

The Effectiveness of Company's Financial Analysis and Supply Chain Policy in Predicting the Future Prices of Stocks

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Abstract— The core idea behind this research is to examine the significance of financial ratios taken from the financial reports or statements to forecast trend in stock price. For this purpose financial ratios have been taken to forecast stock returns from 2008 to 2018. Thus to predict the future price of stock four financial ratios have been taken, “price to book ratio (P/B), price to earnings ratio (P/E), dividend per share (DPS) and firm sizes”. This research comprises on panel data with fix and random effect model for analysis that is a very effective and comprehensive predictive regression method for forecasting the stock returns. This study reveals results which show that the financial ratios are the most efficient tool for predicting stock returns. Among the four taken ratios in this research the firm size has proven to be more accurate prediction power as compare to dividend per share as well as price to book ratio. Nevertheless, the relationship between price to earnings ratio and stock returns has not been proven to be significant. Thus the study has proven that financial ratios are reliable tool to predict stock price while making investment decisions.

Keywords— *financial analysis, stocks, supply chain strategy, price.*

1. Introduction

The purpose of reporting the financial position of any company in the annual reports is to provide information to stake holders about the company's market standing and performance by disclosing financial statements for their future investment decisions. These stakeholders evaluate and predict the expected financial returns, growth in equity, cash in and out flows and dividend payouts of the company's financial and other decisions. The reporting of company's financial can effect investor interest in company. Investors are usually searching for prospects to invest in the high revenue generating companies and “stock price” is on the major interest of investors to be taken care off.

According to Loader the core purpose of stock markets is the resource allocation, and working as mediator for facilitating capital between the ones need it and the one who have it. Nowadays, the stock markets play the role that was the same as the barter system works centuries ago. The only difference is the processing speed, internationalization of businesses and the sophisticated customized deals available to cater the sheer needs of customers. One thing that has been changed with time is the try to forecast returns on stock to avail highest optimum return on equity with minimum risk. Therefore, prediction of returns on stock has been a rational advent in the study of financial markets and pricing the assets [1-3].

Brunnermeier elaborates that there are an enormous amount of financial stocks fluctuations every single moment in financial world. Either these are in the form of financial derivatives, stocks, bonds, or in currencies, as these are major qualities of an asset that drive the market price. For instance, price of assets change more frequently than the ordinary good's prices in the daily life. Additionally one unique characteristic of these assets are that those assets brought uncertain returns, and mostly have payments after a long duration of time like after six months or a annually. The values of assets are determined by prospects about the future returns. The recent information grounds market contributors to re-access their potentials. For instance, “news” about future earnings of a company's can predict fluctuations in the stock holders anticipated value of bonds and stocks; on the other hand rumors about of a country's economic visions can effect exchange rates of local currency. It depends on the available information and the market contributors to sell or buy the stocks consequently. In brief, we can say

that the information effects the market activity, and also the price of assets [4-6].

Gill et al. elaborates that the information is fundamentally important for predicting returns in future; financial experts and the economists have been agreed that this is the most effective variables that forecast the future returns on stock. Including other various variables the share's market price is a significant factor that effects the investor's investment decision. Hence the price of share is the most crucial indicators for the investors to determination either to invest or not particular stock [7].

Uddin et al. also agreed that the price of share is not static in the market but dynamic in nature. The most crucial factors that highly influence the price of share is the demand and supply [8]. Razuk the value of any product or service is influenced by both economies either from micro or macro [9]. Kendall also agreed with Razuk that the number of macro-economic aspects including political, economic circumstances for example economic performance, regulations by government, etc., as well as company-related aspects for instance ownership structure, management quality, labor force quality, per share dividend, firm's book value (asset value), dividend cover, earnings per share, price earnings ratio and etc., thus all of these factors have an influence on the stakeholder's decision about pricing [10-14].

In 1953, when Kendall detected that the prices of stock, he seemed to stroll that stock prices behavior were random over time almost sixty years ago; he and most of the other scholars contributed in the market efficiency literature and test either a the normal price change can predict using returns of past [15]. Lewellen argues that since then different valuation techniques have been produced to predict the future prices of a stock. The type of analysis emphasized in this study takes into consideration business financial statements, health of financial statements, management, competitive advantages, competitors rivalry and markets. This type of an analysis technique is known as "fundamental analysis" in the business world [16].

