STUDY OF CONSISTENCY AND PROFITABILITY THROUGH FINANCIAL RATIO ANALYSIS IN PLANTATIONS INDUSTRY IN SRI LANKA

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ABSTRACT

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Purpose - This paper aims to examine financial ratio disclosure in annual reports, and the degree to which the primary ratio components differ between and within the firms, and the stability of ratios over a period of time, moreover the relationship between the companies' profitability, leverage and liquidity.

Design/Methodology/Approach - Out of 297 public listed companies in Colombo Stock Exchange, financial ratios which are presented voluntarily in the annual reports of 18 public listed companies in Plantations Industry in Sri Lanka, from 2013 to 2017 were examined.

Findings - Findings indicate that there is a significant variation in financial ratio component composition through firms in Plantations Industry. Further Earnings per Share, Interest Cover and Net Asset per Share are stable over a period of time across firms while Current Ratio, Debt to Equity and Return on Equity are not and that there is a positive relationship between Leverage and Liquidity with profitability in firms.

Practical Implications - The significant variation in financial ratio component composition might imply the incompetency of Financial Statement preparers in selection of proper components in calculation of financial ratios and as well might imply the intended manipulation by them through deliberate wrong selection of components.

Originality/Value - This paper provides support to those financial analysts and investors who rely much on financial ratios presented in companies' annual reports. Further identification of factors affecting to profitability of companies will enrich companies with useful information for decision making purpose.

KEYWORDS - *Financial Ratios; Ratio Analysis; Annual Reports*

1. INTRODUCTION

For a quite a while, views and arguments on the usefulness of financial ratios have taken greater attention throughout the literature. Remarkably, regardless of the length of time of analyzing financials, it's difficult to see a common theory for computation and presentation of financial ratio which are in the annual reports (Gilman 1925). The reason for calculating financial ratios using different formulas in various books can be explained by this. The determination of this study is to examine the degree to which the components of financial ratio at a point in time differ between companies, between companies over a period, and whether reported financial ratio sets in an annual report are same from one year to another. These inconsistencies indicate that users are not able to compare ratios with any reliability and trustworthiness. Hence objections are being presented for financial ratios in the history because of their progressions after some time can't be interpreted on the grounds that both the numerator and denominator differ (Gilman 1925). Financial ratios denote a result of transaction reflected in the accounting items, and when such ratios are a product of component manipulation by means of discretion of the companies by selecting different denominator/numerator, presenting financial ratios which are different from one to another over the period of time and with compared to other companies in the same industry readers can not to discriminate between a change in ratio value (Courtis 1996).

2.LITERATURE REVIEW

Prior Studies on Financial Ratio Component Consistency

Financial ratios are the basic components which are used to financial projections and predictions. Researchers have used

financial ratios to improve methodologies in order to forecast the future of businesses being a failure or a success (Altman, 1968). Variations in a specific financial ratio are hard to understand, because these changes can be associated to fluctuations in the numerator and or the denominator. Thus, every such alteration wants a clarification of its own. Accordingly, Laitinen (2018), conducted a study to investigate what type of proportions have changes in the numerator and the denominator played in the long term variation of financial ratios. There were seven ratios reflecting profitability and its determinants, liquidity, and long-term solvency.

The results of the study by Rumman (2015), indicated that the Earnings before Interest and Tax, Current Assets Turnover and Cash Flow to Total Assets were financial ratios which were different from industry to industry. When it comes to variations between the financial ratios over time there were no changes as per the study. The financial ratios were stable respectively from 2010 to 2014. For the comparisons of company financial performances over a period of time, it is necessary that the benchmarks used are steady. Or else, the benchmarks are only relevant for the analysis phase and they are not to be extrapolated into the future periods (Chin-Fook Yap et al, 2013).

Prior Studies on Stability of Financial Ratios

Chin-Fook Yap et al. (2013) argued that the market and economic conditions where companies operate change generally over a period of time. When there is a strong economic growth in a country companies can expect to achieve well and in times of recession or economic downturn, many companies would face significant drop in sales, profitability and experience liquidity problem. This study's objective was to assess whether a set of financial ratios which have been used broadly are steady throughout three different sectors and whether they are steady over a time period of five years starting from 2006 to 2010. Furthermore firms' financial data were expected to be negatively affected and the means of the ratios in these significant two years were anticipated to be unsteady compared to the other periods in the United States (Ocal et al. (2007).

