

**ANALYSIS OF INTERNAL FACTORS AFFECTING  
SHARE PRICES: REFERENCE TO DIVERSIFIED  
FINANCIAL COMPANIES IN COLOMBO STOCK  
EXCHANGE, SRI LANKA**

Baweithra Umathevan

(168850A)

Thesis submitted in partial fulfillment of the requirements for the degree Master of  
Science

Department of Mathematics

University of Moratuwa

Sri Lanka

December 2020

## 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.

Also, I hereby grant to University of Moratuwa the non-exclusive right to reproduce and distribute my thesis, in whole or in part in print, electronic or other medium. I retain the right to use this content in whole or part in future works (such as articles or books).

Signature:  .....

Date: 11/01/2021

U. Baweithra

The above candidate has carried out research for the Master's thesis under my supervision.

Signature:  .....

Date: 11/01/2021

Mr. K. A. N. K. Karunarathna,  
Senior Lecturer in Statistics,  
Department of Mathematics,  
Faculty of Science,  
Eastern University, Sri Lanka.

## **ABSTRACT**

The stock market plays an important role in economic progress of any nation and share price is a key aspect in stock market. Share price is the value of single share of a company's multiple sellable stocks. It represents not only present value of a company, but also the growth. However, the stock market is dependent on several factors and hence, it fluctuates and predicting becomes much more complicated.

This study aimed to determine internal factors that influence share price of 24 diversified financial companies listed in Colombo Stock Exchange in the period from 2014 to 2019. Impacts of six variables namely return on assets, return on equity, book value per share, earnings per share, dividend per share and dividend yield on market price of shares in the respective sector were studied. Yeo and Johnson power transformation was used to transform the data and then used for model fitting. The panel data models: ordinary least square with common effect model; fixed effects model; and random effects model were tested. Among these models, the best model was fixed effects model.

The results indicated that return on assets, return on equity, book value per share, earnings per share and dividend per share have positive relationship with share price and dividend yield has negative relationship with share price. Further, all these factors have significant impact on market price of share and dividend yield has higher influence whereas book value per share has lower influence on share price.

Results of this study implies that investors can take most advantageous investment decisions and be guaranteed favorable returns if they take into consideration of these significant determinants

In the future, it can be aimed to complement a study in various sectors with in internal and external variables of and a large timeframe. This would provide better insights on the determinants of share price.

**Keywords:** Colombo stock exchange, diversified financial companies, share price, panel data

## **ACKNOWLEDGEMENT**

Firstly, I would like to express my sincere gratitude to my research supervisor Mr. K. A. N. K. Karunaratna, Senior Lecturer in Statistics, Department of Mathematics, Faculty of Science, Eastern University, Sri Lanka who consistently supported my MSc research with patience, motivation and great knowledge for giving me his utmost support.

Besides my supervisor, I would like to express my special gratitude to the course coordinator of MSc/P.G. Diploma in Financial Mathematics Mr. Rohana Dissanayake, Senior Lecturer in Mathematics, Department of Mathematics, University of Moratuwa, for giving his fullest support in each stage of this research.

My sincere thanks also goes to the ex-course coordinator Mr. T. M. J. A. Cooray, Senior Lecturer, Department of Mathematics, University of Moratuwa, for the valuable guidance and advice throughout this postgraduate degree program.

It is a great pleasure to remember the kind co-operation extended by the colleagues in the degree program who helped me to continue the studies from start to end. Finally, I would appreciate everybody who helped me in numerous ways at different stages of the study, which was of utmost importance in bringing out this effort a success.

