The Predictability of Market Value Ratios on Firm's Stock Returns, Evidence from Kenya

Wanda A. Joseph
Department of Accounts and Finance, School of Business and Economics,
Moi University, P.O Box 3900-30100, Eldoret, Kenya

Email address: joswanda.jw@gmail.com

Abstract

This study investigated the ability of market value ratios to predict firm's stock return. The duration of the study was 10years from 2008 to 2017. The study undertook to establish whether market value ratios (share price ratio, dividend yield and earnings per share ratio) can predict firm's stock returns. Generalized least squares and panel data models were utilized in the study. Stock returns was used as the dependent variable whereas price earnings ratio (PER), earnings per share (EPS) and dividend yield proxy for market value ratios. The findings revealed that EPS is negatively related to share returns and it's significant. The study also revealed that PER is negatively related to share returns though not significant. Similarly, the study revealed that dividend yield is not significant though positively related to share returns. We conclude that earnings per share can be used by prospective investors on Nairobi securities exchange as one of the predictors of stock prices. The study recommends for future research to use the variables utilized in this study plus other variables that were not used in this research to study the predictability on stock returns in order to arrive at more robust results.

Keywords: Market value ratios, stock returns, Nairobi securities exchange, price earnings ratio, dividend yield ratio and earnings per share.

INTRODUCTION

Stock markets in any economy have a significant impact on growth. The economic growth of every country is influenced by the money and capital market's activities (Pan *et al.*, 2018). Stock returns provide investors with information about firms which aids in making investment predictions and decisions in stock markets. (Wijesundera *et al.*, 2016). This paper therefore aims to provide evidence of the predictive ability of market value rations (EPS, PES and dividend yield) on stock returns of firms listed on the Nairobi securities exchange.

According to Rita (2019), stock prices take a random walk in any stock market. Simply put, on any given day, share prices are likely to swing up and down without any pre-determined formula or influence. Further, Borges (2011) asserts that this random behavior of share prices results to the random walk hypothesis. The random walk hypothesis postulates that making predictions of share prices is very difficult since they may show an upward trend at one moment and afterwards the same stocks might be showing a downward trend. This therefore implies that perfect predictability of share prices is next to impossibility. Efficient market hypothesis is suggested as divergence to the random walk behavior. The efficient market hypothesis proposes that in the stock market, fair pricing of shares is evident, which gives the implication that

information on stock prices is availed to all investors therefore one investor cannot have undue advantage over other investors as a result of inequitable access of information (Khan *et al*., 2012).

Researchers have endeavored to find out most perfect predictors of stock prices using financial ratios, cash flow ratios and profitability ratios but market based ratios are mostly used in investment predictions. In fact, when making investment analysis, market value ratios are relied on by investors to value their stock and make predictions (Zeytinoglu *et al*., 2012).

In this study, the association between market value rations and stock returns is investigated. The function of market value ratios is in the evaluation of stock prices of public companies. From the evaluation of company share prices, investors are therefore, able to make inferences on share over-pricing or underpricing. This study has adopted stock return as the dependent variable and the components of market value ratios (PER, EPS and dividend yield) as the independent variables.

In this study we have used panel regression model to apply predictive regression, which is essential in stock return predictions. A set of panel data is used model formulation. The generalized least squares model has been used in this study to tackle issues of heteroskedasticity and non-normality of residuals.

LITERATURE REVIEW

Financial market efficiency is primarily determined by information (Zeytinoglu *et al*., 2012). Investor profits are therefore increased as a result of information regarding stock prices. Investors gather information from financial ratios in financial tables to have an opportunity of gaining high return on their investment; therefore, investment can be diversified by estimation of the future value and examination of the present value of the companies invested in. Zeytinoglu *et al*. (2012) conclude that in the determination of company's market value, investors use market-value ratios to forecast stock value such as price to earnings ratio (P/E), market to book value ratio (M/B), and earnings per share ratio (EPS). Overall, investors' decision to purchase stock is determined by the market value of the stock.