Certain examinations found that a few ratios are commonly steady in one sector while not steady in a different sector (Tan et al., 1997). Tan et al. (1997), calculated the means and the standard deviations in their research on the consistency of financial ratios to obtain an initial overview. They understood that there were noteworthy deviations in the ratios after some time and crosswise over industry. The comparability of financial ratios might be narrow because of the unpredictability of components used, for researchers and all others who depend on published financial ratios that are presented in annual reports. There are four main reasons for these inconsistencies as per Courtis (1996) such as; Differences in categorization of similar accounts, same account over a period, expression on relevant numerator and denominator to be included and description of appropriate components from one year to the other.

Prior Studies on Factors Affecting to Profitability

As per Rumman (2015), financial ratios can be used in order to financially ascertain Performance of companies. This ratio study facilitates companies to realize their financial strengths and weaknesses. This also ensures their ability to evaluate their risks and opportunities. Not only facilitating to make precise predictions, but also ratios are useful in

determining the existing position of a company. When investors, banks and other financial institutions are assessing the profitability and also the feasibility in negotiating with a particular company, they count on financial ratios. Further when it is necessary for managers of companies to make rational decisions as to whether to go into liquidation or continue business, ratios frequently offer the required analysis. In the study of Chen and Shimerda (1981), they have identified that Return on Investment is an essential ratio in determining companies' performance. So as a result of that in the present study, 'Return on Equity' is to be recognized as the parameter in determining the profitability of companies in the Plantations Industry. As per the study by Yichen Wu, (2013) the correlation between leverage and firm growth is noticeably negative. There are also research studies which show a positive relationship between leverage and firm growth as well. For instance the study by Kim P. Huynh, (2009).

Research Gap

None or the prior researches were being performed in developing countries such as Sri Lanka. Further, though industries such as Pharmaceutical Industries, Chemical Industries, Leather and clothing (Rumman 2015) and banking industry were analyzed in such researches, Plantations Industry was ignored and not captured in to such ratio analysis attempt by researches. Hence this study might help in bridging the above mentioned research gap.

3.RESEARCH OBJECTIVES

According to discussed problem statement, Objectives of this study can be defined as bellow:

1. To investigate whether there is a significant variation in financial ratio component composition through firms in Plantations Industry.
2. To investigate whether there is a significant instability in financial ratios over a period of time across firms in Plantations Industry.
3. To investigate factors affecting the profitability of firms in Plantations Industry.

4.SIGNIFICANCE OF THE STUDY

This study might be of a greater support to those financial analysts and investors who rely much on financial ratios presented in companies annual reports. If the users of Annual Reports remain receiving financial ratios via annual reports, without the provision of clarifications with regard to underlying formulations, inter & intra firm evaluations might not be reliable. However, if the problems and ambiguities relating to the inconsistency and unpredictability of presentation of financial ratios can get resolved, then all the users of such information will be benefitted. Further identification of factors affecting to profitability of companies will enrich companies with useful information for decision making purpose.

5.LIMITATIONS OF THE STUDY

1. Research is bound to listed companies in Plantations Industry in Colombo Stock Exchange.Colombo Stock Exchange currently comprises with 297 public listed companies by which 20 sectors are denoted. Nevertheless, for this study only 20 public listed companies in the Plantations Industry will be selected. Therefor this sample will only represent nearly 7% of the entire population.
2. Data collection method is limited to secondary methods.Similar to many studies of this type, this study was entirely based on Annual Reports which is a secondary method of collecting data. It is

supposed that users will refer to the Annual Reports in obtaining data for decision making.

6. RESEARCH DESIGN AND METHODS
Conceptual Framework
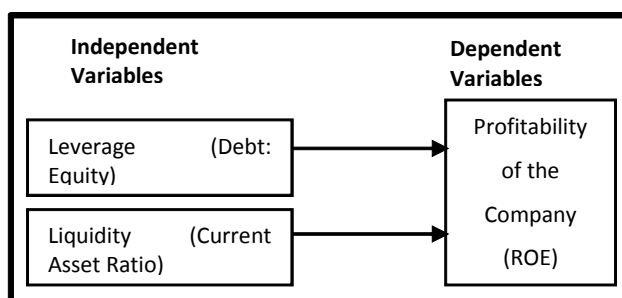
Source: Author Constructed

Figure i - Conceptual Framework
Table i - Operationalization of the Variables

Variable	Working definition	Measurement	Related Studies
Leverage	Usage of fixed interest bearing loans in the capital structure of a firm.	Debt : Equity	Laitinen (2018) Rumman (2015) Courtis (1996) Chin-Fook Yap et al, (2013)
Liquidity	Indication of whether a company's current assets will be sufficient to meet the current obligations when they become due.	Current Assets : Current Liabilities	Laitinen (2018) Rumman (2015) Courtis (1996) Chin-Fook Yap et al, (2013)
Profitabilit	Measurement to determine the ability of a business to create earnings.	PAT : Equity	Laitinen (2018) Rumman (2015) Courtis (1996) Chin-Fook Yap et al, (2013)

Source: Author Constructed

HYPOTHESES
The hypotheses used in the study are:

H_1: There is no significant variation in financial ratio component composition through firms in Plantations Industry.

