THE EFFECT OF DEGREE OF FINANCIAL LEVERAGE ON FIRM PROFITABILITY: SPECIAL REFERENCE TO STANDARD AND POOR'S SRILANKA (S&P SL) COMPANIES

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ABSTRACT

The purpose of this study is to empirically examine the effect of Degree of Financial Leverage on firm profitability of twenty Standard and Poor's Sri Lanka (S&P SL) companies listed on the Colombo Stock Exchange (CSE) in Sri Lanka. This study used as the sample data for the period of six years from 2015 to 2020. The study was selected ROA (Return on Assets), TOBIN'S Q and EVA (Economic Value Added) to measure the firm's profitability which were used as dependent variable. The independent variable was DFL (Degree of Financial Leverage). The random effect penal regression model was selected to examine the effect of Degree of Financial Leverage on firm profitability. DFL has statistically significant and positive relationship with ROA. DFL has inverse significant relationship with TOBIN'S Q but inverse and non-significant relationship between Degree of Financial Leverage and EVA. The result of this study had revealed that Degree of Financial Leverage has sufficient significant impact on financial performance of S&P SL. From the findings of the study it had recommended that the managers of firms should control the fixed cost and focus to increase the revenue of firms.

Keywords: Degree Of Financial Leverage, Return On Assets, TOBIN'S Q, EVA, S&P SL Companies.

I.   INTRODUCTION

The financial decision taken by the management regarding the optimal level of capital structure to maximize the wealth of the shareholder is very critical. In order to maximize the return to stockholders the managers make the use of debt and if the high amount of debt is used by the management it leads to increase the financial cost and financial risk of the firm. Wealth maximization is the key objective of firm financing decisions and the quality of these decisions affects the profitability of the firms (Mwangi et al, 2014). For the maximization of return for the firm, it is very important to make right financial decisions. Profitability determinants are forces that directly impact the profitability of a firm, and such factors are useful tools for relevant firms to understand what needs to be done and where they should focus in order to improve on the profitability of their business (Bashar & Islam, 2014). Internal factors like leverage, liquidity, tangibility and size have been hypothesized to influence profitability.

Generally, the profitability of a company is seen through its financial statements because the statements reflect the activities carried out by the company in and up to a given period. Using financial statements, owner(s) and management know the company's current potential so that they are able to plan and make the right decisions about what to do next. Financial statements have been used as data base for a stakeholder on which he wishes to cover the company's existing weaknesses, maintain the position that has been achieved, and strive to improve the benefits he expects to enjoy. A company usually brings dividend benefits to shareholders when it produces enough profits to distribute. Thus, profit is very important not only to managers but also owners. That is why a large number of study put a lot of attention in profitability aside of other financial performance parameter such as liquidity, activity and solvability ratios. A company generates profits by operating the business it is capable of. In conducting its operational activity, the company needs funding's to run properly. The fund must be available in a certain amount so that it is enough to used when needed and not too much where it would be idle and considered lost potential. One source of funding is debt. According to Shamsuddin

(2011), shareholders and creditors as should pay attention to the amount of debt owed and the company's ability to pay interest and principal. The larger the debt, the greater the likelihood of a company not being able to repay its debt. When comparing the debt of one company to that of others, leverage ratio is frequently used. The leverage ratio or also known as the solvency ratio is used to measure the extent of the company's assets that are financed by debt (Kasmir, 2014).

An increase in leverage result in increased return and risk, while decrease in leverage result in decreased return and risk. There are two types of leverage that is operating and financial leverage, financial leverage is the use of the fixed charges of resources, that is preference and debt capital along with the owners' equity in the capital structure while operating leverage is degree in which the firms uses much of fixed expenses, the higher the fixed expense the higher the operating leverage. Leverage is the extent to which companies make use of their funds borrowings (debts, financing) to increase profitability and is measured by total liabilities to equity (Alkhatib, 2012). The choice between debt and equity suggests somehow a tradeoff between business and financial risk (Vatavu, 2014). Increased leverage induces agency problems, such as the underinvestment incentive, that can reduce annual profitability due to the associated increase in the costs of monitoring and control. As such, high leverage levels can actually be value enhancing for firms as the obligation to meet the repayment schedules under debt covenants disciplines managers to act in ways which are consistent with shareholders' wealth maximization objectives. This management practice encourages managers to generate future cash flows, thus increasing period profitability and the traded value of the firm (Olaosebikan, 2012).