Stock Returns

Kasmiati and Santosa (2019) define stock returns as the returns generated by investors, which can either be profits from trading or company dividends that are given to its shareholders. Stock price return is calculated by adding price appreciation plus paid dividends, which is the divided by the initial stock price. Income from stock is derived from dividends and the value increase.

Price Earnings Ratio

Arslan *et al*. (2014) defines it as the association between a stock's share price and EPS. It is determined by dividing the share price and EPS. According to Dutta *et al*. (2018) price earnings ratio are adopted by analysts and investors in the determination of the share value. They are also applied in the comparison of a company against its past record or in the comparison of markets over a period of a time.

Earnings per Share

It refers to the net income of the company divided by total outstanding shares. It indicates a company's profitability and the changes in earnings per share greatly affects share price in the long run because share prices are expected to be positively related to

the company's earnings although in the short run, the relationship may be inverse (Arslan *et al.,* 2014). According to Atidhira and Yustina (2017), it is common for a firm to report earnings per share that is doctored for extraordinary and potential share weakening.

Empirical Review

Arsalan *et al*. (2014) studied how stock return was impacted by price earnings ratio (PER) and dividend yield in Pakistan. The findings in their study showed that price earnings ratio significantly impacted stock prices. Further, Dergriades *et al*. (2020) also showed that PER had a significant association with stock returns of companies. Petcharabul and Suppanunta (2014) examined the relationship between financial ratios (return on equity, current ratio, debt equity ratio, price to earnings ratio, inventory turnover ratio) and stock returns. In their findings, they established that there was a strong association between returns on equity ratio and price earnings ratio whereas other ratios had an insignificant association to stock returns. A study by Wijaya (2015) also sought to establish the association between financial ratios and stock returns in 20 companies in Indonesia and found that stock returns was significantly affected by book to market ratio, earning's yield, return on assets and dividend yield. Kumar (2017) study determined the relationship between stock return, PER and EPS. The findings from their study led to the conclusion that there was a significant positive relationship between stock return, PER and EPS which meant that they can be used to forecast stock return.

Anwar (2016) investigated the extent to which stock returns were affected by performance of companies and established a significant negative association between EPS and stock returns. In Kenya, Tobias and Macharia (2019) also established a significant positive association between EPS and stock price volatility. Jamal and Kasran (2017) study concluded that EPS and stock returns had a significant negative relationship. Wijesundra *et al*. (2016) study concluded that the relationship between EPS and stock returns was significantly positive. Further, Musslam (2018) sought to establish the association between financial ratios and stock returns, and showed a significantly positive relationship between EPS and stock returns. In a study by Allozi and Obeidat (2016), the impact of debt to equity ratio, net profit margin, return on equity, earnings per share and return on assets on stock returns was investigated among manufacturing firms in the Amman market and established that earnings per share significantly impacted stock returns. Bouteska and Ragaieg (2017) had the postulation that stock market performance was predicted by investors by paying attention to dividend yield. In a study by Rao *et al*. (1992), the findings showed that between dividend yield and stock returns the relationship was positive and significant. However, the study also confirmed the existence of seasonal anomaly as pinpointed in previous research. The study concluded that there was a significant effect of dividend yield on stock returns for some months and an insignificant effect when the effect of size was mitigated.

Contrary to the above findings, Dwi (2019) findings showed that earnings per share did not significantly impact stock returns. In fact, this contradiction motivates further interrogation by this paper.

Hypotheses

This study proposes the following hypotheses;

Hypothesis 1

H_0: Stock return and price earnings ratio have no association.

H_a: Stock return and price earnings ratio have an association.

Hypothesis 2
H_0: Stock return and earnings per share ratio have no association.
H_a: Stock return and earnings per share ratio have an association.

Hypothesis 3
H_0: Stock return and dividend yield ratio have no association.
H_a: Stock return and dividend yield ratio have an association.

METHODOLOGY

The study sampled a total of 39 firms for the period 2008-2017 so as to investigate the relationship of the variables, thus EPS, dividend yield and PER on stock returns. Exclusivity and inclusivity criteria applied to the sample included first and foremost, that the sampled firm must have been on the Nairobi securities Exchange before Jan 1st 2008, and the firm must have all the information required by the study. This was in order to enable us to capture only stocks that were active throughout the study period.

