STOCK RETURN PREDICTABILITY WITH FINANCIAL RATIOS: AN EMPIRICAL STUDY OF LISTED MANUFACTURING COMPANIES IN SRI LANKA

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DECLARATION

I declare that this is my own work and this thesis does not incorporate without acknowledgement any material previously submitted for a degree or diploma in any other University or Institute of higher learning and to the best of my knowledge and belief it does not contain any material previously published or written by another person except where the acknowledgement is made in the text and a list of references is given.

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ABSTRACT

This study attempts to investigate financial ratios' predictive power, using the time series data over the period of 2011/2012 – 2016/2017 for 33 listed manufacturing companies in Colombo Stock Exchange. This empirical study specifically identifies financial ratios, which are known as the predictors of stock returns in the share market, to test the stock return predictability on the Sri Lankan market. The financial ratios include the ratio of dividend yield, earnings per share, earnings yield, return on equity and current liability to total asset ratio which are most useful and effective on stock return predictability in order to cover a wide range of predictions which have been used by all most all the previous researches. The results of OLS regression indicate that there exists significant impact of financial ratios on stock return. Furthermore, based on the fixed effect it is confirmed that the stock return has positive relationship with earning yield, Earning per share and Firm age. The regression results show high predictability power, since the R^2-values are high and the coefficients are very significant using heteroscedasticity and autocorrelation corrected standard errors. The results show the all ratios hold a someway predictive power regarding stock returns of the Listed Manufacturing Companies in Colombo Stock Exchange.

Keywords: Dividend yield, Earning yield, Earning per Share, Stock return, Colombo Stock Exchange.

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LIST OF ABBREVIATIONS

OLS -Ordinary Least Squares

DY -Dividend Yield

EPS -Earning Per Share

EY- Earning Yield

SR -Stock Return

ROE-Return on Equity

MPS- Market Price Per Share

CL/TA- Current Liability to Total asset

FS- Firm size

FA –Firm Age

B/MV- Book value to Market value

DPS- Dividend Per Share

MPS- Market Per Share

P/E Ratio – Price Earnings Ratio

ROA- Return on Assets

MP/BP- Market Price to Book Price

BV/MV- Book Value to Market Value

GDP- Gross Domestic Product

CHAPTER 1 INTRODUCTION

1.0 Background of the Survey

The financial market wields the remarkable influence on the economic growth of any country. According to the observation of Schrimpt (2010) the share's return predictability is monumental importance. Kheradar et al (2011) observed that the stock market share prices fluctuate randomly. That is some days the share prices are increased and on some days the share prices declined. The random movement of share prices makes it necessary for the researchers to undertake similar researchers. The random movement of share prices produced the random walk hypothesis remarked that by reason of the time to time change of the share prices stock return prediction is difficult. So the stock return prediction can't be hundred per cent correct. On the contrary, the casual walk behavior produced the efficient market theory, it is stated that prices are reasonably prices in the financial market.

The researchers had identified the variables to predict the share's return from time to time. Some of them were found to be financial ratios and some of them found to be profitability ratios. Those variables are B/M ratio, DY, EY, EPS and ROE. Moreover, some variables were focused on the macro economic factors via interest rate, GDP growth and inflation.

The characteristics of the financial properties and liability return importantly contribute to the development of the fiscal and economic policy. Measuring the changes in the stock market becomes necessary for the formulation of the best fiscal policy.

The undertaking of the research from year to year will help the finding out of the time to time changes of the share prices. This research is used to forecast the stock return by the use of dividend yield, earning yield, return on equity, earning per share and current liability to total assets ratio.

Such researches undertaken in Sri Lanka are found to be very few. The Sri Lanka financial market makes a remarkable contribution to the trade and Industry development of the country. As such the undertaking of similar studies becomes an

indispensable necessity. The accounting information helps the researchers to prognosticate the future. The financial ratios help the making of decisions in relation to the share market. So the investors can choose the lucrative investments in the stock market. This research enables to attempt to identify the among the ratios taken into consideration in this study with stock return of the selected listed companies under manufacturing sector.

1.1Problem Statement

Analysis of market returns and using time series analysis were undertaken on a large scale in the countries such as America, UK and other developed countries. According to the views of Goyal and Welch (2003) before the 1990, the prediction of the stock return was found to be impossible. Nevertheless, it was stated that such researches were possible in the years from 1926 to 1990. They stated that change in the dividend process would affect the stock return. Even though empirical evidence has been proofed on firm size and book to markets effects in behavior of stock price in CSE. Samarakoon (1998), Amerada (2007) and Chaturika Seneviratne and Nimal (2007) undertook similar researches on this topic. They found out that by the use of financial ratios, the stock return could be predicted. However, they stated that similar researchers should be done in the future also. Therefore, the objective of this study is to reconsider whether the share's returns of companies listed under the manufacturing sector is explained by financial ratios. Hence this study tries to test the relationship between financial ratio such as EY, DY, EPS, CL/TA and ROE on equity on share's return of companies listed under manufacturing sector in CSE. The survey will take effort to answer the following question related in this study. To what extent the selected ratios have the power to predict the share's return of the companies taken in this study listed under the manufacturing sector.

1.2 Research Questions

Problems derived from the literature survey, the research questions to be answered.

• What is the current research position of such researchers on the subject area?

• How to estimates the model and what are the estimates?

• How would such models help to forecast the stock return in the companies listed under the manufacturing sector in CSE?

1.3 Objectives of this Survey

Major scope of this survey is to reveal the association between specific financial ratios and the share's yield of the companies scheduled under manufacturing sector in CSE.

Sub purposes are

i. To calculate the average value, in respect of DY, EY, EPS, ROE and CL/TA.

ii. To estimate the share's average return of companies taken in this study.

1.4 Significance of the survey

According to what was stated by Fama (1970) the stock market is very hyper sensitive to both ground rules and potentials. It is often stated that the prices of the shares under go changes of the changes in accordance with the economic changes. This is found to be supporting the empirical findings. That is to say that the macro economic factors have the power to predict the stock return. It is found that price of the shares trend to vary with changes of the economy, furthermore this type of result is helped by empirical findings indicating that variables via inflation. Interest rate, and unemployment rate have explanatory power on share prices and return. The level of return realized or expected from an investment is dependent on number of variables such as internal and external factors of the selected companies. The internal factors can be the type of capital, quality of investment portfolios, and type of different sources of financing required and others, whereas external factors can be price level, influence of government & politics, changes of inflation rate, and ongoing banks loan rate and deposit rate.

• Results of this study will be of significance to CSE analysers and investors in determining investment return and strategies so as to ensure investors earn systematically above average return by investing in appropriate company's shares.

- External investors and shareholders will be able to know the main financial ratios that impact the stock return and to observe firm's profitability level before taking the decision on whether to buy or sell stock.

- Professional managers who can mull over these factors of earnings to create the optimal financing portfolio that helps achieve the company's objectives.

- Lenders may use the findings in evaluating the firm's stock returns before offering long term loans with particular importance on the level of risk involved.

- Theoretically, this kind of survey will enrich the existing knowledge on ratios and returns of the stock of selected firms from CSE. The study will also be of value to academicians who may wish to carry out future survey on the topic of impact of ratio analysis on the gain of the stock of the firms in the CSE.

1.5 Chapter Organization of the report

This research consists of five chapters such as Introduction to research, Literature Review, Methodology, Data Presentation and Analysis and Findings and conclusions. Chapter II deals with the literature review. Theoretical concept and inferences from past research papers are included in this chapter.

Chapter III focuses on the methodology. It includes conceptualization, research samples, data collection techniques, Hypotheses and methods of analysis of data.

Chapter IV concerns with the presentation and analysis of data. Here various methods are employed to present the data and techniques of simple least square, fixed effect regression model are used to analyze the data.

Chapter V deals with the summary and conclusion. The findings, recommendations and scope for future research are discussed here.

CHAPTER 2 – REVIEW OF LITERATURE

2.0 Preamble

This chapter presents the connected literature both theoretical and empirical review on stock return and financial ratios which carried out in developed and developing countries. The chapter presents a theoretical literature on financial ratios via DY, EY, EPS, ROE and CL to TA ratios and stock return as well as the empirical study on the Stock return and financial ratios from different sources.

2.1 The Concepts of Financial ratio

The principal or prime purpose of a financial report is to offer the requisite data to the inside and outside users to take a proper decision regarding the investment. Accounting and financial reporting attach monumental importance to the growth of efficient capital market. Nothing can be mentioned based on the financial report published by the companies. From the data obtained published financial report, the financial ratios can be calculated. By the analysis of the financial ratios the performance as well as the capacity of firms can be assessed. By the comparison of the financial ratios the financial condition of the company can be assessed. Several financial ratios are found in the financial management. From time to time on the basis of the financial ratios, decisions are made.

The financial ratios indicate the relationship between two values from a company's financial statements. The financial statement includes the profit and loss accounts in a statement form of the balance of the asset and liability, statement of the cash inflows and the outflows for a given period. Specially, financial ratio is reviewed as an amount in the form of percentage. These ratios help evaluate the financial, operational performance of the companies.

Do the comparison among companies by using calculated ratios is the common way of analysing the relative values of stocks among investors. The major help of using ratios as a replacement for the figures from the profit and loss account statement is that

they are common for any size of the firm. The firm's position of finance, operations and attractiveness as an investment are evaluated by the ratio analysis.

The financial analysis is that it has a clear- cut analysis of the balance sheet figures of the company. Monami observed that the financial analysis is a study related to the analysis of the strength and the weakness of the firms. By undertaken the financial analysis, one could ascertain tenders the greatest help to the tax department, accountants, bankers and financial market councils to do their work with remarkable ingenuity. At present the usage of the financial ratios increases because it is simple to measure and interpret besides the possibility of the measurement helps to judge the firm performance. Although various financial ratios are found, in this study the following financial ratios are taken.

2.2 Financial ratios and Stock Returns

Based on the previous studies, financial ratios via dividend yield (DY), earning yield, Earning per Share, Return on Equity and Current liability to Total asset ratio have a valid empirical findings and evidence of theoretical background. Based on this the above ratios are considered to be explanatory variables in this study.

2.2.1Dividend Yield (DY) and Stock Return

By the way of the literature review, the DY has the power to predict the stock return. It has been considered as the most important ratios to predict the stock return in US, UK and Canada. Resultantly, the DY places a stellar role in predicting stock return. Based on that, dividend yield is considered to be independent variable in this study.