Different accounting measures such as return on equity, return on sales, earnings, Return on Assets, and return on capital have been used by various researchers as performance indicators. Wet and Hall (2003) measured in their study the impact of DFL, DOL and DCL on profitability by using EVA (Economic Value Added) and MVA (Market Value Added) as profitability measures. Pandya (2015) tested the relationship between financial leverage and EVA. Mule and Mukras (2015) applied Tobin's Q, ROA and ROE as profitability indicators in their study to test the impact of leverage on profitability. Some studies, have considered the impact of financial leverage with some other variables on the profitability. Mohamed Cassim Abdul Nazar (2020) examined the influence of financial leverage on corporate performance (ROA, ROE and EPS) of eighteen plantation farming companies listed on the Colombo Stock Exchange (CSE) of Sri Lanka. Ahmed et al. (2015) determined by taking the companies of cement sector of Pakistan the effect of financial leverage on ROA. Rehman (2013) examined the impact of debt to equity ratio on ROA, sales growth, ROE and EPS in listed sugar companies of Pakistan. Akhtar et al. (2012) analyzed by taking fuel and energy sector of Pakistan the influence of financial leverage on financial performance.

Fixed financial interest is the reason of financial leverage in almost all type of organizations. Fixed financial charges used by the business are explained by the financial leverage. It magnifies the impact of changes in EBIT on the earnings after tax made by the company or EPS. Funds or finances which are obtained on fixed cost paid on it are represented by financial leverage by focusing to increase the wealth of shareholder in future.

Under these circumstances, it is important to observe this phenomenon practically. It is interesting to observe that the effect of Degree of Financial Leverage on firm profitability of S&P SL companies. This study establishes if there is a clear linkage between DFL and firm profitability of twenty S&P SL companies.

Problem Statement

Firms' profitability is greatly influenced by financial leverage as established by some studies. Such studies include Rehman (2013), Rajkumar (2014), Al-Shamaileh and Khanfar (2014), Mule and Mukras (2015), Pandya (2015), Vijitha (2016), Meragal et al. (2016), Singh and Bansal (2016), Dovi and Arbi (2017), Abubakar (2017), Umer and Usman (2018), Ripon et al. (2018), Gamlath (2019), Okoye (2019), Kenn et al. (2019), Nazar (2020) and Abolaji et al. (2020). However, most of this studies were carried out on firms in different sectors most notably banking and manufacturing industries.

The researches done on the effect of the financial leverage on a firm's profitability are fewer in number; it is lesser especially on the S&P SL companies in Sri Lanka. When examining past studies regarding financial leverage and firm's profitability, most of the researches have undertaken their researches based on the data collected from many Asian, African and European countries. However, most of the studies in Kenya were carried out on firms in different sectors most notably banking, financial and manufacturing industries other

than agricultural sector although agricultural sector is one of the pillars of Country's economy. But those identified factors may be irrelevant and mismatching to the S&P SL companies in Sri Lanka due to the nature and the size of the company and the economic conditions. Therefore, this paper forms part of a larger effort to develop a case study of the effect of Degree of Financial Leverage on firm profitability of S&P SL companies.

Research Objectives

The primary objective of the research was to investigate the influence of Degree of Financial Leverage on firm profitability of S&P SL companies. The primary objective was breakdown into sub objectives as follows:

1. To investigate the influence of Degree of Financial Leverage on Return on Assets of S&P SL companies.
2. To investigate the influence of Degree of Financial Leverage on TOBINS'Q of S&P SL companies.
3. To investigate the influence of Degree of Financial Leverage on EVA of S&P SL companies.

Research Questions

1. What effect does the Degree of Financial Leverage have on Return on Assets of S&P SL companies?
2. What effect does the Degree of Financial Leverage have on TOBINS'Q of S&P SL companies?
3. What effect does the Degree of Financial Leverage have on EVA of S&P SL companies?
4. Does Degree of Financial Leverage have a major effect on firm profitability of S&P SL companies?

II. LITERATURE REVIEW

Franklin and Muthusamy (2011) found in their study cash flow, interest, interest coverage, firm size, retained earnings before interest and tax, sales, intrinsic value of shares and structure of assets affect the financial leverage. The study did not provide any evidence which support to the association among operating and combined leverage and Tobin's Q, ROA, EVA.

Sachchidanand and Navindra (2012) pointed out that use of financial leverage is like a speculative technique. They analyzed that different special risks and cost are involved with financial leverage. In which period financial leverage will be successful cannot be assured. They studied and analyzed only the risk associated with financial leverage but the companies do not have to face only financial leverage risk, companies also have to bear operating leverage risk and the total risk which is combination of financial and operating risk.

Rehman (2013) analyzed the association between firm's financial performance and financial leverage by taking sugar companies in Pakistan. According the results debt to equity ratio was positively associated with ROA and growth in sales. Further he found that debt to equity ratio is negatively related with EPS, NP and ROE. The study could not provide any support for the existence of association among leverage and Tobin's, ROA and EVA.

Hasan and Gupta (2013) determined the association of debt ratio with EPS by taking the sample of 28 companies of Bangladesh. They found statistically significant relationship between leverage and shareholder's wealth. They did not consider the other ways to measure the shareholder's wealth like EVA.