Razuk says that the main objective of major investigation is to conclude the core value of a security by the cautious inspection of significant

value leads to risk of earnings, competitive position and growth. Ratio analysis is one of the main tools that fundamental analysts use in achieving this objective. Acquired from financial statements the financial ratios are considered as mathematical associations between significant figures. The assessment of the connection between financial ratio and prices of stocks may indicate whether there are patterns in the markets' response to that information, therefore indicating the usefulness of ratio analysis as a quantitative tool for security valuation [17-20].

In this research, effectiveness of financial ratios as predictors of stocks performance are assessed in Iraqi Stock Exchange. The ratios that have been used in this study: price to earnings ratio (P/E), price to book ratio (P/B), dividend per share (DPS) and firm sizes. The regression analysis is tested to check the correlation among the changes per percentage in the financial ratios and also percentage change in the returns on stock for the listed companies in Iraqi Stock Exchange.

2. Literature Review

For the purpose of estimating and forecasting performance the financial ratios are considered to be the most authentic, simplest and practical tool. This tool has been recognized in the mid nineteenth century, and has been widely being used by financial analysts and accountants. For both internal and external users the financial ratios have been using since decades for making the economic and financial decisions, along with investment and other decisions. Various accounting and financial models were developed in the last decades for the purpose of predicting the future earnings. Though, these ratios of financial nature have kept the traditional and "essential control models as well as other significant analysis for future planning and financial analysis.

The use of accounting data and financial ratios to explain changes in stock prices is frequently referred to in the literature, using a financial ratio analysis can be largely attributed to changes in stock prices has often been discussed by academics and financial analysts. Kendall observes that stock prices seem to change randomly over time, and he tested whether a previous price could be used to predict a future price change [21-24].

Later, studies expanded to include other predictive variables such as dividend yield, price to earnings ratio, book-to market ratio, return on equity, and various measures of interest rates that commonly tested to predict stock prices and returns. However, the evidence is mixed. Ball and Brown originally researched the correlation between accounting information and stock price. After they empirically studied the correlation between annual report earnings data and stock price, they found that if a company had excess earnings and then investors could get an abnormal return. This shows the relationship between accounting earnings and stock price [25].

Beaver asserted from another perspective that a company's financial reporting and accounting information could influence stock price. Beaver found that investors used the declared accounting information when they traded in stocks.

Dechow and Sloan respectively empirically studied the influence of earnings information and operating cash flow information on stock price [26-30]. They found that the earnings information is better correlative, but not absolute. In his study determined the predictability of the profitability of companies in the Stock Exchange using their financial ratios. In his own research, he concludes that a financial ratio analysis can have a high correlation with profitability and predictability by multiple regression financial ratios, including a profitability test contract. The companies with low and high profitability were divided into two groups and the results of his research indicate a high potential for profitability in the projected financial ratios. Investigated the factors affecting the stock price and amount an investor would pay to buy, and the results suggest that the most impact factor on stock prices is cash flow.

Studied the relationship between financial ratios and stock prices in the metallic and non-metallic minerals industry. The results indicate that the linear and non-linear relationship between financial ratios and stock prices and the models of type B (without interception) offer a greater ability to explain the stock price. Quadric nonlinear models are better than the other models which cannot explain the stock price. The proportion of activity in the circulation and Profitability ROA, return on capital and the percentage of non-profit special sales can better explain the stock price.

According to Eun Lee some empirical evidences that explain the association between dividend, book to market ratio, firm size and other income statement variables connected with stock returns [12]. Collins found that dividend per share and book value per share influence share prices in the banking industry in the USA. Size of the firm, book to market ratio and earnings to price ratio reflects capital market integration [9]. Further Lam, Chui and Wei captured the cross sectional variations of the stock returns and idiosyncratic return volatility with higher transaction costs, with lower investors sophistications that is linked with book to market ratio [31-35]. Midani investigated a sample of 19 companies in Kuwait and found earnings per share as a determinant of share prices [22].

Ali, Hwang, and Trombley explained that the intuition behind for dividend is explained that dividend succinctly predicts the stock returns because of policy payouts that emerged with pay dividends, regular repurchases and occasional repurchases [36]. Al-Hares, Abu Ghazaleh, and Haddad Dividend yield is a good predictor of the stock return on the same way book to market and earnings-price ratio are the good predictors of stock returns for the short sample as explained by Lewellen, since there is strong and positive relationship between corporate dividends and stock return [37-40]. Similar studies by Ang and Liu demonstrated that expected stock return and return volatility are completely explained by the price ratio and dividend ratio. There is a common dynamic stochastic trend among earnings to price ratio and dividend ratio with expected stock return [4].