2.2.2 EY and SR

For a long period, the EY is found to be the basis to price the stock as the standard method of era. The EY is contentiously the multiple of the price which is frequently discussed by the researchers, financial analysers and used by the investors to analyzer the investment opportunities and EY is indubitable still the intimate valuation measure today.

2.2.3 EPS and SR

EPS are found to be of overriding importance in determining the market price of the shares of the firms. With the enhancement the shares the market price of the shares will rise. In accordance with the literature review, EPS is utilized as the independent variable of this study. A firm that successfully functions earns substantial profits. This will rise the earning per share of the company.

2.2.4 Return on Equity and Stock Prices

ROE and stock return are found to be the subjects of analysis by the researchers. These two variables wield considerable influence on the performance of the company. ROE compares the accounting profit for the investment whereas the stock return measures the income emerging from the investment of shares. The purchase price does not always represent the value of equity capital. As such the ROE and stock return are found to be different.

2.2.5 Current liability to Total Asset Ratio

Debt capital contributed the fund from the external creditors of a company. This is treated as loan because of the very fact that it has to be repaid by the firms. Debt financing are considered to be leverage of a firm. Between is two a caveat is found. Generally, the usage of debt financing is not considered to be bad since it provides the requisite finance to the growth as well as the expansion of the firm. The usage of the leverage is found to be more predominant than the cost of debt financing.

2.3 Empirical findings on Stock return predictability using financial ratios

Campbell and Sheller (1988) made an effort to explore the association betwixt share's market price and probable dividends. Researchers found that is dividend policy had the ability to forecast the expected return and expectations. DY also has the prediction power of the growth of dividend yield. So DY was taken one of the explanatory variables in this survey.

Chan et al (1991), studies about fundamental and stock returns. They established that there was a connection between EY and stock return in Japanese stock exchange. In comparison of the dimension of the organization and EY, B/M value and DY had the significant effect in stock return.

Mukerji et al (1997) in his article on the topic of A fundamental analysis of Korean stock found the direct relationship between return on stock and financial ratios. They found that P/E ratio was less predictability power than debt to equity ratio.

Kothari and Shaken (1997) did a survey on the topic B/M and expected M/R in US market. They found that DY and B/M ratios had impact on real return during the research period from 1926 to 1991. Here lied a tract of variation in time series among the companies.

Lewellen (2002) did a survey on the heading of prediction of share's profit with the help of ratio analysis in US. Researcher concluded that ratio analysis had the predicting power of stock profit on the US companies. They suggested that the predicting power for forecasting stock profit was more than PE ratio and book to market ratio.

Ang and Behaert (2007) did a study on the topic of stock return predictability. In that study they had taken a effort to anticipate the IR and SR with the facilitate of forecasting strength of DY. The results implied that DY had the predicting power of return of stock market. Compared with expected growth of cash flow to the dividend yield, dividend yield had a good predictive power.

Hjalmarsson (2010) investigated a survey on the topic of predicting global stock return. He has taken into consideration twenty thousand monthly observations from 40 international stock market. Out of 40, 24 companies were of urban economy and sixteen were of developing economy. He found that DY and P/E ratio had the predicting power of share's return. He defended his conclusion by adding that international result was showing deviation from traditional view because the methods use internationally.

Panahiha (2000) had done a study on the topic of B/M ratio as prediction of market return. They used the B/M ratio to predict the market return. The study revealed that

there was a significant positive impact of the ratio of the B/M on equity capital and return of the market.

Rozeff (1982) made a research on the topic of the growth, beta of the return and agency cost of the company as determinants of DP ratios. He concluded that D/Y has the predicting power of the return of the stock. Reason for this was D/Y acts on a measure of the exact risk of the stock premium. He found that when the investors realize the high risky situation regarding their investment, they demanded the higher return from their investment.

Goetzmann and Jorion (1993) did a survey on the topic of trying the analytical strength of DY. They have used the boot strap methodology and simulations. The study revealed that DY and stock return have the significant association among them.

Fama and French (1992) carried a survey on the topic the cross section analysis of expected stock returns. They found that the systematical risks or beta has significant impact on stock return. That is the stock with lower beta requires lower stock return whereas the stock with higher beta requires the higher stock return in US market.

Chairakwattana & Nathapan (2014) did a survey to find out the forecasting power of future stock return by employing BM model for the period from 2001 to 2011 in Thailand. They found that B/M ratio, risk of investment and inflation rate were valuable forecaster of the forthcoming return in Thailand.

Barbee et al (1996) did a study on the heading of sales- price and DE ratio clarified return of the stock better than B/M ratio and FS. They explained in the findings compared with D/E ratio, B/M ratio and FS had the predicting power of the stock return.

Alexakis (2010) researched about stock return prediction and financial figures collected from financial statements information. Empirical evidence from emerging Greek stock market. The results revealed that the leverage ratios and asset turn over have the impact of stock return asset turnover whereas ROA and NPR has no impact.

Martani and Khairurizka (2009) did a survey on the topic of the financial ratios and stock return. They found that FS and CF from the operating activities have the significant impact on stock return.

Er and Varun (2012) did a research to test the factors upsetting stock profits in Turkey capital market during the period of 2003 to 2007. They have used the technique of dynamic panel data approach. They found that both the activity ratios and profitability ratios had the significant impact on the return of the Turkey capital market.

Percharabul and Romprasert (2004) did a study on the topic the relationship between financial ratios and stock return in Technology industry using panel data analysis. This study concluded that P/E ratio, EPS ROE were significant impact on stock return whereas CR ratio, inventory turnover ratio and leverage ratio have no impact on return of the stock.

Kheradyar et al (2011) did a study on the topic of the analysis of ratios using time series analysis. The study revealed that in stock market share prices move time to time. They argued that investors were not essentially taken into account with firm's financial strength or positions unless they can earn income from it. Furthermore, EPS and DY had the power to signal of the profitability of the firms.

Dongwei (2003) studied about reaction of stock price and dividends announcements: empirical studies from Chinese markets. They revealed that stock price change occurred due to the changes in EPS in the CSM. The study reported that local investor on approximately did not perfectly forecast the changes of EPS and did not bend very speedily to the new gain data from the markets.

Ghayoumi et al (2011) analyzed about analysis of relevance of accounting information from data gathered in Romanian Emerging stock exchange. They found that the local investors in the Tehrans stock exchange used the ratios via EPS and annual changes of EPS to predict the income from their investments.

Hejaz et al (2011) views a study on the topic the analysis of stock income using of the content of accounting variables in Tehran stock exchange. This study revealed the relationship between SR and accounting variables. NPR, OP income was considered

to be explanatory variables and net cash for operations were considered to be dependent variable. The results revealed that OP, NPR had impact on the income of investments.

Khan et al (2012) did a study on the topic of financial ratio and prediction of stock return. They explained that DY, EY and BVPS had different and positive impact on the stock return in the stock exchange in Pakistan for the study period. He conclueded that BVPS had more illustrative power compared with EY and DY.

Manaje (2012) did a study on the topic of Impact of selected variables on share prices of companies listed firms in the Philippines. He set up that EPS has positive correlation with share price and ROA showed a negative association with share price in the PSM.

Mgbame and Ikhatua (2013) studied about accounting ratios and stock price changes in Nigerian stock market. They found that B/MV, DPS and EPS have significant effect on stock price changes in NCM.

 Emamghholipour et al (2013) in his article on the market ratio and the stock return of companies in the TSE during the research period 2006 to 2010. They found that EPS had positive effect on stock return whereas P/E ratio and MV to BV ratio had significant and negative impact on the shares return of the existing year.

Constand (1991) observed the forecasting power of profitability of companies in the stock exchange using their selected ratios. He suggested that the companies with low income and high profitability divided into two gangs and the results reflected that a high potential for forecasting was predicted by selected ratios.

Miri and Abraham (2010) in their article titles on the association among accounting ratio and shares return in the non –minerals industry in TSE during the research period of 2003 to 2007. The results proved that those linear and nonlinear relationships between selected ratios and stock prices there was no intercept association were able to interpret the stock prices.

Salehnejah et al (2010) conducted a survey on the ROA and ROE of listed companies. Results revealed that ROA and ROE were significant impact on stock return and gearing ratio did not significant on stock return on TSE.

Muhammad (2014) investigated stock profits and ground rules of the firms in the market of Australia. The results of the study revealed that the balance sheet and profit statement had the significant impact on share prices.

Refenes (1994) conducted a survey entitled performance of stock modeling usage of neural networks. The results showed that neural networks had good performance indicator than the models in statitistics.

Tan et al (1995) examined conservative 30day stock forecasting using a neural network. The system had been developed major changes in the short term stock price estimation. The events had taken place before dealing out and neural network modeling the position very well benefit estimates.

Macmillan (2011) did a survey predictability of stock return. Using non parametric and threshold model. According to the findings the independent variables such as interest, dividends, ROE and ROA were determined through a sample logarithmic model.

Souto Maior (2006) investigated forecasting IBOVESPA index with fuzzy logic. The result was predictable and has adequate evaluation.

Kanas and Yannopouluos (2001) investigated comparing linear and nonlinear forecasts for the stock returns. Linear models had the predictability power of stock return.

Olsen (1995) conducted a study to forecasting stock return using ratios. They found that the neural network analysis has the forecasting power of stock income and forecast error was significantly low priced.

Jabbari and Fathi (2014) carried out a research on the Topic ' Stock Returns forecasting Using Financial Ratios Based On general Cost, Compared With AP With Neural Network Approach' They found that the stock return based on the financial ratios

adjusted based on the general price index and the use of neural networks better performance in comparison with historical financial ratios and least squares regression approach in predicting stock return had the variables were adjusted based on the general price index, variable, net margin , return on assets, current ratio , asset turnover and fixed assets turnover ratio respectively , were of the greatest importance and impact.

Wijesundera et al (2015) carried out a research on the topic of Stock Returns and ratio analysis: based on CSE. This survey applies least squares (LS) model to forecast the stock return in CSE. The outcome tinted that ROA, DY and MP/BP had a significant link with the stock return which is agreed by a linear equation to forecast the past returns of the stock market.

Perera (2010), conducted a survey with Thilahawardena on the topic of Accounting Information on Investor's Decisions in CSE, Sri Lanka. Findings revealed that accounting data such as EPS, ROE and EY have the significant impact of return of the stock.