Rajkumar (2014) analyzed the impact of financial leverage on financial performance of John Keells Holdings plc in Sri Lanka during the period 2006-2012. This study used net profit, return on equity (ROE) and return on capital employed (ROCE) as dependent variables while debt equity ratio and debt total asset ratio as independent variables. This study used correlation and regression analysis. The findings of the study showed a negative relationship between the financial leverage and the financial performance of the John Keells Holdings plc. But the financial leverage has a significant impact on the financial performance of the John Keells Holdings plc in Sri Lanka.

Samarakoon et al. (2014) analyzed the effect of leverage on profitability and market performance in the manufacturing sector of Sri Lanka. Study discussed the explanatory power of Financial Liability Leverage (FLEV), Operating Liability Leverage (OLLEV), and Total Leverage (TLEV) on Profitability and Market Performance. While profitability was measured by Return on Equity (ROE), Return on Assets (ROA) and Return on Net Operating Assets (RONOA), market performance was peroxided by Price to Book value ratio (PB), Price Earnings ratio (PE), Market Capitalization (LGMCAP) and Tobin's Q. The sample consisted of twenty-eight listed companies in the manufacturing sector of Colombo Stock Exchange, and data was gathered for the period 2008-2012. This study used fixed effect model, random effect model, correlation analysis and panel regression analysis. The findings revealed that OLLEV and FLEV exhibit a positive significant impact on the RONOA. While

FLEV affects the ROA negatively and significantly, there is a negative significant relationship between TLEV and ROE. Only LGMCAP is captured by OLLEV and TLEV positively and negatively respectively.

Banafa et al. (2015) analyzed the impact of leverage on financial performance of listed non-financial firm in Kenya during the period 2009-2013. This study used Debt/Equity as independent variable while Return on Assets (ROA) as dependent variable. The sample was 42 listed non - financial firms at the NSE. Descriptive Statistics, regression analysis and diagnostic tests were used in this study. The results showed that financial leverage has a negative and significant effect on corporate financial performance (ROA).

Meragal et al. (2016) investigated the impact of financial leverage on firms' value of listed manufacturing companies in Sri Lanka. Debt equity ratio was used to measure financial leverage while return on assets (ROA) and return on equity (ROE) were used to measure firms' value. A sample was ten listed manufacturing companies in Sri Lanka for the period 2011-2015. This study used correlation, descriptive statistics and regression analysis. The results indicated that there is a significant relationship between financial leverage and firms' value.

Dovi and Arbi (2017) analyzed the influence of financial leverage on financial performance at mining, oil and gas companies listed on Indonesia stock exchange. This study used debt to equity ratio (DER) to measure financial leverage while earnings per share (EPS), net profit margin (NPM) and return on equity (ROE) to measure financial performance. The sample consisted of 151 mining, oil and gas companies listed on the Indonesian Stock Exchange during the years 2010-2014. Simple regression method was used for data analysis. Results of this study indicated that the use of debt or debt to equity ratio does not significantly affect the company's financial performance such as earnings per shares, net profit margin and return on equity.

Leonard et al. (2018) observed leverage and financial performance of listed firms in Kenya. Long-term debt ratio (LDR) and total debt ratio (TDR) were used to measure leverage while financial performance measured by return on assets (ROA) and return on equity (ROE). Analysis revealed that observed leverage measured by long-term debt ratio (LDR) had a significant positive coefficient with performance metrics. However, the leverage measure using total debt ratio (TDR) showed a negative and significant role on performance metrics.

Musah and Yusheng (2019) analyzed leverage and financial performance of non-financial firms listed on the Ghana Stock Exchange (GSE). Leverage had an affiliation with the firms' financial performance as measured by Return on Assets (ROA), Return on Equity (ROE) and Return on Capital Employed (ROCE). Panel data extracted from the audited and published annual reports of the Ghana Oil Company Ltd, Total Petroleum Ghana Ltd, Starwin Products Ltd, Camelot Ghana Ltd, Aluworks Ltd, Clydestone Ghana Ltd, African Champion Industries Ltd, Benson Oil Palm Plantation Ltd, Fan Milk Ltd, Guinness Ghana Breweries Ltd, Unilever Ghana Ltd, PZ Cussons Ghana Ltd, Produce Buying Company Ltd, Mechanical Lloyd Company Ltd and Sam Woode Ltd for the period 2008 to 2017. Both the descriptive and Correlational Analysis were used for the study. The results found that leverage had a significantly negative association with the firms' financial performance as measured by ROA. However, an insignificantly positive association between leverage and the firms' ROE and ROCE.

Nazar (2020) analyzed the influence of financial leverage on corporate profitability in the plantation sector of Sri Lanka. This study used return on assets (ROA) and return on equity (ROE) as accounting performance measures and EPS as market performance measure and all three were the dependent variables. Total debt to Total assets (TDTA) and Total debt to Total equity (TDTE) were used to measure financial leverage and firm size as a control variable. This study used as the sample data of eighteen plantation farming companies listed on the Colombo Stock Exchange (CSE) of Sri Lanka for the period of six years from 2013 to 2018. Descriptive statistics, correlation and multiple regression analysis were used in this study in determining the relationship between the leverage and firm's profitability. The results indicated that there is a significant negative association between Total debt to total assets (TDTA) and profitability. Similarly, Total debt to total equity (TDTE) was significantly negatively associated with profitability. Firm size has significant positive relationship with profitability.