Measurement of Variables

Stock Return
This study has used stock return as dependent variable. According to Hatem (2017), stock returns are estimated by market share price growth rate. Stock returns can be computed by use of various models such as Market adjusted returns, Market model, Fama and French three-factor model, Carhart four-factor model and Constant mean return model. This study adopted a simple market adjustment method as suggested by Muhammad and Ali (2018).
Stock Returns = ln (P_1 /P0).
Whereas: P_1 = Current Price, P0 = Previous Price and ln = Natural Logarithm
Stock returns measures gains/losses of investors in a particular period of time.

Dividend Yield
According to Kheradyar *et al*. (2011), to calculate dividend yield, dividend per share is divided by market price per share. Lower market price compared to a high dividend per share, means that the investment signal is riskier. Alternatively, with a high market price and low dividend per share, the investment signal is optimistic.
Dividend yield is calculated using the formula:

Dividend Yield Ratio = Dividend per Share / Market rate per share.

Price Earnings Ratio
P/E ratio is used in company valuation and it measures share price against the firm's EPS (Dutta *et al.,* 2018). Investors use price earnings ratios to make decisions on the value of the firm's share. The P/E ratio is also used to make comparisons between the firm and its records or to make comparisons between markets over a period of time. In other words, it Measure of future prospective growth. The following formula is used in the calculation;

P/E Ratio= Earnings per share/Market value per share.

Earnings per Share

According to Atidhira and Yustina (2017), to calculate earnings per share, the company's common stock shares are divided by its profit which results to an indication of the profitability of the company. They further add that a company may report an adjusted EPS to cater to share dilution and extraordinary items. Overall, EPS measures market efficiency in terms of profitability. To calculate EPS, net profit (after taxes) and preference dividends are divided by the number of equity shares, expressed as follows:

Earnings per share = (Net Profit after Taxes – Preference Dividends) / Number of Equity Shares

In case of a change in the capital structure (change in share number) during the period of reporting, EPS is calculated using a weighted average of the equity shares.

Regression Model

This study has investigated the relationship between market value ratios (price earnings ratio, earnings per share and dividend yield) and stock returns. Panel multiple regression model has been formulated using panel data. Heteroskedasticity and non-normality has been tackled by applying generalized least squares. This is similar to the model used by Kheradyar *et al*. (2011) and Kwai-yee, (2016).

The study's hypotheses have been tested using multiple regression model. The model takes the following form:

$$SR_{it} = \beta 0 + \beta 1\ PER_{it} + \beta 2\ EPS_{it} + \beta 3\ DY_{it} + \varepsilon_{it}.$$

Where,

SR_{it} = Dependent variable which represents stock returns of company i at time t

β0= the expected stock returns if all factors have a value of zero sometimes it is usually referred to as the risk-free rate or the constant.

β1, β2 and β3= the sensitivity of stock returns to price earnings ratio (PER), earnings per share (EPS) and dividend yield (DY).

PER_{it} = Price earnings Ratio of company i at time *t*.

EPS_{it} = Earnings per share of company i at time *t*.

DY_{it} = Dividend yield of company i at time *t*.

ε_{it} = error term.

RESULTS AND DISCUSSION

Table 1: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
SRS	332	-4.796019	89.30108	-1627	3.7032
Eps	390	8.316954	15.64841	-46.74	100
Per	390	.1070152	.3365657	-.6628	6.0295
Dyr	390	3.814103	8.310951	0	112.2

Table 1 displays an overview of descriptive statistics study's variables. The rows contain mean, std. dev., min, and max values of all the variables utilized in this research. The dependent variable for this study is stock returns and it shows a mean of -4.796019 and a std. dev. of 89.30108, a min of -1627 and a max of 3.7032. The first independent variable is earnings per share which shows a mean of 8.316954, a std. dev. of 15.64841 a min of -46.74 and a max of 100. The second independent variable is price earnings ratio which shows a mean of 0.1070152, a std. dev. of .3365657, a min

of -.6628 and a max of 6.0295. The third independent variable is dividend yield which shows a mean of 3.814103, a std. dev. of 8.310951 a min of 0 and a max of 112.2.