H_2: Financial Ratios are stable over a period of time across firms in Plantations Industry.

H_3: There is a positive relationship between leverage and profitability in firms in Plantations Industry.

H_4: There is a positive relationship between liquidity and profitability in firms in Plantations Industry

Data Analysis & Methodology

For the purpose of testing the **first objective**, i.e., consistency of financial ratio component composition, the formula used for each of the six ratios presented in the annual reports for the year 2017 were compared to a benchmark. The formula which was used by the majority of the companies was determined as the benchmark. The percentage of consistency versus inconsistency was tested using chi-square method through SPSS.

In relation to the **second objective** of stability in financial ratios over a period of time the said six financial ratios were to be analysed using EViews through Descriptive statistics which' results show whether such financial ratios were stable over time. For this purpose Mean value, Median, Standard Deviation, skewness and etc. of time series of each of six financial ratio were to be calculated.

Standard deviation can estimate the dispersion in a more accurate manner and below formula shows how to measure it.

$$\text{Standard Deviation} = \sqrt{\frac{\sum (x-\bar{x})^2}{(n-1)}} \qquad (1)$$

Where;

x = each value

$\bar{x}$ = the mean or average

n = the number of values

$\sum$ = the sum of values

For the **third and final objective** of ascertaining factors affecting to the profitability of firms in Plantations Industry and how they affect to the profitability, The collected data were to be examined through regression analysis method, using EViews and SPSS. In the present study in order to investigate the possible relationship between the Profitability, Leverage and Liquidity the said Regression Model has been associated.

7. DATA ANALYSIS AND FINDINGS
Objective I - Financial Ratio Component Composition Consistency

The Annual Reports of firms do not disclose the components used in calculating Financial Ratios presented.

Hence, first of all it was required to identify how the ratios were being constructed. This involved working with many combinations of component groups on a trial and error basis until the correct group of components are being identified. SPSS Chi-square Two way Contingency Test was utilized in measuring whether there is significant association in component consistency. The Financial Components mostly used was treated as the Yardstick in measuring consistency versus inconsistency. The frequency of consistency and inconsistency component composition of 18 companies for the six Financial Ratios are presented below in Table ii.

Table ii - Ratio Component Consistency in 2017

Ratio	Population	Consistency	Inconsistency
Earnings Per Share	18	18	0
Interest Cover	18	10	8
Debt To Equity	18	13	5
ROE	18	14	4
Net Asset Per Share	18	18	0
Current Ratio	18	18	0
Total Observations	**108**	**91**	**17**

Source: Author Constructed

Out of the 108 observations in 91 observations reported stability of numerator and denominator while 17 observations reported instability. As a whole, these findings depict that compliance with the benchmark formulas occurred in 84% observations reported.

The proportion between consistency and inconsistency of component usage can be stated as 91:17 and this was tested via Chi-square. If all the Financial Ratios are calculated as expected using the above benchmark formulas, then it is concluded as 100% consistency that is 18 out of 18 companies are observed as expected. The results are summarized in Table iii.

Table iii - Chi-square Test

Chi Squre Test	Population
X^2	2.156
Df	5
Asymp. Sig. – $p(X^2 > 2.156)$	0.8272

Source: Author Constructed

The null hypothesis is that there is no association of between variables which is rejected if the p-value is less than 0.05 (significant level). The Chi Square Test Statistic which is X^2 was calculated as,

$$X^2 = \text{``} \frac{(Observed - Expected)^2}{Expected} \qquad (2)$$

Even though 84% of ratios were consistent, a user cannot determine which companies use consistent ratios and which companies do not, without performing a lot of work on data.

H_{1} – *"There is no significant variation in financial ratio component composition through firms in Plantations Industry" is not supported, as there is a significant variation which is statistically proven, in the selection of denominator and numerator in calculation of their Financial Ratios*

Objective II - Stability of Financial Ratios over a Period of Time

In performing this study descriptive statistics are used to explain main features of the study. Descriptive statistics including Mean, Median and Standard Deviation for the five year period is given below in Table iv.