III.   RESEARCH HYPOTHESIS

Based on the objectives of the study, the researcher developed the following statement of hypothesis.

H1: There is a significant effect of Degree of Financial Leverage on ROA of S&P SL Companies

H2: There is a significant effect of Degree of Financial Leverage on TOBIN'S Q of S&P SL 20 Companies

H3: There is a significant effect of Degree of Financial Leverage on EVA of S&P SL 20 Companies

IV. METHODOLOGY

4.1 Sample and Data Collection

The study was covered S&P SL 20 that is designed to measure the firm profitability of twenty of the largest and most liquid companies in the Sri Lankan equity market (based on market capitalization). This study was carried out based on the secondary data. It was collected from annual reports of selected companies for the period from 2014/2015 to 2019/2020.

4.2 Data Analysis

The study was used SPSS 20.0 and EViews 10 software to investigate the effect of DFL on firm profitability of S&P SL companies. In the study, panel data were used to analyze how DFL affected the firm profitability of the companies. The connection between the variables were evaluated using the correlation coefficient. In this manner, three distinct regression models were applied.

- The first model was designed to assess how DFL affected the profitability as determined by ROA.
- In the second model, the DFL was assessed in relation to the profitability as indicated by Tobin's q.
- The third model was designed to assess how DFL affected the profitability as determined by EVA.

4.3 Research Models

$ROA_{i,t} = \beta_0 + \beta_1 (DFL_{i,t}) + \varepsilon$

$TOBIN'S\ Q_{i,t} = \beta_0 + \beta_1 (DFL_{i,t}) + \varepsilon$

$EVA_{i,t} = \beta_0 + \beta_1 (DFL_{i,t}) + \varepsilon$

Where,

$ROA_{i,t}$ = Return on Assets of company "i" for the period "t"

$TOBIN'S\ Q_{i,t}$ = TOBIN'S Q of company "i" for the period "t"

$EVA_{i,t}$ = Economic Value Added of company "i" for the period "t"

$DFL_{i,t}$ = Degree of Financial Leverage of company "i" for the period "t"

β_0 = the constant

$\beta_1, \beta_2, \beta_3$ = the coefficients for independent variables

ε = the error term

4.4 Definitions of Key Terms

4.4.1 Return on Assets (ROA)

The division of earnings after tax and total assets serves as the benchmark for the company's return on assets, or ROA.

ROA = Net Income / Total Assets

4.4.2 Tobin's Q

The q ratio is the relationship between the market worth of a company's assets and the cost of replacing those assets. Assets of the company are determined by the market value of the shares and the debt.

Tobin's Q = (Sum of Book Value of total Debt + market value of equity) / Book value of Assets

4.4.3 Economic Value Added (EVA)

Economic Value Added (EVA) is a financial measurement of the return earned by a firm that is in excess of the amount that the company needs to earn to appease shareholders.

EVA = Net operating profit after tax – (Capital Invested × WACC)

4.4.4 Degree of Financial Leverage (DFL)

Financial leverage is the amount of debt that the company has in its capital structure. The level of financial leverage determines whether there are fixed costs.

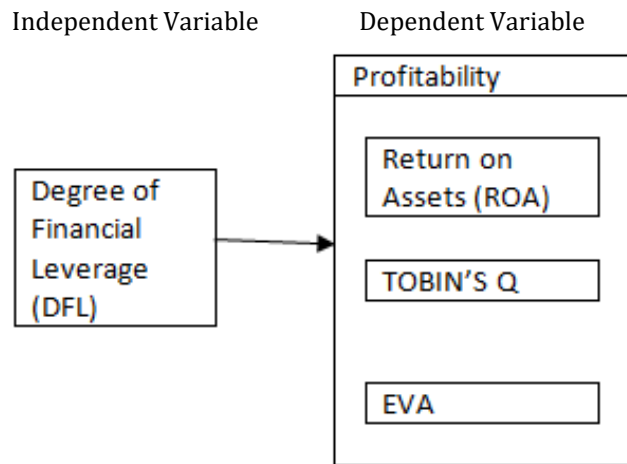DFL= Percentage change in NI / Percentage change in EBIT

4.5 Theoretical Framework

Independent Variable   Dependent Variable

Fig.1: Conceptual Framework

V.   RESULTS AND DISCUSSION

5.1 Descriptive Statistics

Table 1: Descriptive Statistics of all Study variables

	ROA	TOBIN'S Q	EVA	DFL
Mean	0.042	1.936	329000000	-0.548
Median	0.034	1.064	4941060	0.86
Maximum	0.494	43.858	5560000000	64.523
Minimum	-0.307	0.363	-570000000	-144.768
Std. Dev.	0.302	4.098	860000000	19.058
Observations	120	120	120	120