Mohamed Ismail and Athamba (2015) studied about B/Mk Ratio and SR: Study on the CSE. They found that the portfolio which has higher risk earned higher return than lowest risk portfolio. The survey concluded that in CSE there was a value effect exists.

Ume Salma Imran (2018) did a study Predicting Stock Returns Using Financial Ratios: A Case of Pakistani Listed Companies. This study investigated the effect of financial ratios with propose of predicting stock return on Pakistan Stock Exchange. They found that the market to book ratio, dividend yield price earnings ratio had the predicting power of Pakistan Stock Exchange (PSX).

Samarakoon (1998) did a survey on the topic 'analysis of stock return in Sri Lanka. He found that beta has negative effect whereas the PE ratio has the positive impact of return of the stock. They recommended that share of the firm with low risk may give higher average gain. This indicated that fundamental analysis that was based on the widely used positive relation between market risk and returns may not work in Sri

Lanka. The positive E/P-effect implied that stocks with higher earnings-price ratio tend to produce higher average returns.

Nimal (1997) investigated about 'Relationship between stock returns and selected fundamental variables: Evidence from Sri Lanka. They found that beta, FS, P/E ratio and B/E ratio using daily and annually data for the period of 1991 to 1996. It is found that P/E ratio is significantly positively related with SR for all analysis used in that study. The stock has positive significant relationship with P/E ratio.

Jiang and Lee (2009) analysed about 'Do the financing ratios have the prediction power of Stock Returns. They concluded that all ratios have the prediction power of returns and fundamentals. This will help to explain that financial ratios in the absence of decay find faint foretelling power in short horizons and some predictive power in long horizons. They found both components predict return, reliable with present value models.

CHAPTER 3 METHODOLOGY

3.0   Introduction

This section explains the methods of analysis used in this study. To complete this study many stages and methods that were adopted. It involves a plan for the data collection, data measurement and investigation of data using different techniques. In this section the research presented the models used in this study and techniques that were used in the collection of the data on study. This chapter includes the data collection, conceptual frame work, Hypotheses, variables of this study, and statistical techniques which are used to analyze the data.

3.1 Variables of the Study

A variable is found to be undergoing a change from one variable to the others. So when a research is undertaken, the variables subjected to the critical study should be perspicuously defined. The variables taken up for study are grouped to be forecasting and explanatory variables. The dependent variable is found to under a change by the explanatory variables. Importantly in this study the stock return of the listed companies listed under manufacturing sector is considered to be dependent variable.

3.1.1Stock Return (SR)

Accordance with the research of Lewellen (2001) and Samarakoon, (1998) in this study the stock return is used as dependent variables. The Stock return is obtained by the addition of dividend yield as well as capital gain. formula for calculation of stock returns as follows.

SR= (DPS + CG)/MPS

Where

SR-Stock return

DPS- Dividend per Share

CP- Capital Gain

MPS- Market price per share

3.1.2 Dividend Yield (DY)

In accordance with the Samarahoon (1998) the DY ratio is considered to be one of the explanatory variable in this study. This is obtained by the division of DPS on MPS. If MP is less than DY this will reveal a dangerous trend for the investment. On the contrary the low DY gives an optimum view in regard to the investment.

DY can be calculated using the formula given below.

DY = (DPS / MPS) x 100

Where

DPS- Dividend per share

MPS- Market price per share

3.1.3 Earning Yield (EY)

The empirical study state the fact the EY has the forecasting power of the stock income. As such the EY was taken up in this study as a explanatory variables. Furthermore, the EY explains the competence of the capital marketplace which has a preponderant role in determining the stock profit, thus this study utilizes the EY as the forecasting of the return of the stocks.

3.1.4 EPS

EPS measures the amount of income in Rupees earned by the total investments. This is obtained by the division of the net income by the number of shares.

3.1.5 ROE

ROE is obtained by the division of the net income by the share holders' equity. As the share holders' equity is equal to company's assets minus its debt.

3.1.6 Current Liability to Total Asset Ratio

CL/TA is measured by the division of spontaneous sources of finance by its total assets. What is meant by the spontaneous finance is that it denotes that debt resulting from the day to day activities of the companies. The firms did not pay the interest to these kinds of sources of financings.

3.2 Data Collection of This Study: In this study secondary data will be utilized to achieve the main objectives. The data will be collected from the hand books of listed companies published by CSE and CD issued by CSE, annual reports of companies.

3.3 Developed Hypotheses in this survey

In this study, the following hypotheses are considered by the researcher.

H_1: DY has the forecasting power of the stock return companies listed in manufacturing sector.

H_2: EY has the forecasting power of the stock return companies listed in manufacturing sector.

H_3: EPS has the forecasting power of the stock return companies listed in manufacturing sector.

.H_4: ROE has the forecasting power of the stock return companies listed in manufacturing sector.

H_5: CL/TA has the forecasting power of the stock return companies listed in manufacturing sector.

3.4 Data Description

There are 20 sectors are listed in CSE**.** 20 sectors are available in the CSE. In this survey researcher on considered the manufacturing sector. There are 40 companied listed under the manufacturing sector. Out of 40, only 33 companies are taken in this study. Data garnered from 2011/2012 to 2016/2017 were taken into consideration and altogether 198 observations are considered in this survey.

3.5 Model Specification: Under the review of literature, researcher carefully studied the empirical and theoretical concepts related this topic. After that researcher developed the conceptual model and presented in the figure 3.1.

INDEPENDENT VARIABLES	DEPENDENT VARIABLES
Financial Ratio	
EPS	
DY	Stock Return(SR)
EY	
ROE	
CL/TA	
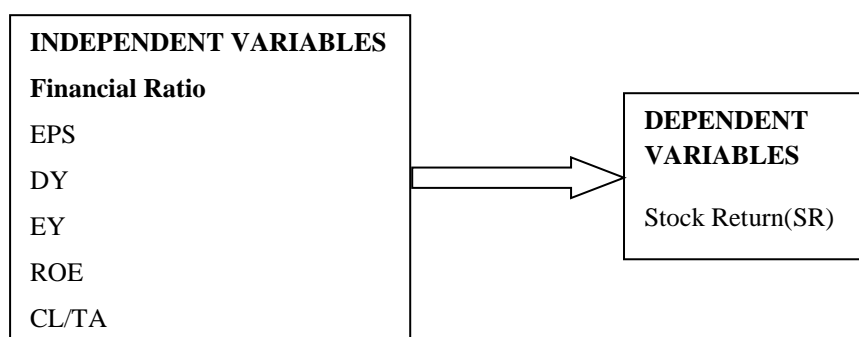
Figure 3.1Conceptual Model Source: Developed by Researcher

3.6 Research Methodology

To achieve the objective mentioned in chapter 1, researcher has applied the following statistical techniques to analyse the garnered data.

3.6.1 OLS Regression Analysis

To achieve the main objective of this survey, data analysis was done by the usage of Eviews software 10. Furthermore, to analyse the data panel data analysis was carried out. Below given model is the regression model will be used to analyse the data garnered in this study.

$$X_t = \propto + \beta x_{t-1} + \varepsilon t$$

Where, β is greater than zero 0 and Xt is the ratios used in the research period t.

With the help of basic linear equation given below gain of the firm's stock is forecasted using the ratios.

$$R_t = \beta 0 + \beta 1 x_{t-1} + \varepsilon t$$

Where, R_t is the gain of the firm's stock for the research period t and X_{t-1} gives the ratios taken in this survey.

The coefficient value of the selected variables in this study would be determined by the simple LS model and the R squared value of the model. Eventually, the return of the forecasting return of shares will be made using fixed effect and random effect models and the effects of the explanatory variables on the stock return.

3.7 Residuals Analysis

To test the validity of the model residual analysis was carried out by the use of software Eviews10. To test the residual diagnosis, the following tests are found in the Eviews software.

3.7.1 Correlograms for Residuals

To test the auto correlation correlogram was utilized. For the randomness autocorrelations should be near to zero; if the analyst fails to check for the randomness, then conclusions May be wrong. The correlogram is used to be the best method to test for such randomness.

3.7.2 Normality of Residuals

The normality of the returns can be tested usage of test which is called as the Jarque-Bera test for normality. By the utilization of Jarque Bera test normality of residual can be determined. This test measures the skewness and ketosis of the series compared to the normal distribution.

3.7.3 LM Test

To test whether there is serial correlation, LM test was harnessed. To get the valuable conclusion from the regression results we need to satisfy the assumptions inherent with the models which were applied.

3.7.4 Heteroscedasticity

In the application of regression analysis, If we allow the heteroscedasticity it leads to wrong statistical results of significance that assume that the modeling errors are uncorrelated .

3.8 Fixed effect and Random effect model in panel data

An advantage of panel data is that it permits analysis which might otherwise have been precluding due to insufficient observations overtime. The fixed effects model may be written as:

$$Y_{it} = \beta X_{it} + \alpha_{it} + \mu_{it}$$

Where $\alpha i = (i=1,2\ldots n)$ is the unknown intercept for each entity (n entity –specific intercepts 0, Y_{it} is the predicting variable where i = entity and t= time, X_{it} represents Explanatory variable . β is the coefficient for X_{it}, μ_{it} is the error term.

Random effects model reveals the variation across entities is to be random The general random effects model may be written as

$$Y_{it} = \beta_1 X_{it} + \alpha + \mu_{it} + E_{it}$$

Where i= 1……., N firms, t= 1,T time period with k regressors in x_{it} and μ_{it} there is a normal error term and Y_{it} is profitability.

3.8.1 Hausman Test

To differentiate between fixed effects model and random effects model in panel data the Hausman test will be also used.

3.9 Summary

Chapter 3 explains the methodology used in this study. This chapter also discussed data collection methods and sample selection of this study. To predict the future events, the ratios via EY, DY, EPS, ROE and CL/TA ratios are used in this survey. In addition, financial scholars are often interested in analyzing the financial ratios for the

forecasting of future stock returns. Accordingly, the present study aims to examine the effects of financial ratios for the forecasting the stock returns of listed Manufacturing Companied in CSE by employing the following financial ratios: EPS, DY, EY, ROE and CL/TA and Stock Return.