Table iv - Descriptive Statistics of Financial Ratios

	Current Ratio	Debt to Equity	Earnings per Share	Interest Cover	Net Asset per Share	ROE
Mean	0.902	0.412	1.753	2.837	53.151	0.034
Median	0.715	0.358	1.745	2.53	44.89	0.059
Maximum	2.52	1.13	23.09	11.83	136.5	0.313
Minimum	0.1	0.015	-20.96	-7.82	2.84	-0.29
Std. Dev.	0.609	0.271	7.514	3.889	36.396	0.111
Skewness	1.094	0.576	-0.066	0.351	0.517	-0.73
Kurtosis	3.39417	2.549	3.562	3.228	2.089	3.506
Jarque-Bera	18.536	5.745	1.251	2.039	7.121	8.855
Probability	0.000094	0.057	0.535	0.3607	0.028	0.012
Observations	90	90	90	90	90	90

Source: Author Constructed

Mean Value indicates the average ratios for the plantations Industry over the five year period starting from 2013 and ending from 2017.

H_2 – *"Financial Ratios are stable over a period of time across firms in Plantations Industry" is not supported as several Financial Ratios are stable over a period of time across firms in Plantations Industry while several Financial Ratios are not.*

Objective III - Impact of Leverage and Liquidity on Firm's Profitability

For this purpose statistical method, Regression analysis is used through EViews System. Here the firms' profitability is measured through Return on Equity Ratio which is the dependent variable.

Regression Analysis

The estimated relationship between the variables can be written as follows.

ROE = + $_1$ DE + $_2$ CR +   (3)

Where; ROE   = Return on Equity Ratio (Measure of Profitability)

DE = Debt to Equity Ratio (Measure of Leverage)

CR = Current ratio (Measure of Liquidity)

        = Constant value

$_1$, $_2$ = Coefficients

    = Standard error

Since all the p-values of all three ratios are less than, it can be concluded that the data set is reliable and the null hypothesis can be rejected at 1% level of statistical significance. Results of the Panel Data Regression Model are as follows;

Table v - Regression Analysis

Dependent Variable: ROE

Method: Panel EGLS (Cross-section random effects)

Periods included: 5

Cross-sections included: 18

Total panel (balanced) observations: 90

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.0319	0.0363	0.8821	0.038
Debt_To_Equity	0.01331	0.0419	0.3172	0.075
Current_Ratio	0.06755	0.0221	3.0590	0.003
	Weighted Statistics			
R-squared	0.7031	Mean dependent var		
Adj. R-squared	0.0825	S.D. dependent var		
S.E. of regression	0.0637	Sum squared resid		
F-statistic	5.003	Durbin-Watson stat		
Prob(F-statistic)	0.0088			1.778

Source: Author Constructed

As adjusted R-squared is 0.7031, this indicates that the model is capable of explaining about 70.31% of the relationship among ROE, Debt to Equity and Current Ratio of firms in Plantations Industry. The probability level – Prob (F-statistic) is less than 0.05 which suggests that the independent variables jointly can significantly influence the dependent variable, which is the Return on Equity.

Coefficients of each independent variables signpost the change in units of the dependent variable when the independent variables alter by one unit each. In view of that, when Debt to Equity increases by one unit ROE increases by nearly 0.0133 and vice versa. When it comes to the impact of Current Ratio to the Return on Equity, it also shows a positive impact with a unit change of 0.0676.

t- Statistics and probability levels mentioned in the above table shows the extent to which the independent variables have the ability to affect the dependent variable individually. Since t-statistics of Debt to Equity ratio is even less that 1 and probability level is slightly greater than 0.05, it can be concluded that Leverage of Firms in Plantations Industry is insignificant in its individual impact on the Return on Equity. However, looking at the results obtained, it can be understood that the Liquidity of firms in Plantations Industry is individually significantly influences the Return on Equity since the value of t-statistics is 3.05 and probability level is less than 0.05.

So that after applying the findings to the basic Regression Equation, the results can be shown as below.

ROE= -0.031959+ 0.013309 DE+ 0.06755CR+ H_3 _ *"There is a positive relationship between leverage and profitability in firms in Plantations Industry" is supported with the results.*

H_4 _ *"There is a positive relationship between liquidity and profitability in firms in Plantations Industry" is supported with the results.*

8. DISCUSSION AND CONCLUSIONS
Objective I - Financial Ratio Component Composition Consistency

According to the Chi-square Two Way Contingency Test, the conclusion is that for the year 2017, there is a statistically proven significant variation in the choice of components been used as denominator and numerator for financial ratios. It is difficult for a user of Annual Reports to identify which companies use components consistently and which companies do not, without a major effort on data.