Table 2: Correlation Analysis

	SRS	PER	EPS	DYR
SRS	1.0000			
PER	0.0065	1.0000		
EPS	0.0221	-0.0347	1.0000	
DYR	-0.0017	0.0033	0.0131	1.0000

Table 2 presents the correlation analysis results. The correlation matrix measures the degree to which the variables are linearly related. This analysis is important because it aids the researcher to identify the type of relationship among the variables (Acheampong *et al.,* 2021). Further Shah and Noree (2016) reiterate that correlation analysis is an indication of the direction of the association between variables, which can either be positive or negative. The correlation result in table 2 explains the association between dependent (SRS) and independent variables (price earnings ratio (PER), earnings per share (EPS), and dividend yield (DYR).

The correlation analysis above reveals that PER and EPS are positively related with share returns at 0.0065 and 0.0221 respectively. Dividend yield on the other hand is negatively correlated with share returns at-0.0017.

Regression Results and discussion

The study performed the fixed effect and regression model and random effect regression model on the basic model. Finally, the Haussmann test was conducted, which revealed the appropriateness of the fixed effect model for the study. The fixed effects model results are shown:

Fixed Effect Regression

```
Fixed-effects (within) regression               Number of obs      =       332
Group variable: comp                            Number of groups   =        39

R-sq:  within = 0.1510                          Obs per group: min =         4
       Between = 0.0402                                        avg =       8.5
       Overall = 0.0912                                        max =         9

                                                F (3,290)          =     17.19
corr(u_i, Xb)  = -0.5024                        Prob > F           =    0.0000

------------------------------------------------------------------------------
          Sr |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
         Eps |  -2.843191   .3973207    -7.16   0.000    -3.625189   -2.061193
         Per |   -.2029086   13.42                -0.02   0.988    -26.61586
             26.21004
          Dy |    .3047974   .6972301             0.44   0.662    -1.067475
             1.67707s
       _cons |    19.36062   6.634273             2.92   0.004     6.303186
             32.41805
    sigma_u |   39.779303
    sigma_e |   83.031552
        Rho |   .18667709   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0:     F (38, 290) =     1.52          Prob > F = 0.0301
```

The F-statistic is 0.0000 implying that the overall model is well fitted. Further, the model reveals that EPS is negatively associated with share returns and it's significant thus the Null hypothesis that Stock return and earnings per share ratio have no association is therefore rejected. The alternative hypothesis that stock return and price earnings ratio have an association is accepted. This finding is similar to those of Anwar (2016), Jamal & Kasran (2017), and Anwar (2019), but contradicts the finding of Mussllam (2018) whose findings indicated a positive association between EPS and share returns. The results also contradict the findings of Dwi, (2019) who found a significantly positive association between EPS and stock returns.

The results for the other two independent variables; PER and dividend yield are not significant, implying that null hypothesis for the two that they have an association with stock returns is accepted and the alternative hypothesis that they have an association is rejected. These results contradict those of Kumar (2017), who concluded that EPS and PER are very strong forecasters of stock return. Further, findings of Arslan *et al.* (2014), Petcharabul and Suppanunta (2014) and recently Dergiades *et al.* (2020) all found a significant positive relationship between PER and stock returns whereas a study by Wijaya (2015), found that dividend yield significantly affected market stock returns contrary to the finding of the current study.

CONCLUSION

Stock returns is explained by earning per share, price earnings and dividend yields. Accordingly, price earnings ratio is negatively related to share returns though not significant. Dividend yield on the other hand is negatively correlated with share returns. The study also concludes that EPS is negatively related to share returns and it's significant. We conclude that earnings per share can be used by prospective investors on Nairobi securities exchange as one of the predictors of stock prices. Although the other two independent variables; PER and dividend yield ratio were found to be insignificant by the current study, we still recommend that the potential investors should consider them as predictors of stock prices as evidenced in the empirical literature. The study recommends for future research to use the variables utilized in this study plus other variables that were not used in this research to study the predictability on stock returns in order to arrive at more robust results.