The efficiency of the management is measured by the Return on Assets. Table 1 had shown that the mean value of ROA in S&P SL companies was 4.2% and the maximum value was 49.4%. The mean value had reported that the largest and most liquid companies had averagely 4.2% of profit on total assets. It had indicated that there was lower profitability earned by S&P SL 20 companies. The maximum value had indicated that few companies had profit at 50% on total assets among the selected period from year 2015 to 2020. The median, minimum and standard deviation for the ROA were 3.4%, -30.7% and 30.2% respectively. The minimum value had also reported that some companies had the negative profit over the selected period.

The average value of TOBIN'S Q in S&P SL companies was 1.936 and its standard deviation was 4.098. These values had shown that book value of the largest and most liquid companies are less than firm market value. It means during this period the largest and most liquid companies were overvalued. The TOBIN'S Q mean value is larger than 1 which had clear cut indication of higher value of the shares of the firm. The median for TOBIN'S Q was 1.064. The maximum value for TOBIN'S Q was 43.858 for a company in a year while, the minimum was 0.363. The maximum value had indicated that companies had 43.858 of market value of the assets to cost of replacement of the asset among the selected period from year 2015 to 2020 and the minimum value had reported that some companies had the positive market value of the assets over the selected period.

Organization's economic profit is measured by the Economic Value Added. The mean value of EVA in S&P SL companies was 329000000 and the maximum value was 5560000000. The mean value had reported that the largest and most liquid companies had 329000000 of net operating profit on the total cost of capital. It had indicated that there was lower return earned by S&P SL 20 companies. The maximum value had indicated that companies had 5560000000 of net operating profit on the total cost of capital among the selected period from year 2015 to 2020. The median, minimum and standard deviation for the EVA were 4941060, -570000000 and

860000000 respectively. The minimum value had also reported that some companies had the negative net operating profit over the selected period.

The sensitivity in fluctuations of a company's overall profitability to the volatility of its operating income caused by changes is its capital structure is measured by the Degree of Financial Leverage (DFL). The mean value of DFL in S&P SL companies was -0.548 and the maximum value was 64.523. The mean value had reported that the largest and most liquid companies had -0.548 of net income on the earnings before interest and tax. It had indicated that the volatility of its stock price will likely be negative to reflect the volatility of its earnings by S&P SL 20 companies. The maximum value had indicated that companies had 64.523 of net income on the earnings before interest and tax among the selected period from year 2015 to 2020. The median, minimum and standard deviation for the DFL were 0.86, -144.768 and 19.058 respectively. The minimum value had also reported that some companies had the negative net income over the selected period.

5.2 Panel Regression Analysis

5.2.1 Stationary Test

Table 2: Results of Panel Unit Root Tests of All Selected Data Set

Variables	Methods of unit root testing	Statistic	The first order difference is need?	Unit root of first order difference	Stationary?
ROA	Levin, Lin & Chu t*	-3.61602 (0.0001)		-8.17332 (0.0000)	
	Im, Pesaran and Shin W-stat	1.21045 (0.8869)	Yes	-2.15259 (0.0157)	Yes
	ADF - Fisher Chi-square	34.6011 (0.7115)		52.5358 (0.0885)	
	PP - Fisher Chi-square	47.3189 (0.1986)		61.0240 (0.0177)	
TOBIN' S Q	Levin, Lin & Chu t*	-8.68467 (0.0000)			
	Im, Pesaran and Shin W-stat	-0.52744 (0.2989)	No		
	ADF - Fisher Chi-square	57.4409 (0.0364)			
	PP - Fisher Chi-square	85.9617 (0.0000)			

EVA	Levin, Lin & Chu t*	-19.1596 (0.0000)	
	Im, Pesaran and Shin W-stat	-3.75678 (0.0001)	No
	ADF - Fisher Chi-square	82.7696 (0.0001)	
	PP - Fisher Chi-square	115.101 (0.0000)	
DFL	Levin, Lin & Chu t*	-7.55157 (0.0000)	
	Im, Pesaran and Shin W-stat	-1.80927 (0.0352)	No
	ADF - Fisher Chi-square	74.5067 (0.0008)	
	PP - Fisher Chi-square	88.1327 (0.0000)	

Table 2 had shown the results of panel unit root tests to check the stationary of the panel data which were collected for this study. First the research was checked the stationary of data set of dependent variables (ROA, TOBIN'S Q and EVA).

