Factors determining Profitability: A Study of Selected Manufacturing Companies listed on Colombo Stock Exchange in Sri Lanka

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Abstract  
This paper aims to investigate whether factors such as capital structure, working capital, firm size, non-debt tax shield and growth rate, determining profitability have any impact on profitability of selected manufacturing companies listed on Colombo stock exchange, Sri Lanka over a period of five years from 2008 to 2012. This study employs multiple regression analysis to measure relationship among variables, individual and overall impact on profitability and to test the operational hypotheses. The results revealed that whereas all independent variables explain 76.6% and 84.7% of the variance on ROA and ROE respectively where significant is at 5% levels, the overall model has a significant impact on profitability at the rate of 80.5% (Adjusted $R^2 = 80.5\%, P < 0.05$). Further, while capital structure (+) and non-debt tax shield (+) have statistically significant impact on profitability ($P < 0.05$), the remaining working capital (+), growth rate (-) and firm size (+) have no significant effect on the profitability ($P > 0.05$).

Keywords: Profitability, Determinants of Profitability, Colombo Stock Exchange

1. Introduction  
Profitability has been given considerable importance in the finance and accounting literatures. According to Hifza Malik, (2011), Profitability is one of the most important objectives of financial management since one goal of financial management is to maximize the owners’ wealth, and, profitability is very important determinant of performance. A business that is not profitable cannot survive. Conversely, a business that is highly profitable has the ability to reward its owners with a large return on their investment. Hence, the ultimate goal of a business entity is to earn profit in order to make sure the sustainability of the business in prevailing market conditions. Pandey (1980) defined the profitability as the ability of a business, whereas it interprets the term profit in relation to other elements. It is necessary to examine the determinants of profitability to understand how companies finance their operations. A financial benefit is realized when the amount of revenue gained from a business activity exceeds the expenses, costs and taxes needed to sustain the activity. Profitability analysis classifies measures and assesses the performance of the company in terms of the profits it earns either in relation to the share holders investment or capital employed in the business or in relation to sales, profit, (or loss). Given that most entrepreneurs invest in order to make a return, the profit earned by a business can be used to measure the success of that investment. Hermanson (1989) defines that profitability is the organizations’ ability to generate income and its inability to generate income is a loss. He further asserts that if the income generated is greater than the input cost, that is simply profitability but if the incomes are less than the input cost, it reflects poor performance.

The study addresses the research question “to what extent do the factors affect profitability of manufacturing companies in Sri Lanka” and tries to find out the factors which determine profitability of the selected manufacturing firms listed on Colombo stock exchange. More specifically, the study investigates on the
relationship between the factors determining profitability and profitability and the impact of those factors on profitability of the companies. Section 2 of the study reviews previous studies with the development of hypotheses and section 3 presents the research methodology. Section 4 discusses the empirical results of the study. Finally, section 5 provides a summary of the findings with main conclusion.

2. Review of Literature and Development of Hypotheses
Modern literature provides two schools of competing models of firm profitability, such as structure-conduct-performance (SCP) and firm effect model (Andreas, 2009). In the SCP model, the market structure determines firm behavior and profitability, whereas in the effect model, market structure is the results of the distribution of firms and firms profits. Previous studies have generated many results that attempt to explain the determinants of profitability of several institutions. There exist a number of determinants of profitability, out of which this study focuses on capital structure, working capital management, firm size, growth rate and non-debt tax shield.