CHAPTER 4 DATA PRESENTATION AND ANALYSIS

4.0. Introduction:

This chapter includes the data presentation and analysis. Forecasting stock price using ratios of companied under manufacturing industries in Sri-Lanka is found out with the panel data analysis. Lease Square regression model, fixed and random effect model were used to predict the stock price using financial ratios of manufacturing industries in Sri-Lanka. For the analysis purpose, this chapter is mainly divided into the followings,

    i.   Presentation of Financial Ratios

    ii.   Least square Regression Analysis

    iii.   Residuals diagnostics

- Correlogram for the Residuals
- Serial Correlation LM Test
- Heteroscedasticity Test
- Normality Test

    iv.   Fixed effect Model and Random effect model

    v.   Hausman Test

4.1 Presentation of Financial Ratios

To take the financial decisions the ratio analysis and comparison ratios are important. To predict the stock return in this study, the financial ratios taken up are presented here. Financial ratios may be utilized by management within a firm, by the owners of a firm, and by creditors of the firm. This helps finding out the trend of the selected ratios of the listed companies listed under manufacturing sector CSE.

4.1.1   Earnings Per Share (EPS)

EPS is the appropriate ratio to measure the profitability of the companies. The following figure shows the EPS of the companies for the research period. EPS is the proportions of the firm's earnings that is assigned to outstanding balance of equity.

Figure 4.1.2 given above indicates the trend of earning per share of the selected manufacturing companied for the year from 2011/2012 to 2016/17 financial year. The trend shows the rise and fall of EPS of the manufacturing sector. The figure shows the negative trend of EPS some times. Nevertheless, the EPS of the other periods of manufacturing companies are found to be positive.

EPS
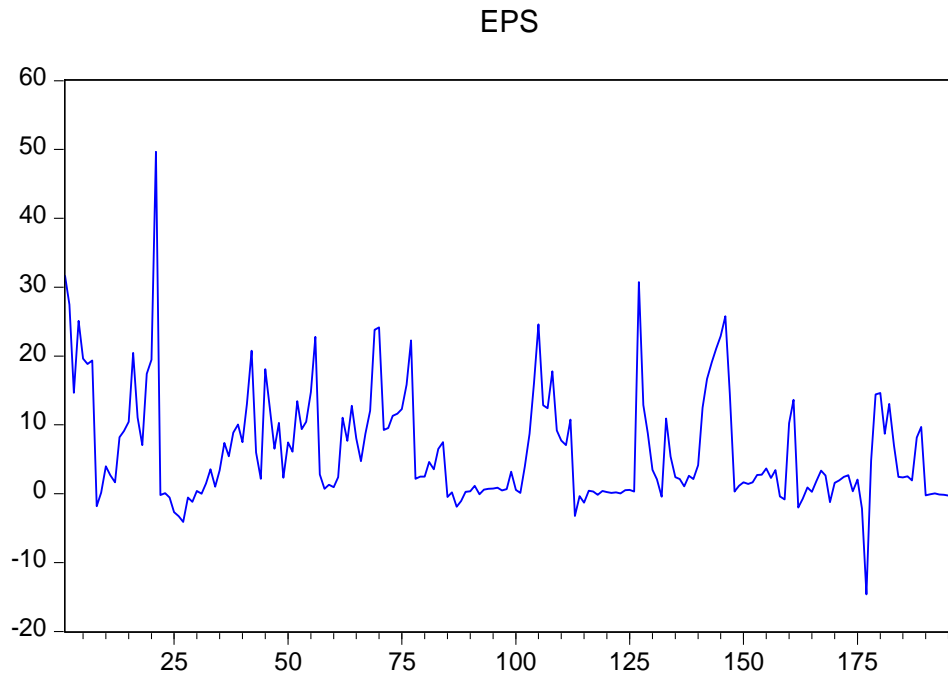
Figure 4.1 .1 Earning Per Share

4.1.2   ROE of the companies

ROE shows the company's profit on capital of the equity investment. This shows the amount of profit they earned from their capital investment. The figure shows the rise and fall ROE from time to time. But during some period the ROE is found to be negative.

Figure 4.1.2 given above indicates the trend of return of equity of the selected manufacturing companied for the year from 2011/2012 to 2016/17 financial year.

ROE

Figure 4.1.2 Return on Equity

4.1.3 Dividend Yield

The earlier researcher indicated the fact the DY plays a remarkable role in determining the stock return. This shows the payment of dividend; the companies provide for their shareholders. This is calculated by the process of dividing the DPS by the market price per share. If the dividend is not increased or decreased, the DY will rise when the price of the share's falls, and it will decline when the price of the share increases. Because the DY changes with the price of the share, it always appears uncommonly high for shares that are declining suddenly.

Figure 4.1.3 given above indicates the trend of the Dividend yield of the selected manufacturing companies for the year from 2011/12 to 2016/17 financial year. The trend shows that the companies pay acceptable dividend for their shareholders.
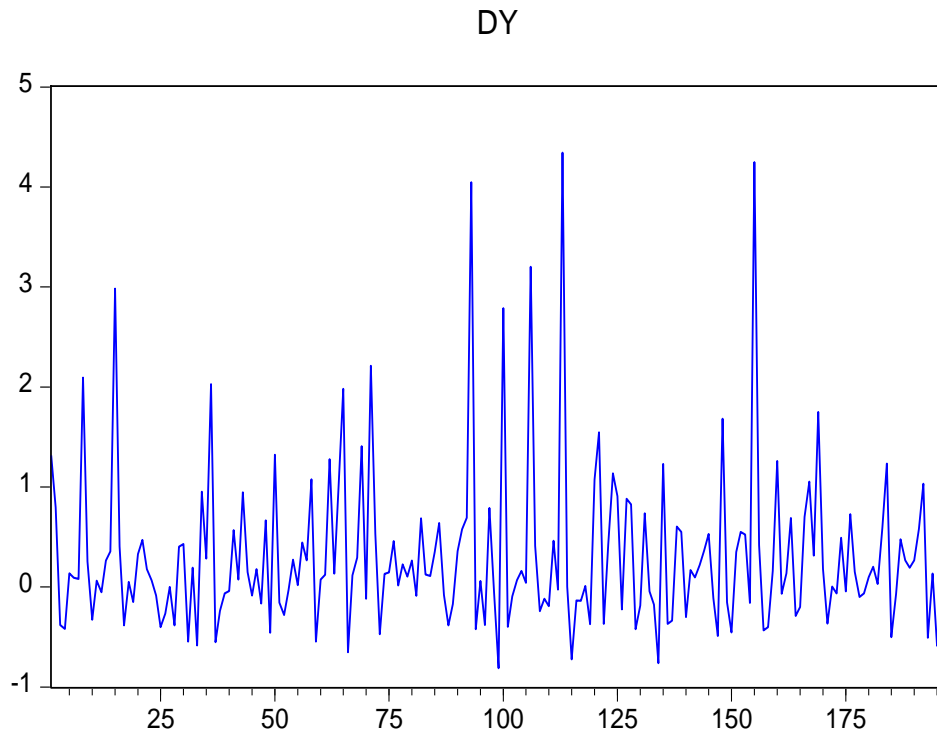
Figure 4.1.3 Dividend Yield

4.1.4 Earning Yield

One of the way is to evaluate investments is calculating the EY. The earnings yield will help to investors to evaluate the investments. it helps investors evaluate whether those returns adequate with capital risk. The earnings yield is the just opposite of P/E ratio. The researchers are found that the EY assumes the greater importance for the prediction of stock return.

Figure 4.1.4 given above indicates the trend of earning yield of the selected manufacturing companied for the year from 2011/12 to 2016/17financial year. The above figure shows the rise and fall of the earning yield during the study period.
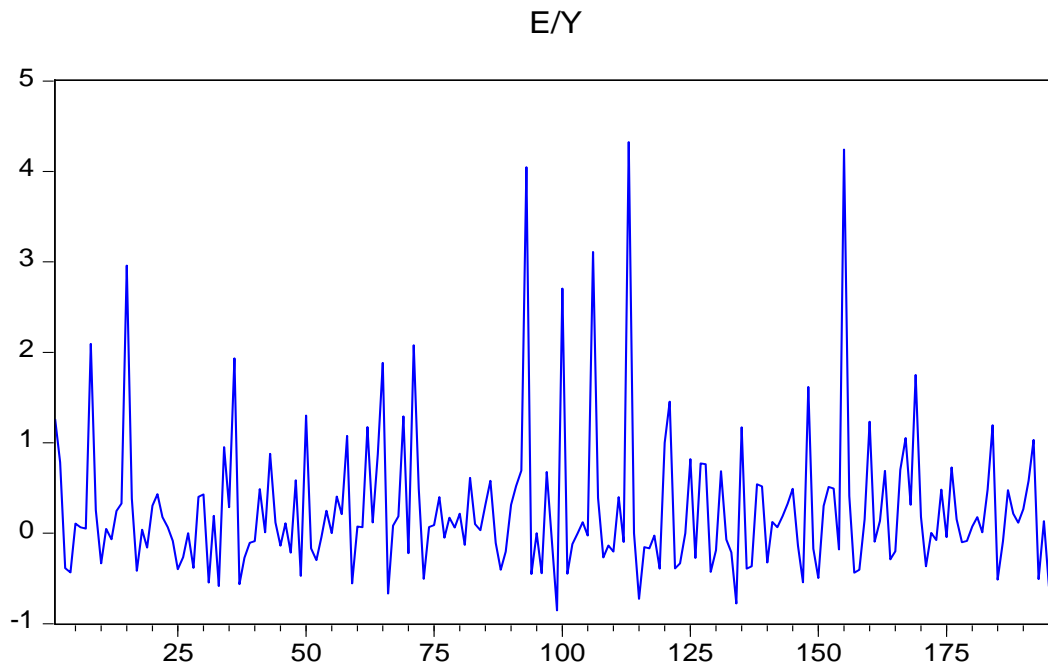
Figure 4.1.4 Earning yield

4.1.5 Current Liability to Total Assets

Current liability is a spontaneous source of financing. This is a debt which merits no payment of interest.

Figure 4.1.5 given below shows the trend of firm's current liability to total asset of the selected manufacturing companied for the year from 2011/12 to 2016/17 financial year. The figure shows that during the research period the CL/TA ratio is found to be very low. Yet the figure shows a certain companies have higher CL/TA for a certain period.