## TABLE OF CONTENTS

	Page
Declaration .....	i
Abstract .....	ii
Acknowledgement .....	iii
Table of Contents .....	iv
List of Figures .....	vi
List of Tables .....	vii
List of Abbreviations .....	viii
List of Appendices .....	ix
1. Introduction .....	1
1.1 Introduction .....	1
1.2 Research Problem .....	4
1.3 Research Objectives .....	8
1.4 Significance of Study .....	8
1.5 Limitations of Study .....	9
1.6 Organization of Report .....	10
2. Literature Review .....	11
3. Methodology .....	21
3.1 Introduction .....	21
3.2 Data Collection .....	21
3.3 Analysis .....	22
3.3.1 Model fitting .....	22
3.3.2 Linear Multiple Regression Model .....	23
3.3.3 Assumptions of Regression Model .....	23
3.3.4 Remedial Actions for Violation of Assumptions .....	29
3.3.5 Model for panel data .....	30
3.4 Software .....	36
4. Results and Discussion .....	37
4.1 Introduction .....	37
4.2 Abbreviations for Variables .....	37
4.3 Descriptive Statistics .....	37
4.3.1 Transformation of data .....	40
4.3.2 Descriptive statistics for transformed data .....	41
4.4 Fitting the Models .....	43
4.4.1 Selection of model .....	44
4.4.2 Assumptions of model .....	47
4.5 Determinants of Market Price of Share .....	51

4.6 Discussion .....	54
5. Conclusions .....	56
Reference List .....	59
Appendix A: Boxplots for transformed independent variables .....	63
Appendix B: Probability plots for transformed independent variables .....	66
Appendix C: Scatter plots for dependent variable vs. independent variables ..	69

## LIST OF FIGURES

	Page
Figure 4.1 Trend chart of variables .....	41
Figure 4.2 Histogram of residuals .....	50
Figure 4.3 Probability plot of residuals .....	51
Figure 4.4 Residuals plotted against the fitted values .....	51

## LIST OF TABLES

	Page
Table 3.1 Abbreviation of variables .....	21
Table 4.1 Summary of variables .....	38
Table 4.2 Descriptive statistics of each variable .....	39
Table 4.3 Yeo–Johnson power transformation lambda values .....	41
Table 4.4 Descriptive statistics of transformed data .....	42
Table 4.5 Results of pooled ordinary least squares, fixed effects model and random effects model with YJ_MPS as response.....	44
Table 4.6 Result of Breusch-Pagan Lagrange multiplier test .....	45
Table 4.7 Result of Chow test .....	45
Table 4.8 Result of Hausman test .....	46
Table 4.9 Results of fixed effect model .....	47
Table 4.10 Result of Anderson-Darling test .....	48
Table 4.11 Values of variance inflation factor and tolerance for model variables .....	49
Table 4.12 Results of Jarque–Bera test .....	50

## LIST OF ABBREVIATIONS

Abbreviation	Description
BLUE	Best Linear Unbiased Estimate
BVS	Book Value per Share
CSE	Colombo Stock Exchange
DPR	Dividend Payout Ratio
DPS	Dividend per Share
DY	Dividend Yield
EPS	Earnings per Share
ER	Exchange Rate
EV	Earnings Volatility
EY	Earnings Yield
FEM	Fixed Effect Model
FL	Financial Leverage
FS	Firm Size
LM	Lagrange Multiplier
MPS	Market Price of Share
OLS	Ordinary Least Square
PER	Price Earnings Ratio
POLS	Pooled Ordinary Least Squares
P-P plot	Predicted Probability plot
REM	Random Effect Model
ROA	Return on Asset
ROE	Return on Equity
SP	Share Price
VIF	Variance Inflation Factor
YJ_BVS	Yeo–Johnson power transformed Book Value per Share
YJ_DPS	Yeo–Johnson power transformed Dividend per Share
YJ_DY	Yeo–Johnson power transformed Dividend Yield
YJ_EPS	Yeo–Johnson power transformed Earnings per Share
YJ_MPS	Yeo–Johnson power transformed Market Price of Share
YJ_ROA	Yeo–Johnson power transformed Return on Asset
YJ_ROE	Yeo–Johnson power transformed Return on Equity

## LIST OF APPENDICES

Appendix	Description	Page
Appendix A	Boxplots for transformed independent variables .....	63
Appendix B	Probability plots for transformed independent variables .....	66
Appendix C	Scatter plots for dependent variable vs. independent variables ....	69