Modigliani and Miller (1958) were the first ones to landmark the topic of capital structure. This theory put forward by Modigliani and Miller (MM) explains the impact of taxation, bankruptcy costs, and agency costs on the determination of an optimal capital structure. Four theoretical approaches can be distinguished namely the irrelevance theory such as Modigliani and Miller (1958), the trade-off theory (Bradley et al., 1984), agency cost theory (Jensen and Meckling, 1976) and pecking order theory (Myers and Majluf, 1984). The three conflicting theories of capital structure such as trade-off theory, agency cost theory and pecking order theories have been developed after the establishment of Modigliani and Miller’s theory. Whereas the trade-off, signaling, and agency theories expect a positive relationship between profitability and leverage, the pecking order theory predicts a negative one. Most empirical studies observe a negative relationship between leverage and profitability. The Pecking Order Theory of capital structure (Myers 1984) suggested an inverse relationship between leverage and profitability. The findings of Kester (1986), Titman and Wessels (1988), Rajan and Zingales (1995) and Booth et al. (2001), empirically confirm an inverse relation between the leverage ratio and profitability. Lalith (1999) examines the use and determinants of leverage in a cross section of quoted companies in Sri Lanka and stated that profitability is reliably negatively correlated to leverage suggesting that more profitable firms tend to use less leverage. On the other hand, the trade-off, signaling, and agency theories expect a positive relationship between profitability and leverage. The free cash flow theory (Jensen, 1986) suggested that debt reduces the agency cost of free cash flow. This theory implies a positive association between leverage and profitability. In a study carried out by Sangeetha and Sivathaasan (2013), a significant strong and positive relationship between profitability and leverage (r = 0.569, P<0.01) has been found. Frank and Goyal (2004) experienced a positive relationship between profitability and leverage in some models. Moreover, various studies identified the determinants of profitability (Velnampy, 2005 & 2005, 2013).

Working capital management involves the relationship between a firm's short-term assets and its short-term liabilities. The basic goal of working capital management is to ensure that a firm is able to continue its operations and that it has sufficient ability to satisfy both maturing short-term debt and upcoming operational expenses. In relation to the relationship between working capital and profitability, there are mixed results from different scholars across the world. In the study conducted by KessevaniPadachi (2006) on the trend in working capital management and its impact on firm’s performance, it was found that high investment in inventories and receivables is associated with lower profitability. A case study conducted by Abdul Rahman and Mohamed Nasir (2007) on working capital management and profitability of Pakistan firms, a strong negative relationship between variables of working capital management and profitability of the firm has been observed. The empirical results found by Carpenter and Johnson (1983) revealed that there is a negative relationship between working capital policies and profitability. While Amir Shahn and Sana (2006) pointed out a negative relationship between working capital and profitability of the firm, Bradley and Michal Rubach (2002) on trade credit and small business failures suggested that there is a relationship between poor working capital management and organizational failure. Anupchowdhury and Md. Muntasir Amin (2007) conducted a research on working capital management practiced in pharmaceutical companies listed on share stock exchange. A positive correlation had been found in the mathematical model, between current assets management and financial performance of pharmaceutical firms.

Empirical evidence has given varying results relating to the relationship between firm size and profitability. In this view, Velnampy and Nimalathasan (2010) examined about firm size on profitability between Bank of Ceylon and Commercial Bank of Ceylon in Sri Lanka during ten year period from 1997 to 2006 and found that there is a positive relationship between firm size and profitability in Commercial Bank of Ceylon Ltd, but there is no relationship between firm size and profitability in Bank of Ceylon. Demsetz (1973) offers an alternative
explanation for the relationship between firm size and profitability, arguing that the greater profits of large firms have little or nothing to do with conventional scale economies. Using Internal Revenue Service data, he observes that large firms earn higher profits in highly concentrated markets while smaller firms earn a normal return. On contrast, Managerial utility maximization thus provides a conceptual framework for a negative relationship between firm size and profitability (Amato and Wilder 1985). Hall and Weiss (1967) who reported that size did tend to be associated with higher profit rates, however, reached the opposite conclusion. While Marcus (1969) found either a weak negative relationship or none at all, Hall & Weiss (1967) observed through their studies a positive association that disappears or reverses itself among the firms with the largest assets. Trau (1996), Sutton (1997), and Hart (2000) have reviewed the theoretical and empirical literature on firm growth. In the early empirical literature, a number of manufacturing studies find either no relationship or a positive relationship between firm sizes and growth rates. MacMillan and Day (1987) considered that rapid growth could lead to higher profitability based on evidence that new firms become more profitable when they enter markets quickly and on a large scale. On the other hand, Hoy (1992) concluded that the pursuit of high growth may be minimally or even negatively correlated with firm profitability. Keith (1988) examined the relationship between company characteristics, profitability and growth using accounts data for a sample of 38 small manufacturing firms and his research revealed that size, age, location, and industry group are found to be limited value in explaining profitability. The use of growth as a measure of firm performance is generally based on the belief that growth is a precursor to the attainment of sustainable competitive advantages and profitability (Markman, 2002). In addition, larger firms have higher rates of survival (Aldrich 1986), and may have the benefits of associated economies of scale. While growth has been considered the most important measure in small firms, it has also been argued that financial performance is multidimensional in nature and that measures such as financial performance and growth are different aspects of performance that need to be considered (Wiklund, 1999)

This study has tested the following hypotheses in relation to the determinants of profitability of selected manufacturing companies quoted on Colombo Stock Exchange. Figure 1 clearly presents the relationship between dependent and independent variables taken in this research.