CLTA
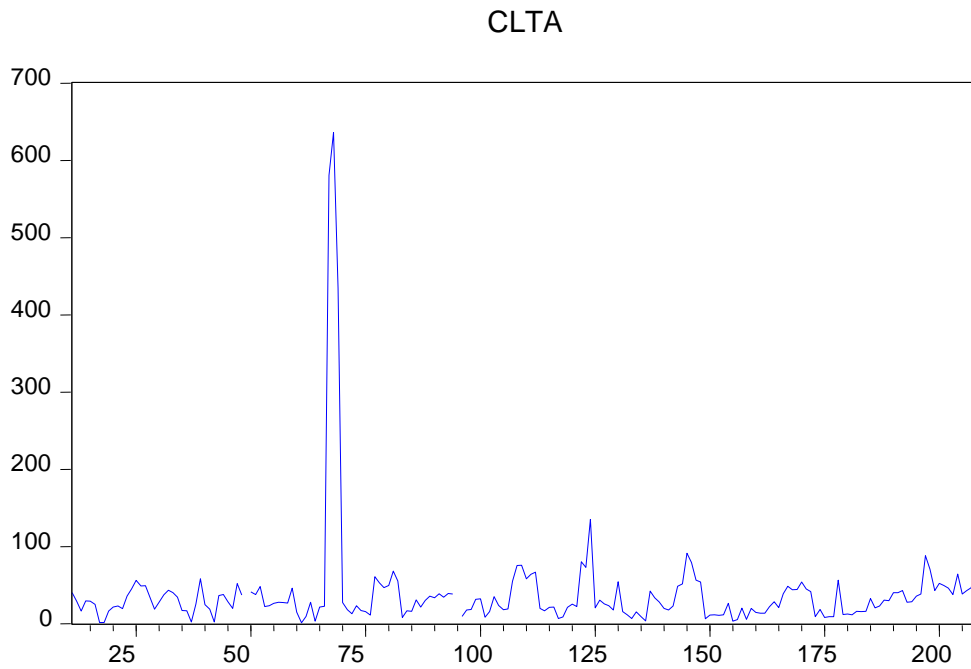
Figure 4.1.5 Current Liability to Total Assets

4.1.6 Stock Return

Stock return refers to the gain or loss of a share during particular period. This return encompasses both the dividend gain and the capital gain. Normally this is shown percentage wise. The common rule is the more risk investments yield higher return. Even the stock return found to be very low, only during some periods SR is very higher. Reason for this trend is that some companies subjected to this study have higher stock return during the research period.

Figure 4.1.6 given above indicates the trend of stock return of the selected manufacturing companied for the year from 2011/12 to 2016/17 financial year.
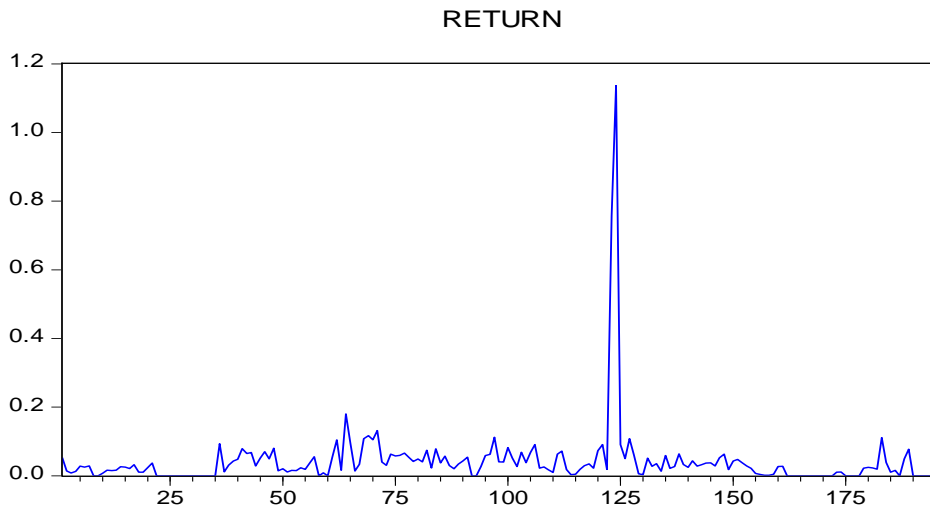
RETURN
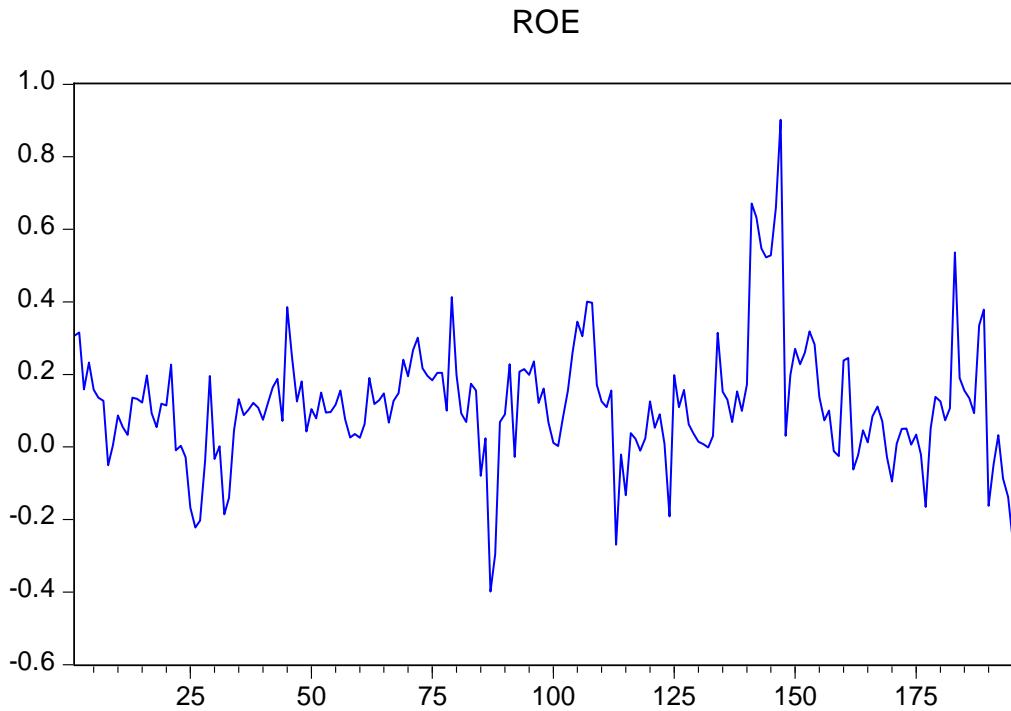

Figure 4.1.6 Stock Return

4.1.7 Firm Size

To improve the R squared value of the model, Guajarati suggested that it is better to incorporate the additional variables in the regression model. As such in this study the firm size and the firm age are considered to be control variables. Firm age is calculated by the log value of the total assets. Figure 4.1.7 given above shows the trend of firm size of the selected manufacturing companied for the year from 2011/12 to 2016/17 financial year. The figure shows the rise of the firm size of some companies taken up for study.

FS
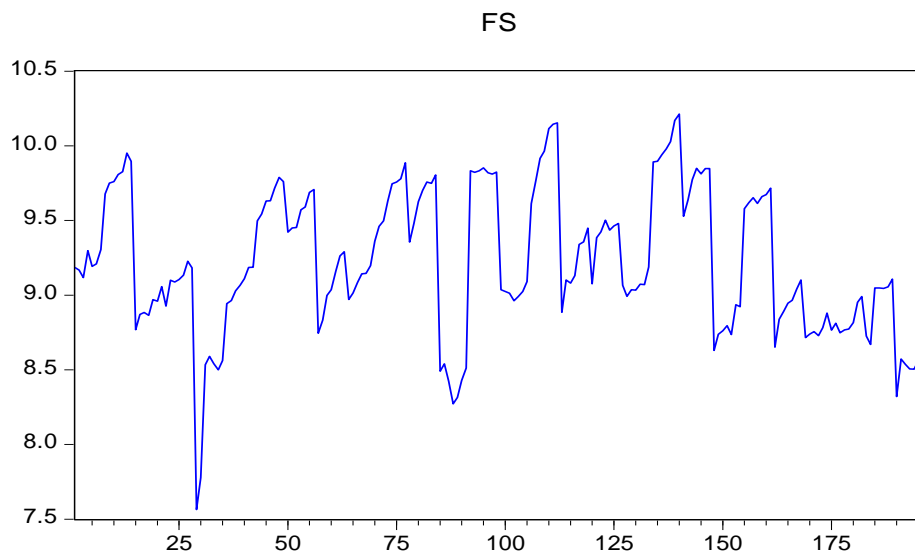
Figure 4.1.7 Firm size

4.1.8 Firm Age

Age is the length of time during which a being or thing has existed. Firm age is defined as the number of years of incorporation of the company. The relationship between age and profitability is contentious. Age is considered to be control variable in this study. Firm age is calculated deduct the construction year of the company from the research period.

Figure 4.1.8 given above indicates the trend of firm age of the selected manufacturing companied for the year from 2011/12 to 2016/17 financial year.

COM.age
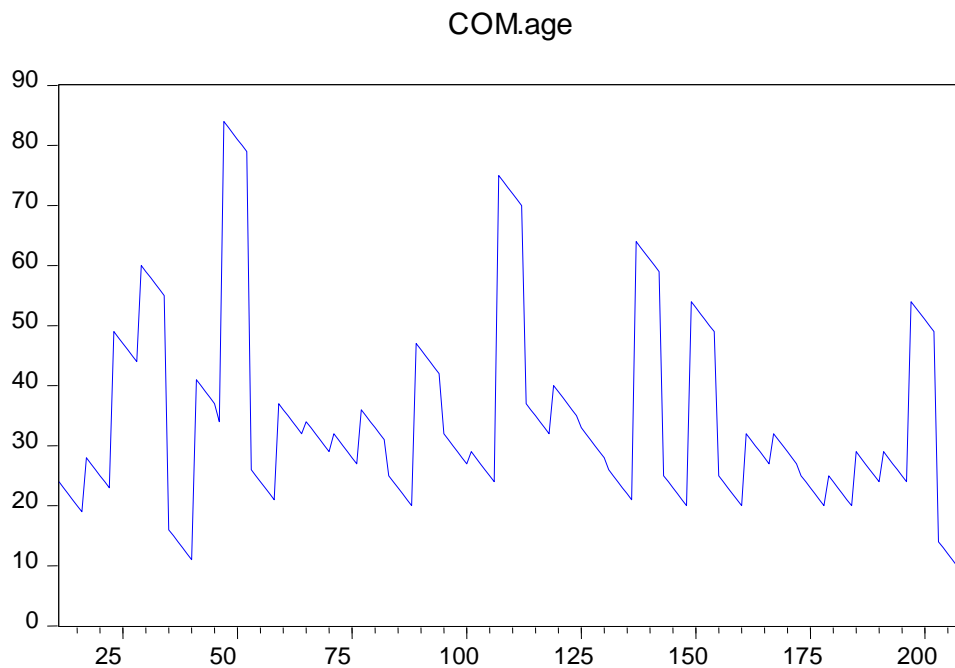
Figure 4.1.8 Firm age

4.2 Least Square Regression Analysis

To test the hypotheses of this survey, ordinary least square regression analysis was processed using the software Eviews 10 and the outcome of the analysis displayed in Table 4.1. Ordinary least square is carried out based on the assumption that no group or individual effect is nothing among the companies subjected in the survey. In this analysis the stock return is considered as predicative variables and the ratios via DY, EY, EPS, ROE and CL/TA are considered to be explanatory variables. The view of the results is displayed in Table 4.1; it indicates that ratios taken in this survey have

the significant impact at 5% confidence level. The OLS regression has an adjusted R squared of only 55 percent. P value for the f-statistic is less than 0.05 reveals the fitness of the model.