This might imply the incompetency of Financial Statement preparers in selection of proper components in calculation of financial ratios and as well might imply the intended manipulation by the financial statement preparers through deliberate wrong selection of components. This deliberate manipulation can be justified through the need for enhancing the companies' image on profitability, growth and

also risk as per the study by Lev and Penman (1990). Another possible reason for this deliberate wrong selection of components for manipulation would be to ensure compliance with debt covenants, mainly when such debt covenants are presented in terms of GAAP (Generally Accepted Accounting Principles) based financial ratios as per the study (Courtis 1996).

Objective II - Stability of Financial Ratios over a Period of Time

As per the results Earnings per Share and Interest Cover have standard deviations of 7.514 and 3.888 respectively indicating high variability in ratios over the five year period while Net Asset per Share presented the highest Standard Deviation of 36.396. Those three ratios with high Standard Deviation indicated high variability of value over the time, hence overall instability. However Current Ratio, Debt to Equity and Return on Equity ratios have very low standard deviations indicating lesser fluctuation of ratios over time, hence overall stability.

Objective III - Impact of Leverage and Liquidity on Firm's Profitability analyzed through Regression Analysis

The Leverage and Liquidity which are independent variables can significantly influence the Profitability which is the Dependent Variable. Based on coefficients, Leverage which is denoted by Debt to Equity is positively correlated with ROE, with 0.0133 increment in ROE for one unit increment in Debt to Equity. Further Liquidity which is denoted by Current Ratio is also positively correlated with ROE, with 0.0676 increment in ROE for one unit increment in Current Ratio. Further based on T- Statistics and probability levels, it can be concluded that though leverage has relatively low significant individual impact on Return on Equity, liquidity has a relatively high individual impact on Return on Equity.

REFERENCES

1. Altman, EI. (1968), 'Financial ratios, discriminant analysis and the predication of corporate bankruptcy', The Journal of Finance, pp. 589-609
2. Chen, KH. (1981), & Shimerda, TA, 'An empirical analysis of useful financial ratios', Financial Management, 51-60
3. Chin-Fook Yap, B, Mohamad, Z, & Chong, K. (2013), 'A longitudinal and cross-industry study on the stability of financial ratios of Malaysian companies', Accounting and Finance Research, vol. 2, no. 3, pp. 1927-5986
4. Courtis, JK. (1996), 'Annual report financial ratio component consistency', Asian Review of Accounting, vol. 4, no. 1, pp. 146 – 162
5. Gilman, S. (1925), 'Analyzing financial statements', The Ronald Press Company
6. Kim P Huynh, RJ. (2009), 'Age Eûects, Leverage and Firm Growth', Department of Economics, Indiana University, vol. 2
7. Knauss, RL. (1964), 'A reappraisal of the role of disclosure', Michigan Law Review, vol. 62, no. 4, pp. 607-648
8. Laitinen, EK. (2018), 'Financial Reporting: long-term change of financial ratios', American Journal of Industrial and Business Management, vol. 8, pp. 1893-1927
9. Lev, B and Penman SH. (1990), 'Voluntary Forecast Disclosure, Nondisclosure, and Stock Prices', Journal of Accounting Research, spring, pp. 49-76
10. Ocal, ME, EL, Erdis, E, & Vera, G. (2007), 'Industry financial ratios-application of factor analysis in Turkish construction industry', Building and Environment, vol. 42, pp. 385–392
11. Rajakaruna, KSS, Silva, ND, Shaymalie, HW, Jayasinghe, AD. (2016), 'Assessment of entrepreneurial behavior among Tea small holders in low country Sri Lanka', Tropical Agricultural Research & Extension, vol. 19, no. 2
12. Rumman, AG. (2015), 'Evaluating the stability of the financial ratios of Jordanian industrial companies', International Journal of Accounting and Financial Reporting, vol.5, no. 1, pp. 2162-3082
13. Abbie Smith (1990), 'The effect of leveraged buyouts', Business Economics, vol.25, pp. 19-25
14. Tan, PMS, Koh, HC, & Low, LC. (1997), 'Stability of financial ratios: A study of listed companies in Singapore', Asian Review of Accounting, vol.5, no. 1, no. 9-39
15. (15)Yichen Wu. (2013), 'Leverage and Firm Growth', The European Evidences, pp.1-100