H1: There is a positive relationship between capital structure and profitability.
H2: There is a positive relationship between working capital management and profitability.
H3: There is a positive relationship between firm size and profitability.
H4: There is a positive relationship between growth rate and profitability.
H5: There is a positive relationship between non-debt Tax shield and profitability.
H6: There is a significant impact of above determinants on profitability.
3. Research Methodology

This study analyzes the factors determining profitability of selected manufacturing companies quoted on Colombo Stock Exchange (CSE).

3.1. Sampling Technique

The Colombo Stock Exchange (CSE) has 287 companies representing 20 business sectors as at 01st June 2013; with a Market Capitalization of Rs. 2,481.8 Bn. This study considers only 11 manufacturing companies out of listed manufacturing companies. While Titman and Wesseles (1988) adopted three year averages, Rajan and Zingales (1995) used five year averages. Following Rajan and Zingales, this study used five year averages. The necessary data was collected from the annual reports of the selected companies for the financial year ended 2008, 2009, 2010, 2011, and 2012 through the link available in the website of CSE.

3.2. Variables in the Study

The most important variable used in this study is the profitability which is the dependent factor. This variable is broken into two and average is used to find the overall impact of the study. Return on equity (ROE) (Demsetz & Villalonga, 2001; Gugler et al., 2004a) and return on assets (ROA) (Denis & Denis 1994; Lehmann & Weigand, 2000) are used as tools determining financial performance. Hence, these variables are taken to measure the profitability. Variables such as capital Structure, working capital, firm size, non-debt tax shield and growth rate are taken as determinants of profitability. Table 1 (a & b) clearly shows the design of variables and their measurements proposed to use.
Table 1(a): Design of Independent Variable(s)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Indicator</th>
<th>Measurement Used by</th>
<th>Proxy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital Structure</td>
<td>(Sivathaasan, 2013b)</td>
<td></td>
<td>Total Debt/Total equity</td>
</tr>
<tr>
<td>Working Capital</td>
<td>(Pandy, 2005)</td>
<td></td>
<td>Current asset: Current liabilities</td>
</tr>
<tr>
<td>Firm size</td>
<td>(Tanveer &amp; Safdar, 2013)</td>
<td></td>
<td>The log of Total Assets</td>
</tr>
<tr>
<td>Non-debt tax shield</td>
<td>(Tanveer &amp; Safdar, 2013)</td>
<td>(EAIT + Depreciation) / average tax rate / total assets</td>
<td></td>
</tr>
<tr>
<td>Growth rate</td>
<td>(Lujie, 2007)</td>
<td>(Current year’s sales - Last year’s sales) / Last year’s sales $ \times 100$</td>
<td></td>
</tr>
</tbody>
</table>

Table 1 (b): Design of Dependent Variable

<table>
<thead>
<tr>
<th>Profitability</th>
<th>Return on asset (ROA)</th>
<th>Ratio of profit before interest and tax to total assets</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(Denis &amp; Denis, 1994; Lehmann &amp; Weigand, 2000)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Return on equity (ROE)</td>
<td>Ratio of profit before interest and tax to equity</td>
</tr>
<tr>
<td></td>
<td>(Demsetz &amp; Villalonga, 2001; Gugler et al., 2004a)</td>
<td></td>
</tr>
</tbody>
</table>

3.3. Model Specification and Mode of Analysis

To find out the impact of the above independent variables on profitability, the following ordinary least square (OLS) regression model is used.

