	1			
	Sig. (2-tailed)				
	N	50			
NPM	Pearson Correlation	0.436(**)	1		
	Sig. (2-tailed)	0.002			
	N	50	50		
ROA	Pearson Correlation	.939(**)	0.101	1	
	Sig. (2-tailed)	0	0.484		
	N	50	50	50	
ROE	Pearson Correlation	0.982(**)	0.597(**)	0.858(**)	1
	Sig. (2-tailed)	0	0	0	
	N	50	50	50	50

Table 3 illustrates the results of Unit Root, which assesses whether the data is stationary or not, if the variables are non stationary the regression becomes unauthentic. The results show that the critical values at 90%, 95% and 99% are -2.613, -1.948 and -1.613, respectively. For stock returns, NPM, ROA and ROE; ADF and PP coefficients are -6.933, -6.919, -6.908 and -6.913, respectively; all significant at 99% level of confidence. The results are authentic and strong assuming no trend or constant. So the variables are stationary and δ< 0.

Table – 3
* and ** indicate significance at 0.05 and 0.01 levels, respectively

	ADF- LEVEL	PP-LEVEL
Return	-6.933**	-6.933**
NPM	-6.919**	-6.919**
ROA	-6.908**	-6.908**
ROE	-6.913**	-6.913**
Critical values at 1%	-2.613	-2.613
Critical values at 5%	-1.948	-1.948
Critical values at 10%	-1.613	-1.613

Table 4 depicts the findings from conducting regression analysis for the model under study. The value of R shows that NPM, ROA and ROE have 100% impact on stock returns with an F statistic of 6358412 significant 99% level of confidence. Therefore, the model is concluded to be correctly specified. The results show that 1 unit increase in the NPM decreases stock returns by 0.0137 units with t-statistic = -37.117. Similarly, 1 unit increase in ROA decreases stock returns by 0.0002 units with t-statistic = -19.9424. Whereas 1 unit increase in ROE increases stock returns by 0.0306 units with t-statistic = 62.385. And the values for all these variables are significant at 99% level of confidence.

Table – 4
* and ** indicate significance at 0.05 and 0.01 levels, respectively

INDEX		NPM	ROA	ROE	R	F-value	p-value
Stock Returns	coefficient	(0.0137)**	(0.0002)**	0.0306**	1.000	6358412	0.000
	t-value	(37.117)	(19.942)	62.385			
	p-value	0.000	0.000	0.000			

4. Discussion

The descriptive statistics show that the values fluctuate a lot but mostly the values are inclined to one side and this applies to all the variables which mean the distribution is not bell shaped. Also the distributions are unnaturally peaked which means that most of the values are really close to the mean. Similarly, correlation analysis depicts that the dependent and explanatory variables have really highly positive correlation among them which means they tend to move along and one variable changes as the other does. This may be due to the fact that NPM, ROA and ROE are easily calculated and understood by both firms as well as general public which drive them to buy/sell a share which in return increases/decreases the share prices due to excess/less demand thus resulting in high/low stock returns.

The unit root analysis depicts that the data is stationary and the results are robust at order zero which means that the results are applicable for the complete set of data and can be claimed to predict future impacts also. Therefore we reject Ho1. Similarly, regression results show that the explanatory variables do influence the stock returns although the intensity of the influence is not high but yes it is significant. This may be because that Pakistani public is irrational and if one starts buying or selling stock of a firm others follow suit but there are also organizational investors who act rationally and consider information also in addition to these three explanatory variables.

Menaje (2012) was among those who strived to find various dynamics that could influence share prices by using and analyzing multiple variables i.e. EPS and ROA for fifty companies. He found a negative yet weak association among ROA and stock prices. Like Machfiro and Sukoharsono (2013) found that among all the independent variables under study ROE was among those who were found to be influencing stock returns. Similarly, Martani and Mulyono (2009) analyzed the impact of return on investment and net profit margin over stock returns for the Indonesian markets for a four year period starting in 2003 and thus found out that they

influence stock returns a lot. Therefore we reject Ho2, Ho3 and Ho4.

5. Conclusion

NPM, ROA and ROE are the factors that are very closely related to the fluctuations that are witnessed in the stock returns of the companies belonging to any business sector. My research findings supported this phenomenon as well as opened the doors to the realization that these factors have very little influence so it should be found that if the tested model is perfect than there may be some factors that are acting as mediators or moderators for the relationship that has been tested. Hence, I conclude that in Pakistan's Oil and Gas sector, NPM, ROA and ROE have substantial influence over stock returns but there are some mediators and moderators for this relationship that need to be identified in future studies.

I had to face many constraints while carrying out this work which can be catered in future. Most important ones include firstly, time constraints as this work has been done as a degree requirement and only a months' time was available to complete it; secondly, the data for the chosen sector was not easily available as only 4 years' annual statements were accessible online; thirdly, my hectic job routine made it almost impossible to carry out this study; fourthly, geographical constraints and finally, first time use of Eviews also was a big challenge for data analysis. So, I recommend theorists to adopt a wider focus and try to figure out the mediators and moderators that could define the influence of these three predictors over stock returns more comprehensively.

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