Table 4.1. Results OLS model I

Dependent Variable: stock return
Method: Least Squares
Date: 10/30/18   Time: 13:06
Sample: 1 198
Included observations: 198

Variable. Used	Coefficient	Std. Error	t-stat	Prob.
C	40.87346	17.38711	2.350791	0.0198
DY	0.108152	0.041274	2.620365	0.0095
EY	1.611117	0.306184	5.261919	0.0000
EPS	0.197892	0.086024	2.300441	0.0225
ROE	-1.169205	0.080791	-14.47195	0.0000
CLTA	-0.327710	0.088155	-3.717441	0.0003
COM_AGE	0.583902	0.208172	2.804898	0.0056
FS	-8.649902	2.127492	-4.065773	0.0001

R-squared	0.546015	Mean Dependent Varian		-23.48303
Ads R-Squired	0.529111	S.D. Dependent varian		62.83654
S.E. of Regression	43.11927	Akaike info criterion		10.40578
Sum of Residual	349543.0	Schwarz criterion		10.53958
Log likelihood	-1011.766	Hannan-Quinn criteri		10.45995
F-statistics	32.30152	Durbin Watson		1.130590
Prob(F-statistic)	0.000000			

In this model stock return was considered to be predicative variable and the ratios via DY, EY, EPS, ROE and CL/TA were considered as explanatory variables and firm size and age of the company were considered as control variable. In accordance with the outcome of the model I presented in the Table 4. 1 the beta value of the DY is -

0.108152 and p value is 0.0095. In accordance with these results H_1 is supported. The beta value of the EY is 1.61117 whereas the p value is 0.0000 which is also significant at 5% level. This supports to the acceptance of H_2. In accordance with the outcome of the model 1, the beta value of EPS is 0.197892. Besides the SE and t statistics are 0.86024 and 2.300441 respectively. This proves that H_3 is supported. This implies that an increase in the EPS by 1 Rupees is connected with a increase in SR by 0.197892. While the beta value of ROE is -1.160205 in the outcome of the model summary, which significant at 5% level since the p value is 0.000. In accordance with this statistics H_4 is supported. While the beta value of CL/TA is -0.327710 in the model summary, which is significant at 5 % level as p value is equal to 0.003. So H_5 is supported.

The adjusted R^2 value for the model is 0. 526015.It reflects that approximately 53% of the changes in the return could be predicted by the changes in the DY, EY, EPS, ROE and CL/TA and FS and FA. Remaining 47% not explained by this model.

4.3 Residuals Analysis

4.3.1 Residual Analysis for the model

To test the auto correlation correlogram of residual is carried out. And the result is presented in Table 4.3.1

4.3.1 Correlogram of Residuals (Q statistics)

Date: 10/3   Ti: 1.00
Same: 1 198
Includ observation...   198
Q-static pilities adjusted for 2 dynamic regression

AutoCorrelation	partial.Correlation		AC	PAC	Q-Stat	Prob*
		1	0.004	0.004	0.0060	0.938
		2	-0.005	-0.005	0.0158	0.992
		3	-0.037	-0.037	0.4868	0.922
		4	0.057	0.057	1.5794	0.812
		5	0.120	0.119	6.4607	0.264
		6	0.091	0.091	9.2915	0.158
		7	0.033	0.040	9.6603	0.209
		8	-0.005	0.002	9.6697	0.289
		9	0.024	0.018	9.8685	0.361
		10	0.043	0.022	10.507	0.397
		11	0.096	0.073	13.698	0.250
		12	-0.050	-0.064	14.559	0.266

Figure 4.1.9 Correlogram of Residuals (Q statistics)

Accordance with figure 4.1.9 which gives the correlogram for the residuals, AC, PAC did not interpret any same pattern. Here the p value for all lags is greater than 0.05 reflect there is no auto correlation among the residuals. This proves the fitness of the used model in this study.

4.3.2 Correlogram Squared residuals

This test also tries to prove there is no auto correlation among the residuals. The figure gives outcome of the squared residuals. Accordance with the outcome we can say that there is no auto correlation among the squared residuals in the used model. This also proves the fitness of the used model in this study.

32

```
Date: 10/30/18   Time: 13:14
Sample: 1 198
Included observat...              198
```

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
		1	0.064	0.064	1.3668	0.242
		2	0.158	0.154	9.7811	0.751
		3	0.002	-0.016	9.7832	0.205
		4	0.079	0.057	11.910	0.180
		5	-0.017	-0.023	12.008	0.467
		6	-0.011	-0.030	12.052	0.061
		7	-0.019	-0.010	12.176	0.095
		8	-0.029	-0.027	12.462	0.132
		9	-0.027	-0.018	12.717	0.176
		10	-0.012	0.001	12.767	0.237
		11	0.005	0.014	12.777	0.308
		12	-0.021	-0.018	12.926	0.374

Figure 4.1.10 Correlogram Squared residuals

4.3.3 LM Test

To test the serial correlation LM test was carried outs. The outcome id presented in the Table 4.2. Accordance with the outcome of the LM test chi squared probability value exceeds 0.05. It can be concluded that there is no serial correlation among the residuals.

Table 4.2 LM Test

```
LM Test
```

Null hypotis: No serial corrtion at up to 2 lag

F-statis	1.455437	Pro. F(2,196)	0.2348
Obs*R-squired	2.983123	Pro. Chi-Sq(2)	0.2250

4.3.4 Residuals Normality Test

Figure 4.1.10 shows the histogram of the residuals of model 1. Since the probability of Jarque bera statistics is greater than 5% and therefore, we can say that residuals are normally distributed. The kurtosis of the histogram is less than 3 and its left tail is heavy and also skewness is closer to 0. (0.282809)

Series: Residuals	
Sample 198	
Observations 198	
Mean	2.37e-15
Median	-0.008696
Maximum	1.582406
Minimum	-1.046963
Std. Dev.	0.516887
Skewness	0.282809
Kurtosis	2.953596
Jarque-Bera	1.341992
Probability	0.511199
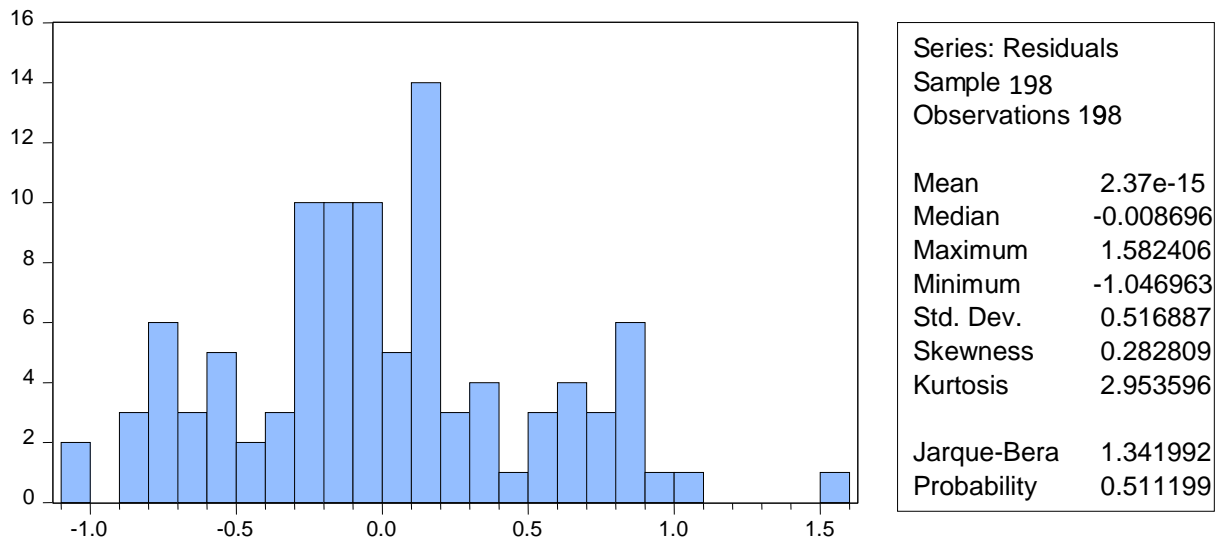
Figure 4.1.11 Residuals Normality Test

Accordance with figure 4.1.14 the histogram of residuals suggests that they are normally distributed because of the p value is 0.51199 which is greater than 0.05.

4.3.5 Heteroscedasticity Test

In statistics, a collection of random variables is heteroscedastic if there are sub-group population that may differ from one to another. Here difference could be quantified by the variance or any other statistical dispersion measures. Thus the existence of the heteroscedasticity means the absence of homoscedasticity.

Table 4.3 Heteroscedasticity Test: White Test

F-statistic	0.038177	Prob.F(4,194)	0.8452
Obs.R-squared	0.038403	Prob.chi.sqare.4	0.8446

Accordance with the Table 4.3 chi squares p value is 0.8444 which is greater than 0.05 reveals that there is no heteroscedasticity.

4.4 Fixed Effect Regression

The data garnered in this study contains cross section and time series data. To test the hypotheses then fixed effect regression was carried out using Eviews 10 and the outcome is displayed in Table 4.4.