The results of ROA in S&P SL companies had shown that statistic of only one panel unit root test was significant at 1% significance level (Levin, Lin & Chu t* -3.61602 at P-value of 0.0001) and statistic of another selected three panel unit root tests were insignificant at any significance level (Im, Pesaran & Shin W-stat 1.21045 at P-value of 0.8869, ADF- Fisher Chi-square 34.6011 at P-value of 0.7115 and PP- Fisher Chi-square 47.3189 at P-value of 0.1986). Thus, based on the majority of results, the data of ROA for the largest and most liquid companies was non- stationary in level. However, in first order difference, the data of ROA was stationary since statistic of one panel unit root tests were significant at 1% significance level (Levin, Lin & Chu t* -8.17332 at P-value of 0.0000) and also statistic of two panel unit root test was significant at 5% significance level (Im, Pesaran & Shin W-stat -2.15259 at P-value of 0.0157 and PP- Fisher Chi-square 61.0240 at P-value of 0.0177). Therefore, the data for the largest and most liquid companies related with ROA was fit for panel regression analysis.

The results for TOBIN'S Q in S&P SL companies had shown that the data was stationary in level since statistic of two panel unit root tests were significant at 1% significance level (Levin, Lin & Chu t* -8.68467 at P-value of 0.0000, and PP- Fisher Chi-square 85.9617 at P-value of 0.0000) and also statistic of one panel unit root test was significant at 5% significance level (ADF- Fisher Chi-square 57.4409 at P-value of 0.0364) while statistic of only one panel unit root test was insignificant at any significance level (Im, Pesaran & Shin W-stat -0.52744 at P-value of 0.2989). Therefore, the data for the largest and most liquid companies related with TOBIN'S Q was fit for panel regression analysis.

The data of EVA in S&P SL companies was also stationary in level since statistics of all selected panel unit root tests were significant at 1% significance level (Levin, Lin & Chu t* -19.1596 at P-value of 0.0000, Im, Pesaran & Shin W-stat -3.75678 at P-value of 0.0001, ADF- Fisher Chi-square 82.7696 at P-value of 0.0001 and PP- Fisher Chi-square 115.101 at P-value of 0.0000). Therefore, the data for the largest and most liquid companies related with EVA was fit for panel regression analysis.

The data of DFL in S&P SL companies was stationary in level since statistics of three selected panel unit root tests were significant at 1% significance level (Levin, Lin & Chu t* -7.55157 at P-value of 0.0000, ADF- Fisher Chi-square 74.5067 at P-value of 0.0008 and PP- Fisher Chi-square 88.1327 at P-value of 0.000) and also statistic of one panel unit root test was significant at 5% significance level (Im, Pesaran & Shin -1.80927 at P-value of 0.0352). Therefore, the data of selected independent variable for the largest and most liquid companies were fit for panel regression analysis.

Thus, Table 2 had summarized that the data of all selected variables for the largest and most liquid companies were stationary. In another words, there was no autocorrelation in panel data of selected variables of the study. Thus, all selected independent and dependent would be used in regression models to examine the objectives of the study.

5.2.2 Selecting Appropriate Regression Model for the Panel Data Set

The study should be selected an appropriate regression for panel regression analysis. There are three types of panel regression model which includes fixed effect model, random effect model and pooled effect model. As a first step fixed effect model is compared with random effect model. To compare these two models "Hausman testing" is used. If the fixed effect model will be selected then fixed effect model and pooled effect model will be compared with the use of "Wald testing", otherwise the random effect model will be selected in the first stage without using "Wald testing". This section is first compared the fixed effect model with random effect model from "Hausman testing". Therefore, the hypotheses are as follows,

H0: Random effect model is appropriate for the study

H1: Fixed effect model is appropriate for the study

If the calculated significant value for the cross section chi square is less than significant value (P < 0.05) at 5% significance level, H0 has to be rejected and alternative hypotheses H1 has to be accepted. On other hand, If the calculated significant value for the cross section chi square is more than significant value (P > 0.05) at 5% significance level, H0 has to be accepted and alternative hypotheses H1 has to be rejected.

Table 3: Results of Hausman Test of all regression equations

Equations	Chi-square statistic	Chi-square degree of freedom	P-value	Test result
ROA	1.961869	3	0.5804	Random effect model
TOBIN'S Q	0.205233	3	0.9767	Random effect model
EVA	1.406343	3	0.7040	Random effect model

Based on the results of Hausman test for the largest and most liquid companies, the cross section chi square values of regression equations for ROA, TOBIN'S Q and EVA were 1.961869, 0.205233 and 1.406343 respectively and those were insignificant at 5% significance level. Thus, it had indicated that cross section chi square values of all regression equations were insignificant. Therefore, the null hypotheses were accepted and alternative hypotheses were rejected in all three regression equations. It means that random effect model was appropriate model for all regression equations from compared with fixed effect model. Thus, this study had not

tested "wald" test in second stage. Because of that hausman test had been confirmed in first stage that random effect model was appropriate model for all regression equations to investigate the effect of Degree of Financial Leverage on firm profitability of S&P SL companies.