Morelli studied beta, size, book to market equity and stock returns for the UK securities data and found that market is segmented between ups and downs with a significant relationship between beta and stock returns, while book to market ratio is found to be a significant determinant of stock return [23].

According to Hung, Chiao, Liao, and Huang the book to market ratio is strongly associated with risk and stock returns [41]. Lewellen explained that after controlling for risk factors book to market ratio does not provide any significant information for expected stock return; meanwhile book to market ratio is strongly influenced by the past

activities of trading institutions that predicts the stock return and firm size also agreed by Jiang H [42-50].

Although some authors, such as Lo and MacKinnlay, point out that the models for predicting the stock returns might be just data snooping, it is still widely believed that some financial and economic factors can explain much of the variation of the stock returns so as to have a great forecast power for stock return [31].

3. Methodology

The panel data methodology has been used in this research to examine the relationships between financial ratios and stock returns for these purpose 100 companies have taken from Iraqi stock exchange form the period of 2008 and 2018. However, to maintain the robustness and validity of our model we used 47 companies quarterly data have been taken for the analysis. We obtained the data series for i variables from the Iraqi official website.

Panel data analysis is significantly used from 1980s due to its validity. It reflects the desire properties for controlling unobservable individual private effects and may be associated with other variables in the scope of the model which is used to determine an economic relationship. Hence according to Hausman and Taylor the panel estimation is the combined effect of multiple cross section objects' observations that are driven from the period of analysis in the panel data analysis, consequently the merger of time series and cross section observations are used for the estimation process [14]. In a typical panel data analysis, an analysis is carried out by using N number of individual's T -term time series data for the dependent variable. General equation for panel data are expressed by equation number [17]. The simplest form of panel data analysis is used to keep the coefficients in the model constant for all cross sectional individuals. This assumption is represented by the equation as follows:

All the independent variables affect the entire cross sectional individual observations equally. However, this equation is insufficient if it is assumed that independent variables affect different individuals in different ways. At this point, the basic issue arises on how to define the starting point in an estimation

model. The starting point can be held constant for all the individuals or different starting points are allowed for different cross sectional individuals not using a starting point". In this regard, there are two alternative methods to define the starting point; "fixed effects model," and "random effects model".

4. Results

According to Çınar, the econometric assessment boards the "unit root tests" which question whether the variables are obtained or maintain the stationary property or not? "When panel data set is used to test the presence of unit root testing the cross sectional dependence is crucial. If cross-sectional dependence is rejected, then using the first generation unit root tests is more suitable. On contrary, if it is determined that cross-sectional dependence is valid, and then using the second generation unit root tests provides more consistent results in panel in data set. In this study, LM Pearson cross sectional dependence test is applied and it is observed that variables are not cross sectional dependent. Therefore, it would be suitable to use the first generation for panel data unit root tests [10].

The unit root test of the variables that are taken into account in the model and various types of the unit root tests. According to results of the various types of the unit root tests, the variables used in the model are stationary at the different significance levels. Since variables are found to be stationary at the different significance levels, there is no need to investigate a co-integration relationship which requires to investigate the long term relationships among the financial variables. Therefore, there is no need to investigate a long run causal relationship for this model. However, some studies from the literature found that, even though, there is no long term relationship between variables, there might be possibility that a causal link in the short term exists.

Boulila and Trabelsi found a long-term relationship between the variables (co-integration) for three countries in their study, which covers sixteen Middle East and North Africa countries and applied the error correction mechanism for these countries. However, they also found that a long-term relationship does not exist between pairs of variables in thirteen countries including Turkey and they also apply a short-term causality tests on the assumption of existence of short term relationship

in these countries. Likewise, Ünalmış could not find long term relationship for two of the five variables in his study, which investigates the relationship between financial development and economic growth in Turkey and he also found that the short-term Granger causality test for these variables do not have a long run relationship. In this study, we conducted Granger Causality test with assumption of existence of short term relationships between variables [29, 32, 33].