Table 4.4 Outcome of Model II

Fixed effect

Dependent Variable: Stock Return

Method: Panel.Least Square

Sample: 1 198

Periods included: 33

Cross-sections included: 6

Total panel (unbalanced) observations: 194

Variable	Coefficient	Std. Error	t-Static.	Prob.
C	44.37065	17.93719	2.473668	0.0143
DY	-0.080959	0.041766	-1.938403	0.0501
EY	0.948558	0.124673	7.608367	0.0000
EPS	0.024983	0.040944	0.610180	0.5425
ROE	-1.131741	0.082510	-13.71633	0.0000
CLTA	-0.196460	0.069932	-2.809282	0.0055
COM_AGE	0.477739	0.213158	2.241244	0.0262
FS	-9.044551	2.189972	-4.129985	0.0001

Effect Specification

Cross-section fixed (dummy. variable)

R-squared	0.537462	Mean dependent varia	-23.70100
Adjusted. R-squared	0.506797	S.D. dependent varia	63.12421
S.E. of regression	44.33113	Akai info criterion	10.48591
Sum squared residual.	355710.1	Schwarz criterion	10.70489
Log likelihood	-1004.133	Hann-Quin criterion	10.57458
F-stats	17.52663	Durbin-Watson statistics	1.925829
Pro(F-statistics)	0.000000		

According to the outcome of the model summary II, the value beta of DY is -0.080959 and p value is 0.0501. H_1 is not supported as the P value is greater than 0.05. Co efficient value of the earning yield is 0.948558 and p value is 0.0000. This value is significant at 5% significant level. H_2 is supported with this regression results. According to the regression summary, EPS and Earning yield have positive impact on stock return. EY significant at 5% which indicates higher amount of earning yield increase the stock return. Return on assets, current liability to total assets ratio and firm size, have negative co efficient values and significant at 5% level.

4.4.1 Correlogram of Residuals (Q statistics)

Dat: 2/30/19 Ti: 20:13
Same: 1 198
Inclu obseat. 198..
Q-static probabties adjusd for 2 dynac regress

Au.tocorrelation	Partial Correlation		A.C	P.A.C	Q-Sta	Pob*
		1	-0.001	-0.001	0.0006	0.981
		2	-0.010	-0.010	0.0361	0.982
		3	-0.059	-0.059	1.2048	0.752
		4	0.084	0.084	3.5808	0.466
		5	0.101	0.101	7.0607	0.216
		6	-0.018	-0.020	7.1772	0.305
		7	-0.058	-0.048	8.3195	0.305
		8	-0.031	-0.027	8.6434	0.373
		9	-0.028	-0.049	8.9143	0.445
		10	-0.009	-0.023	8.9435	0.537
		11	0.017	0.027	9.0440	0.618
		12	0.072	0.086	10.870	0.540

*.

Figure 4.1.12 Correlogram of Residuals

In Accordance with figure 4.1.12 which gives the correlogram for the residuals, Ac, pc did not interpret any same pattern. Here the p value for all lags is greater than 0.05 reflect there is no auto correlation among the residuals. This proves the fitness of the used model in this study.

4.4. 2 Correlogram Squared residuals: This test also tries to prove there is no auto correlation among the residuals. The figure gives outcome of the squared residuals. In accordance with the outcome we can say that there is no auto correlation among the

squared residuals in the used model. This also proves the fitness of the used model in this study.

```
Date: 02/30/19   Time: 20:13
Sample: 1 198
Included observat...              198
```

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
		1	0.011	0.011	0.0389	0.844
		2	0.183	0.183	11.312	0.349
		3	0.021	0.018	11.461	0.947
		4	0.055	0.023	12.506	0.139
		5	0.130	0.127	18.259	0.263
		6	-0.015	-0.032	18.339	0.543
		7	0.007	-0.041	18.355	0.104
		8	-0.019	-0.015	18.481	0.178
		9	-0.013	-0.018	18.540	0.294
		10	-0.004	-0.013	18.546	0.046
		11	-0.023	-0.010	18.728	0.066
		12	0.058	0.070	19.888	0.069

Figure 4.1.13 Correlogram of Residuals

4.4.3 LM Test

To test the serial correlation LM test was carried out. The outcome if presented in the Table 4.5. In accordance with the outcome of the LM test chi squared probability value exceeds 0.05. It can be concluded that there is no serial correlation among the residuals.

Table 4.5 LM Test

```
Breusch-Godfr Serial Corrtion LM Test:
Null hypothesis: No serial corlation at up to 2 lags
```

F-statisc	0.189478	Prob. F(2,196)	0.8275
Obs*R-squed	0.391403	Pro. Ch-Sque(2)	0.8223

4.4.4 Residual Normality Test

Figure 4.1.14 shows the histogram of the residuals of model 1. Since the probability of Jarque –bera statistics is greater than 5% and therefore, we can say that residuals are normally distributed. The kurtosis of the histogram is near to 3 and its left tail is heavy and also skewness is closer to 0 (0.133277).
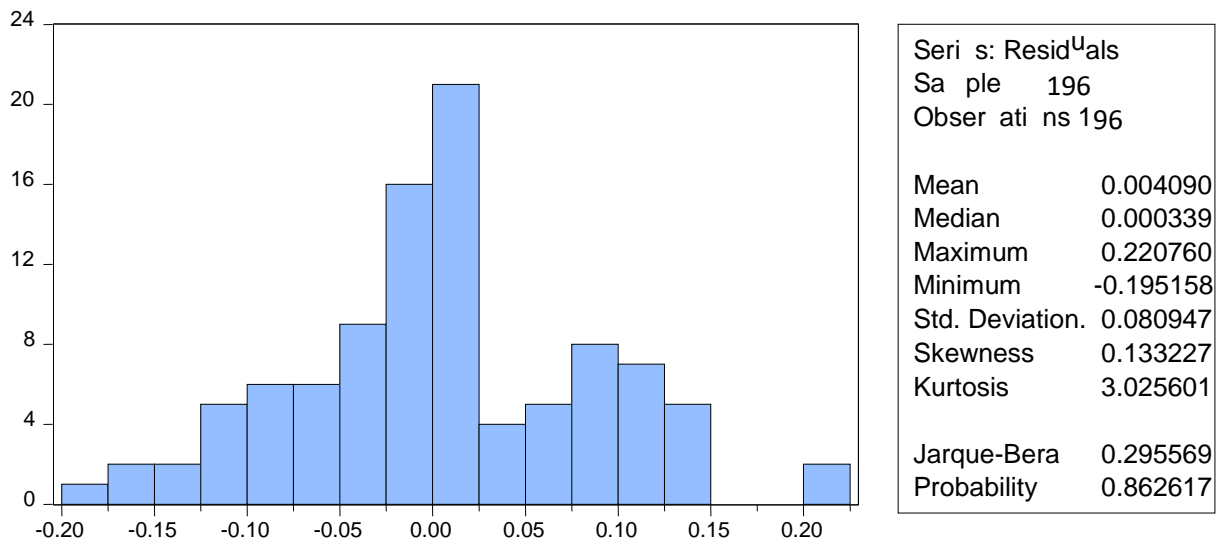
Figure 4.1.14

In accordance with figure 4.1.14 the histogram of residuals suggests that they are normally distributed because of the p value of the Jarque-bera test (0.862617) is greater than 0.05.

4.4.5 Heteroscedasticity Test

In statistics, a collection of random variables is heteroscedastic if there are sub-group population that may differ from one to another. Here difference could be quantified by the variance or any other statistical dispersion measures. Thus the existence of the heteroscedasticity means the absence of homoscedasticity.

Table 4.6 Heteroscedasticity Test:

F-statistic	0.920743	Prob.F(4,192)	0.6180
Obs.R-squared	41.06441	Prob.chi-squared 4	0.5982

The P value of the White's Heteroscedasticity test (0.5982) is greater than 0.05 we accept the null Hypothesis. Hence there is no Heteroscedasticity in residuals.

4.5 Random Effect Model

In a study when we consider the data as sample, it is better to choose the random effect model rather than fixed effect model. Table 4.5 displays the Outcome of the model III.

Table 4.7 Output of Model III

Dependent Variable: Stock Return
Total panel (unbalanced): 198
White s & Covariance

Variable	Coefficient	Std. Error	t-stats	Prob.
C	43.76279	29.76985	1.470037	0.1432
DY	-0.083870	0.058166	-1.441906	0.1510
EY	0.961253	0.491328	1.956439	0.0519
EPS	0.024139	0.014554	1.658558	0.0989
ROE	-1.139753	0.578569	-1.969953	0.0503
CLTA	-0.196517	0.109431	-1.795814	0.0741
COM_AGE	0.494795	0.262222	1.886934	0.0607
FS	-9.028386	3.527372	-2.559522	0.0113

Effect Specification

	S.D.	Rho
Cross-section random	0.000000	0.0000
Individual random	44.33043	1.0000

Weighed Statics

R-squared	0.534592	Mean variance	-23.70100
Ad R-Squared	0.517077	Standard Variance	63.12421
S.E. of regression	43.86669	Sum of squared residual	357917.3
F-Statics	30.52139	Durbin-Watson static	1.933379
Prob(F-statistic)	0.000000		

Unweighted Statistics

R-squared	0.534592	Mean variance	-23.70100
Sum squared residual	357917.3	Durbin Watson- statistics	1.933379

According to the outcome of the model summary III, the value beta of DY is -0.083870 and p value is 0.0501. H_1 is not supported as the P value is greater than 0.05. Co efficient value of the earning yield is 0.961253 and p value is 0.0519. This value is not significant at 5% significant level. H_2 is not supported with this regression results. According to the regression summary, EPS and Earning yield have not impact on stock return. Return on assets, current liability to total assets ratio and firm size do not have the significant impact.

4.5.1 Correlogram of Residuals (Q statistics)

Accordance with figure 4.1.15 which gives the correlogram for the residuals, Ac, pc did not interpret any same pattern. Here the p value for all lags is greater than 0.05 reflect there is no auto correlation among the residuals. This proves the fitness of the used model in this study.