5.2.3 Panel Regression Analysis of random Effect Model to examine the effect of Degree of Financial Leverage on financial performance of S&P SL 20 companies

The study has been selected the random effect model to examine the effect of Degree of Financial Leverage on financial performance of S&P SL 20 companies.

Table 4: Results of Panel Regression Analysis of Random Effect Model for the Regression equation 01

Model	Equation 01 (ROA)	
	Coefficient	P-value
C	0.028689	0.2417
DFL	0.018149	0.0000
R-squared	0.704303	
Adjusted R-squared	0.696656	
F-statistic	92.09780	0.000000
Durbin-Watson stat	1.740757	

R- squared (R^2) is the proportion of variation that is explained by this model, and Adjusted R- squared is the Coefficient of determination adjusted for degree of random. As per the Table 4, the results of the random effect regression model had revealed that the R- squared (R^2) was 0.704303 which was showed that 70.4303% of ROA was explained by Degree of Financial Leverage of the largest and most liquid companies and remaining 29.5697% may come from other factors which were not considered in this study. The adjusted R-squared was indicated that 69.6656 % of variation in ROA was explained by Degree of Financial Leverage of S&P SL companies after adjusting to sample size and independent variable. The F-value was 92.09780 with significant at 5% significance level. It had statistically concluded that the regression model is fit to investigate the effect of Degree of Financial Leverage on firm profitability of S&P SL companies.

The Durbin-Watson value was 1.740757 which was in the range of 1.5-2.5. Tharmila and Nimalathasan (205), Vogt and Johnson (2011) were indicated that there is no auto correlation problem when the Durbin-Watson statistic is between 1.5 to 2.5. Therefore, the study was concluded that there was no auto correlation problem.

According to coefficients of independent variable, DFL was statistically significant and positively related with ROA. It means increase of 1 unit in DFL will give rise to ROA with 0.018149 and vice versa.

The results of random effect model had concluded between leverage indicators and ROA that Degree of Financial Leverage has significant effect on ROA in S&P SL 20 companies since R^2 and Adjusted R^2 had value of 70%. DFL had significant and positive impact on ROA of S&P SL 20 companies.

Table 5: Results of Panel Regression Analysis of Random Effect Model for the Regression equation 02

Model	Equation 02 (TOBIN'S Q)	
	Coefficient	P-value
C	1.624251	0.0000
DFL	-0.017264	0.0136
R-squared	-0.935538	
Adjusted R-squared	0.933871	
F-statistic	561.1724	0.000000
Durbin-Watson stat	1.978089	

As per the Table 5, the results of the random effect regression model had revealed that the R- squared (R^2) was 0.935538 which was showed that 93.5538% of TOBIN'S Q was explained by Degree of Financial Leverage of the

largest and most liquid companies and remaining 6.4462% may come from other factors which were not considered in this study. The adjusted R-squared was indicated that 93.3871 % of variation in TOBIN'S Q was explained by Degree of Financial Leverage of S&P SL companies after adjusting to sample size and independent variable.

The F-value was 561.1724 with significant at 5% significance level. It had statistically concluded that the regression model is fit to investigate the effect of Degree of Financial Leverage on firm profitability of S&P SL companies.

The Durbin-Watson value was 1.978089 which was in the range of 1.5-2.5. Tharmila and Nimalathasan (205), Vogt and Johnson (2011) were indicated that there is no auto correlation problem when the Durbin-Watson statistic is between 1.5 to 2.5. Therefore, the study was concluded that there was no auto correlation problem.

According to coefficients of each independent variable, DFL was statistically significant but negatively related with TOBIN'S Q. It means increase of 1 unit will cause 0.017264 units decrease and vice versa.

The results of random effect model had concluded between Degree of Financial Leverage and TOBIN'S Q that Degree of Financial Leverage has significant impact on TOBIN'S Q in S&P SL 20 companies since R^2 and Adjusted R^2 had value of 94%. DFL had significant and negative impact on TOBIN'S Q of S&P SL 20 companies.

Table 6: Results of Panel Regression Analysis of Random Effect Model for the Regression equation 03

Model	Equation 03 (EVA)	
	Coefficient	P-value
C	330000000	0.0000
DFL	-453354.1	0.9139
R-squared	-0.626410	
Adjusted R-squared	0.541679	
F-statistic	7.392869	0.000000
Durbin-Watson stat	2.202405	

As per the Table 6, the results of the random effect regression model had revealed that the R- squared (R^2) was 0.626410 which was showed that 62.6410% of EVA was explained by Degree of Financial Leverage of the largest and most liquid companies and remaining 37.3590%   may come from other factors which were not considered in this study. The adjusted R-squared was indicated that 54.1679% of variation in EVA was explained by Degree of Financial Leverage of S&P SL companies after adjusting to sample size and independent variable.

The F-value was 7.392869 with significant at 5% significance level. It had statistically concluded that the regression model is fit to investigate the effect of Degree of Financial Leverage on firm performance of S&P SL companies.