REFERENCES

Aiyabei, J.C., Tobias, O., & Macharia, I. (2019). Influence of Book Value per Share on Idiosyncratic Volatility of Stock Returns among Listed Firms in Kenya. *Journal of Finance and Accounting*, 3(1), 15-28.

Allozi, N.M., & Obeidat, G.S. (2016). The relationship between the stock return and financial indicators (profitability, leverage): An empirical study on manufacturing companies listed in Amman Stock Exchange. *Journal of Social Sciences (COES&RJ-JSS)*, *5*(3), 408-424.

Anwaar, M. (2016). Impact of firm's performance on stock returns (evidence from listed Companies of ftse-100 index London, UK). *Global Journal of Management and Business Research*.

Anwar, Y. (2019). The effect of return on equity, earning per share and price earnings ratio on stock prices. *The Accounting Journal of Binaniaga*, *4*(01), 57-66.

Arslan, M., Zaman, R., & Phil, M. (2014). Impact of dividend yield and price earnings ratio on Stock returns: A study of non-financial listed firms of Pakistan. *Research Journal of Finance and Accounting*, *5*(19), 68-74.

Asif, M., Arif, K., & Akbar, W. (2016). Impact of accounting information on share price: Empirical evidence from Pakistan stock exchange. *International Finance and Banking*, *3*(1), 124-135.

Atidhira, A.T., & Yustina, A.I. (2017). The influence of return on asset, debt to equity ratio, earnings per share, and company size on share return in property and real estate companies. *JAAF* (*Journal of Applied Accounting and Finance*), 1(2), 128-146.

Aditya, A.T., & Asandimitra, N. (2019). Pengaruh Leverage, Likuiditas, Market to Book Value, Financial Distress, dan Firm Size terhadap Keputusan Hedging (Studi Perusahaan Sektor Consumer Goods Industry Periode 2011-2016). *Jurnal Ilmu Manajemen* (JIM), 7(2), 334-343.

Ayuba, A.J., Balago, G.S., & Dagwom, D.Y. (2018). Effects of firm level attributes on stock returns in Nigeria. *International Journal of Finance and Accounting*, *7*(4), 122-131.

Bouteska, A., & Regaieg, B. (2017). The Association between Accounting Earnings, Dividends, Stock Prices and Stock Returns: Value Relevance of Accounting Standards in the Tunisian Stock Market. *International Journal of Accounting and Financial Reporting*, *7*(1), 171-189.

Borges, M.R. (2011). Random walk tests for the Lisbon stock market. *Applied Economics*, *43*(5), 631-639.

Dergiades, T., Milas, C., & Panagiotidis, T. (2020). A mixed frequency approach for stock returns and valuation ratios. *Economics Letters*, *187*, 108861.

Dutta, K.D., Saha, M., & Das, D.C. (2018). Determinants of P/E ratio: an empirical study on listed manufacturing companies in DSE. *International Journal of Scientific and Research Publication*, 8(4).

Dwi, S.I.S. (2019). Analysis of the effect of return on assets, earnings per share, inflation rate, and interest rate on stock return: a case study of SOE banking companies listed in Indonesia stock exchange. *Russian Journal of Agricultural and Socio-Economic Sciences*, *85*(1).

Güloğlu, B., Kangallı Uyar, S.G., & Uyar, U. (2016). *Dynamic quantile panel data analysis of stock returns predictability*.

Hatem, B.S. (2017). How Can We Measure Stock Market Returns? An International Comparison. *International Business Research*, 10, 121-126.

Jasman, J., & Kasran, M. (2017). Profitability, Earnings per Share on Stock Return with Size as Moderation. *Trikonomika*, *16*(2), 88-94.

Kasmiati, M., & Santosa, P.W. (2019). The effect of earning information, cash flow componens, firnancing decision, and Stock Return: Empirical Evidence on Indonesia stock exchange. *Journal of Economics, Business & Accountancy Ventura*, *22*(2), 157-166.