Date: 01/20/19   Time: 11:26
Sample: 1 1198
Included observations: 198

Auto correlation	Partial		A.c	PA.C	Q-ς	Pro
		1	0.029	0.029	1.0697	0.301
		2	0.012	0.011	1.2346	0.539
		3	0.035	0.035	2.7910	0.425
		4	0.003	0.001	2.8042	0.591
		5	0.002	0.001	2.8091	0.729
		6	0.000	-0.001	2.8093	0.832
		7	-0.001	-0.001	2.8098	0.902
		8	0.000	0.000	2.8099	0.946
		9	0.002	0.002	2.8143	0.971
		10	0.002	0.002	2.8189	0.985
		11	-0.000	-0.000	2.8189	0.993
		12	-0.001	-0.001	2.8200	0.997
		13	0.021	0.021	3.3730	0.996
		14	0.001	0.000	3.3757	0.998
		15	0.001	0.000	3.3764	0.999

Figure 4.1.15 Correlogram of Residuals

4.5.2 Residual Normality Test

Figure 4.1.16 shows the histogram of the residuals of model 1. Since the probability of is greater than 5% and therefore, we can say that residuals are normally distributed. The kurtosis of the histogram is near to 3 and its left tail is heavy and also skewness is closer to 0. (0.126294)
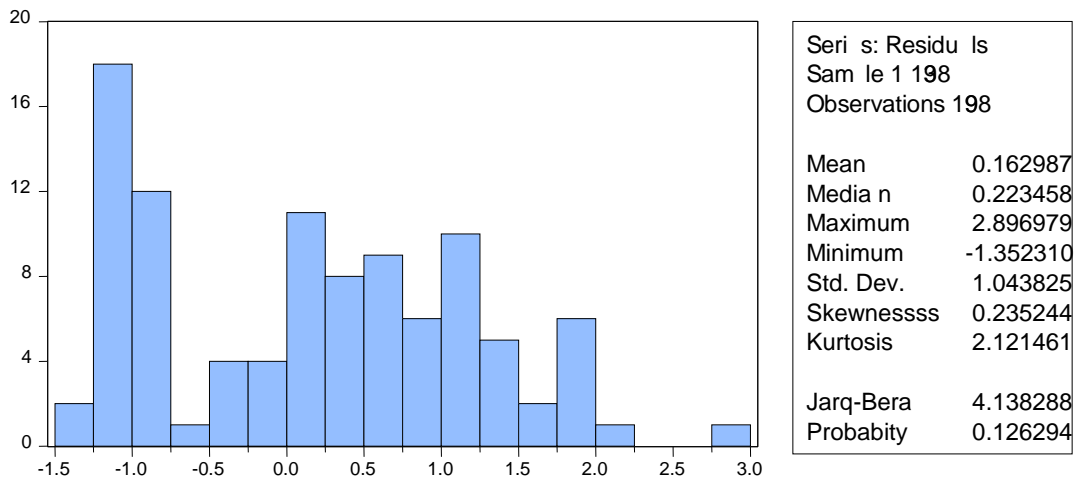
Figure 4.1.16 Residual Normality Test

4.5.3 Heteroscedasticity Test

In statistics, a collection of random variables is heteroscedastic if there are sub-group population that may differ from one to another. Here difference could be quantified by the variance or any other statistical dispersion measures. Thus the existence of the heteroscedasticity means the absence of homoscedasticity.

Table 4.8 Heteroscedasticity Test:

Heteroscedasticity
:

F-statistic	0.346689	Prob. F(4,192)		0.7071
Obs*R-squared	0.694671	Prob. Ci...	(4)	0.7066
Scal explain SS	1.301398	Pro. Chi...	(4)	0.5217

Accordance with the results we can say there is no heteroscedasticity.

4.6 Hausman test

To choose the best model whether the fixed effect or random effect is best. Hausman test was carried out. The outcome is displayed in the following Table.

Table 4.9 Hausman test

Test summary	Chi- squired statistics	P value
Cross section Random	18.082310	0.0362

In accordance with the outcome of the Hausman test summary given in the Table 4.7, p value is 0.0362. This implies that random effect model is not good to analyse the data. That is fixed effect model is suitable to analyze the data.

4.7 Summary of the Hypotheses Testing

The following Table shows the results of Hypotheses testing.

Table 4.10 Summary of the Hypotheses Testing

Hypotheses		Tools	Supported/not Supported
H_1	DY has the predicting power of the stock return companies listed in Manufacturing sector.	OLS Regression	Supported
		Fixed Effect	Not Supported
		Random Effect	Not Supported
H_2	EY has the predicting power of the stock return companies listed in Manufacturing sector.	OLS Regression	Supported
		Fixed Effect	Supported
		Random Effect	Not supported
H_3	EPS has the predicting power of the stock return companies listed in Manufacturing sector.	OLS Regression	Supported
		Fixed Effect	Not Supported
		Random Effect	Not Supported
H_4	ROE has the predicting power of the stock return companies listed in Manufacturing sector.	OLS Regression	Supported
		Fixed Effect	Supported
		Random Effect	Not Supported
H_5	CL/TA has the predicting power of the stock return companies listed in Manufacturing sector.	OLS Regression	Supported
		Fixed Effect	Supported
		Random Effect	Not Supported

4.8 Summary

In our study, we analyzed the impact of the ratios via EPS, EY, DY, ROE and CL/TA on return of the share capital using the analysis of both cross section and time series data. Here three different models via OLS, fixed and random effect models with the forecasting variables of stock return. The hypotheses were tested using, pooled regression, fixed effect and random effect. The six years' data of the 33 companies were taken up for this survey. To attain the aims of this survey the three techniques were used in this study. According to the results of OLS Regression, all hypotheses were accepted, concluding that financial ratios have the predicting power of the stock return of listed manufacturing companies. These findings consistent with Hjalmarsson (2010) Under both estimations models all ratios taken in this study fail to support the hypotheses with a confidence level of 5 percent. The specification test that is Hausman test has implies that advance inference can be obtained by using the fixed effects instead of the random effects model.

CHAPTER 5- FINDINGS AND CONCLUSION

5.0 Introduction

This chapter lists the findings of this research and recommendations to increase the stock return of manufacturing firms and to maintain efficient level of stock return and includes some suggestions for future study.

5.1 Findings of this study

The stock market in Sri Lanka makes a major involvement to the evolution of the growth of an economy. Economic growth of each and every country wields influence on the money supply and the activities of the capital market.

This study serves to predict the return of the stock of the companies in CSE listed under manufacturing sector by the use of financial ratio analysis. Out of 40 companies 33 companies were subjected to this study. The data from 2011/2012 to 2016/2017 were exposed to this study. According to the views of Gujarathi (2003) the data collected were analysed by the use of three panel data regression model. They are ordinary least square, fixed effect and random effect model. In accordance with the outcome of the regression, the EY and the company age has the positive impact on the stock return. Furthermore, DY and EPS did not have significant impact on stock return.

To ascertain the impact of ratios taken in this study on stock return OLS regression was carried out. In conformity with the results of the OLS regression Model the EY, DY and EPS have the positive impact on stock return of the listed manufacturing companies in Sri Lanka. This result is consistent with Samarakoon (1998) Wijesundera et al. (2015).

In accordance with the results of the random effect regression, earning yield, earning per share, company age have the positive impact on the stock return.

To choose the best model for the panel data analysis, Hausman test was carried out. According to the results of the Hausman test, P value of the chi squired statistic is less than 0.05. This states that the fixed effect model is better for the analysis of this study. This study draws the conclusion based on the fixed effect model. According to the

fixed effect results earning yield has the greatest power to predict the stock return. It is better for the investors willing to invest in the manufacturing companies to do the analysis of earning yield before making the investment decisions.

Further to prove the fitness of the models, Residual diagnosis test were carried out. The P value of correlogram was perceived to be greater than 0.05. This proves the fact that there is no autocorrelation in the residuals. In the residual normality test, the p value of the Jarque beta value is found to be greater than 0.05. This satisfies the point that the residual has the normality. Further P value of Heteroscedasticity is found to be greater than 0.05. This proved the point that there is no Heteroscedasticity exist in residuals. The residuals diagnosis test satisfies the fitness of the model. In accordance with the results of the OLS regression.

5.2 Limitation of this Study

- This study is confined to only among the listed manufacturing companies in CSE.
- The Quarterly data for the period of 2011/2012– 2016/2017are taken for the study.
- Analyses are made using the data collected from secondary via hand book of listed companies published by companies and other secondary sources.

5.3 Suggestions for future study

- This survey had the spotlight the companies listed in CSE under manufacturing sector. In future this kind of research can be carried out together with other firms listed different sectors and can do the comparison among sectors.
- Here the financial ratio EPS, DY, EY, ROE and CL/TA were used in this study. In future researchers can carry out the research paying notice to other ratios via profitability ratios and efficiency ratios.
- In this study factors via rate of inflations, rate of interest and GDP growth were not considered. In several researches what was found out was that macro-economic factors wield their influence on the stock return. So it is better for the future researchers to take up this macro-economic factors in their study.

- This study undertaken on the basis of secondary data. It is better for the future researchers to do their research on this topic garnering of the primary data.

5.4 Summary of This Chapter

Subsequent to the finish off of the inner fight in 2009, the capital market actions have contributed notable development and economic growth in Sri Lanka. The stock market in Sri Lanka has constructed its offices in all places via Jaffna, Manner and Kandy. Besides the investment of capital market is also increase. The reason of the collection of investments is to earn maximum earnings from them. The choice of the best combination of portfolio will get peak revenue. By doing the investment appraisal using appropriated ratios will lead better selection of portfolio. This kind of survey has revealed that EPS, DY and EY have impact of profit of shares of the companies. So the investors who want to invest in capital market can attain the premier gain through the best venture in the firms which have EPS and EY at the optimum level.

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APPENDIX 1. LISTED COMPANIES FROM MANUFACTURING SECTOR

1. Acl Cables PLC
2. Singer Industries (Ceylon) PLC
3. KelaniTyres PLC
4. Samson International PLC
5. Regnis(Lanka) PLC
6. Dipped Products PLC
7. Blue Diamonds Jewellery Worldwide PLC
8. Lanka Cement PLC
9. Acme Printing & Packaging PLC
10. Abans Electricals PLC
11. Lanka Tiles PLC
12. Printcare PLC
13. Lanka Ceramic PLC
14. Agstar PLC
15. Swadeshi Industrial Works PLC
16. Kelani Cables PLC
17. Teejay Lanka PLC
18. Orient Garments PLC
19. Alumex PLC
20. Lanka Aluminium Industries PLC
21. Lanka Walltiles PLC
22. Laxapana Batteries PLC
23. Alufab PLC
24. Richard Pieris Exports PLC
25. Central Industries PLC
26. Ceylon Grain Elevators PLC
27. Acl Plastics PLC
28. Chevron Lubricants Lanka PLC
29. Royal Ceramics Lanka PLC
30. Bogala Graphite Lanka PLC
31. Tokyo Cement Company (Lanka) PLC
32. Blue Diamonds Jewellery Worldwide PLC
33. Tokyo Cement Company (Lanka) PLC