The Durbin-Watson value was 2.202405 which was in the range of 1.5-2.5. Tharmila and Nimalathasan (205), Vogt and Johnson (2011) were indicated that there is no auto correlation problem when the Durbin-Watson statistic is between 1.5 to 2.5. Therefore, the study was concluded that there was no auto correlation problem.

According to coefficients of independent variable, DFL was statistically insignificant and negatively related with EVA. It means increase of 1 unit will cause 453354.1 units decrease and vice versa.

The results of random effect model had concluded between Degree of Financial Leverage indicators and EVA that Degree of Financial Leverage has insignificant impact on EVA in S&P SL 20 companies since R^2 and Adjusted R^2 had value of 63% and 54%. DFL had no significant impact on EVA of S&P SL 20 companies.

VI.   HYPOTHESIS TESTING

The model can be regarded as significant if the calculated significant value is smaller than significant value at 5% (P < 0.05). On the other hand, a model cannot be regarded as significant if the calculated significant level exceeds the significant value at 5% (P > 0.05).

Table 7: Results Summary of Hypotheses Testing

In between	Significant level	Significant
DFL and ROA	0.0000	Significant
DFL and TOBINS'Q	0.0136	Significant
DFL and EVA	0.9139	Insignificant

According to the testing of hypotheses, DFL has a significant effect on ROA and TOBIN'S Q but it has insignificant effect on EVA. Based on it, the final conclusion had reported that Degree of Financial Leverage has sufficient level of effect on firm profitability of S&P SL 20 companies.

VII.   CONCLUSION

Model 1: $ROA_{i,t} = \beta_0 + \beta_1 (DFL_{i,t}) + \varepsilon$

The first regression model was to measure the impact of DFL on profitability (measured by ROA) of S&P SL companies. Random effect model indicates that DFL has positive effect on ROA . In terms of DFL the result given by the model shows a significant relationship with ROA because respective P value is less than 0.05 at 5 percent significant level. The Hausman test verifies that the random effect model is best fit model to examine the effect of Degree of Financial Leverage on profitability of the largest and most liquid companies because its respective P value is more than 0.05. Since the results of this study indicates, DFL has statistically significant and positive relationship with ROA which is related to the findings of Khushbakht Tayyaba (2013) who found ROA positively related with DFL and negative relationship between DOL and ROA.

Model 2: $TOBIN'S\ Q_{i,t} = \beta_0 + \beta_1 (DFL_{i,t}) + \varepsilon$

The second regression model was to measure the impact of DFL on profitability (measured by TOBIN'S Q) of S&P SL companies. Random effect model indicates that DFL has significant but inverse influence on the profitability of the firms, which shows that when the firm use more amount of finance to invest in efficient assets then the replacement cost paid on the assets may be more than the profit earned by the firm. So it is better for the management to use optimal amount of finance to fulfill the financing needs of the company. As far as R^2 is concerned, comparatively random effect model is in a good position in predicting TOBIN'S Q than the fixed effect model because it explains nearly 94 percent from the model. Therefore, the random effect regression model is the best fitting model for explaining TOBIN'S Q. The Hausman test verifies that the random effect model is best fit model to examine the effect of Degree of Financial Leverage on profitability of the largest and most liquid companies because its respective P value is more than 0.05. This second model of TOBIN'S Q, is giving us an analysis on the market perspective of the firm's performance. Since the results of this study indicates DFL has inverse significant relationship with TOBIN'S Q, which are in line with the result of Mule and Mukras (2015), they found that financial leverage was the negative predictor to measure the profitability determined in terms of TOBIN'S Q.

Model 3: $EVA_{i,t} = \beta_0 + \beta_1 (DFL_{i,t}) + \beta_2 (DOL_{i,t}) + \beta_3 (DCL_{i,t}) + \varepsilon$

The third regression model was to measure the effect of DFL on profitability (measured by Economic Value Added) of S&P SL companies. Random model indicates that DFL has not been significant in predicting Economic Value Added because respective P values are higher than 0.05 at 5 percent significant level. However, DFL has negative association with EVA. As far as R^2 is concerned, comparatively random effect model is in a good position in predicting EVA than the fixed effect model because it explains nearly 63 percent from the model. Therefore, the random effect regression model is the best fitting model for explaining EVA. The Hausman test gives the surety that random effect model is best fit model for examining the influence of leverage on profitability of the largest and most liquid companies because its respective P value is higher than 0.05. This third model of EVA, is giving us an analysis of how profitable company projects are and it therefore serves as a reflection of management performance. Results show inverse and non-significant relationship between Degree of Financial Leverage and firm profitability. Therefore, with technological advancement the firms need to invest in more efficient and technologically advanced capital that will lead to improved efficiency. Instead of holding funds into large capital which are less profitable, it's better for the firms to invest them in positive NPV projects.

VIII.   REFERENCES

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