Khan, M.B., Gul, S., Rehman, S.U., Razzaq, N., & Kamran, A. (2012). Financial ratios and stock return predictability (Evidence from Pakistan). *Research Journal of Finance and Accounting*, *3*(10), 1-6.

Kheradyar, S., Ibrahim, I., & Nor, F.M. (2011). Stock return predictability with financial ratios. *International Journal of Trade, Economics and Finance*, 2(5), 391

Kumar, P. (2017). Impact of earning per share and price earnings ratio on market price of share: a study on auto sector in India. *International Journal of Research-Granthaalayah*, *5*(2), 113-118.

Kwai-yee, L.P.F.B.C. (2016). Relationships between stock returns and corporate financial ratios based on a statistical analysis of corporate data from the Hong Kong Stock Market. *Public Finance Quarterly*, 1, 111.

Musallam, S.R. (2018). Exploring the relationship between financial ratios and market stock returns. *Eurasian Journal of Business and Economics*, 11(21), 101-116.

Martina, S. (2019). The effect of quick ratio, debt to equity ratio, earning per share, price to book value and return on equity on stock return with money supply as moderated variables (Study of Banking Companies Listed on Indonesia Stock Exchange Period 2008-2017). *International Journal of Public Budgeting, Accounting and Finance*, *2*(3), 1-10.

Muhammad, S., & Ali, G. (2018). The relationship between fundamental analysis and stock returns based on the panel data analysis; evidence from Karachi stock exchange (KSE). *Research Journal of Finance and Accounting*, 9(3), 84-96.

Nurrachmi, R. (2018). *Movements of Islamic Stock Indices in Selected OIC Countries*. Al-Muzara'ah, 6(2), 77-90.

Pan, L., & Mishra, V. (2018). Stock market development and economic growth: Empirical evidence from China. *Economic Modelling*, *68*, 661-673.

Putri, A.P., Hutagalung, J., Octavia, V., & Virginia, C. (2020). Analysis of Stock Market Returns: Study of Consumer Goods Companies Listed on the Indonesia Stock Exchange. *Soshum: Jurnal Sosial dan Humaniora*, *10*(3), 321-333.

Rita Yi Man Li, Simon F. & Kyle Weng Sang Chong (2017) Forecasting the REITs and stock Indices: Group Method of Data Handling Neural Network approach, *Pacific Rim Property Research Journal*, 23:2, 123-160.

Rao, R.P., Aggarwal, R., & Hiraki, T. (1992). Dividend yields and stock returns: Evidence from the Tokyo Stock Exchange. Journal of Economics and Business, 44(3), 187-200.

Valtakoski, A., & Witell, L. (2018). Service capabilities and servitized SME performance: contingency on firm age. International Journal of Operations & Production Management.

Singgih, M., Pricilia, V.P., & Lavista, E. (2018). Market to book value, firm size, and the underpricing of Indonesian initial public offerings. Review of Management and Entrepreneurship, 2(2), 75-90.

Tobias, J.C.A.D.O., & Macharia, I. (2019). *Influence of Earnings per Share on Idiosyncratic Volatility of Stock Returns among Listed Firms in Kenya*.

Wijaya, J.A. (2015). The effect of financial ratios toward stock returns among Indonesian manufacturing companies. *IBuss Management*, *3*(2).

Wijesundera, A.A.V.I., Weerasinghe, D.A.S., Krishna, T.P.C.R., Gunawardena, M.M.D., & Peiris, H.R.I. (2016). Predictability of stock returns using financial ratios: empirical evidence from Colombo stock exchange. *Kelaniya Journal of Management*, *4*(2).

Yao, T., Yu, T., Zhang, T., & Chen, S. (2011). Asset growth and stock returns: Evidence from Asian financial markets. *Pacific-Basin Finance Journal*, *19*(1), 115-139.

Zeytinoğlu, E., Akarim, Y.D., & Çelik, S. (2012). The impact of market-based ratios on stock returns: The evidence from insurance sector in Turkey. *International Research Journal of Finance and Economics*, *84*, 41-48.