In the second Granger Causality analysis, causal relationship between stock price and price/earnings ratio from price/earnings ratio to stock price has been found. Likewise, a causal relationship between stock price and dividend per share from dividend per share to stock price has also been found. A bi-directional causal relationship has been found between stock price and firm size. In other words, when stock price affects the firm size of the company, firm size of the company affects stock price. In the last investigation of causal relations, a one-way causal relationship has been found from stock price to market value/book value ratio.

Following the determination of causal relationships between variables, results of fixed and random effects models used to forecast the financial variables and their behavior. For this purpose, F and LM tests are conducted to decide the appropriate panel data model. According to the table Hausman test statistics is rejected at 1% significance level and explain that fixed effects model is more appropriate than the random effects model with F-test results. Because of time effect and unit-time effect are rejected at 1% significance level according to the F test results, Therefore, it will be appropriate to use fixed effect model based on units of time.

Fixed and random effects models

Fixed Effect Model		
Variable	Coefficient	T statistics
C	0.0732*	16.1957
P/E	-0.0015	-1.3507
DPS	0.0013**	1.7834
FIRMSIZE	0.0108*	2.4508

P/B	0.2709*	18.3635
Unit Effect	There is not	
Time Effect	There is	
Unit- Time Effect	There is	
R-Square= 0.6432	F= 28.0844*	
F(probability)= 0.0000	DW=1.8796	

Note *, ** and *** indicate the significance at 1 per cent, 5 per cent and 10 per cent significance level, respectively.

Random Model		
Variable	Coefficient	T statistics
C	0.0725*	4.9467
P/E	-0.0008	-0.8474
DPS	0.0013**	1.9448
FIRMSIZE	0.0137**	2.3415
P/B	0.2766*	16.2572
Unit Effect	There is not	
Time Effect	There is	
Unit- Time Effect	There is	
R-Square= 0.1978	F=93.7587*	
F(probability)=0.0000	DW=1.8112	

Note *, ** and *** indicate the significance at 1 per cent, 5 per cent and 10 per cent significance level, respectively.

It shows the results of estimates of fixed and random effects models. The fixed effect model gives more consistent results in the Hausman test. According to this DPS variable, FIRMSIZE and P/B variables are found positive and significant at the 10%, 1% and 1% significance level respectively. P/E variable found insignificant. R² value which shows the explanatory power of the model is approximately 64%. F value which shows overall significance of the model is significant at the 1% significance level". The Durbin and Watson value signify that given model does not have autocorrelation.

5. Discussion and Conclusion

In any economy the financial system plays a crucial role in assignment of capital sources. However in sophisticated and well managed financial systems, the cash flows from the people who have those who have excess funds to those are in short of capital, when it comes to indirect way the market-based financing comes to help, and also finance that is backed by banks.

Since 1980 the appropriate provision of capitals and funds make it easier for the decision makers to predict prices of the stock in efficient way thus we can call it to be a “paradigm shift” in the economic and financial studies. Thus the stakeholders cannot forecast the prices stock accurately if the prediction of returns on stock has been a stimulating subject in asset valuation. Thus it’s not shocking that business people and the long term policy formers in business and finance use different kinds of variables for predicting the returns on stock.

In this research, the financial ratios have been used to predict the return on stock for Iraqi stock exchange. We have used Panel data estimation technique form the period of 2008 to 2018, and the quarterly data for prediction of returns on stock.

The financial ratios which have been used for the prediction are “price to book ratio (P/B), price to earnings ratio (P/E), dividend per share (DPS) and firm sizes” which forecast return on stock efficiently. The results of this panel data based estimation technique shows that size of firm has been proven to have higher influence to forecast the return on stock as compare to the other variables.

The dividend per share (DPS) and the price to book ratio (P/B) have relatively less prediction power. Though, between the price to earnings ratio (P/E) and returns on stock there is no significant relationship found.

The Granger Causality Test explained that, there is a fundamental connection between price of stock and price to earnings ratio. Thus this research had explored that there is a causal relationship found among price of stock and dividend per share. This there is a “bi-directional casual” relationship had been found among the firm size and price of stock. Also the research had found an oneway causal relationship between price of stock and the book value.

Hence we can say that the results from this research study have provided some significant directions to the policy makers, brokers in financial world and the financial analysts who use the prediction models, which give considerable and furistic directions to the stake holders not only working in Iraq but working internationally with these Iraqi companies. Additionally, reducing the size of firm can be a good predictor to the stock return; hence it will give a yardstick for stakeholders before making the investment decisions.

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