$\text{Profitability}_{i,t} = \beta_0 + \beta_1 \text{CS}_{i,t} + \beta_2 \text{WC}_{i,t} + \beta_3 \text{NDTX}_{i,t} + \beta_4 \text{FS}_{i,t} + \beta_5 \text{GR}_{i,t} + \epsilon$

Where:

- \( \text{CS} \) = Capital Structure
- \( \text{WC} \) = Working Capital
- \( \text{NDTX} \) = Non-Debt Tax Shield
- \( \text{FS} \) = Firm Size
- \( \text{GR} \) = Growth rate

\( \beta_0, \beta_1, \beta_2, \beta_3, \beta_4, \beta_5 \) - Model coefficients

E = Error term.

i, t = for firm i in period t

In this study, multiple regression analysis has been employed to analyze the data collected from the companies listed on CSE. A well known statistical package called “SPSS” (Statistical Package for Social Science) version 16 has been used to analyze the data the researcher collected. The upper level of statistical significance for hypotheses testing was set at 5%. All statistical test results were computed at the 2-tailed level of significance.

4. Empirical Results

4.1. Analysis of Multi-Collinearity

Before conducting regression analysis, multi-collinearity needs to be checked. There are two major methods utilized in this study, in order to determine the presence of multi-collinearity among independent variables. These methodologies involved calculation of both a Tolerance test and Variance Inflation Factor (VIF) (Kleinbaum et al., 1988; Sivathaasan, 2013a). Menard (1955) suggested that a tolerance value less than 0.1 almost certainly indicates a serious collinearity problem. Furthermore, Myers (1990) also suggested that a VIF value greater than 10 calls for concern. As per the data shown in table 2, none of the Tolerance level is less than 0.01 and VIF value is well below 10. Therefore, independent variables used in this study do not suggest multi-collinearity problem.
4.2. Multiple Regression Analysis

The purpose of regression analysis is to relate a dependent variable to a set of independent variables (Mendenhal and Sincich, 1993; Nilufar et al., 2009). Table 3(a & b) provides the impact of all independent variables on ROA and ROE separately. All independent variables explain 76.6% and 84.7% of the variance on ROA and ROE respectively, where significant is at 5% levels (P < 0.05).

Table 3(a): Regression Results (Individual) on ROA

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Tolerance</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital structure</td>
<td>.306</td>
<td>3.266</td>
</tr>
<tr>
<td>Working capital</td>
<td>.584</td>
<td>1.712</td>
</tr>
<tr>
<td>Firm size</td>
<td>.577</td>
<td>1.732</td>
</tr>
<tr>
<td>Non debt tax shield</td>
<td>.269</td>
<td>3.711</td>
</tr>
<tr>
<td>Growth rate</td>
<td>.772</td>
<td>1.295</td>
</tr>
</tbody>
</table>

Table 3(b): Regression Results (Individual) on ROE

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Tolerance</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital structure</td>
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</tr>
<tr>
<td>Growth rate</td>
<td>.772</td>
<td>1.295</td>
</tr>
</tbody>
</table>

Table 4 presents the results of predictors of profitability of selected manufacturing companies in Sri Lanka. In addition, data can be analyzed using multiple linear regressions to test the hypotheses (Hair et al., 1998, Nilufar et al., 2009). The regression coefficient of determinants on profitability has been estimated. As shown, the overall model is significant at the 5% level (t =9.272, P < 0.05). Of the independent variables, capital structure (+) and non-debt tax shield (+) have statistically significant impact on profitability. The remaining working capital (+), growth rate (-) and firm size (+) have no significant effect on the profitability.

Table 4: Regression Results (Overall) on Profitability

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Coefficients (Beta)</th>
<th>t-statistics</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital structure</td>
<td>.260</td>
<td>4.997</td>
<td>.004</td>
</tr>
<tr>
<td>Working capital</td>
<td>.305</td>
<td>1.672</td>
<td>.155</td>
</tr>
<tr>
<td>Non debt tax shield</td>
<td>.152</td>
<td>4.285</td>
<td>.008</td>
</tr>
<tr>
<td>Growth rate</td>
<td>-.049</td>
<td>-.309</td>
<td>.770</td>
</tr>
<tr>
<td>Firm Size</td>
<td>.125</td>
<td>.678</td>
<td>.528</td>
</tr>
<tr>
<td>R²</td>
<td>.903</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjusted R²</td>
<td>.805</td>
<td></td>
<td>.014</td>
</tr>
<tr>
<td>Model F-Test</td>
<td>9.272</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The results of the study shows that the association between capital structure and profitability is significant with $\beta = 0.260$ ($P < 0.05$). Hence, H1 is accepted. Several studies have highlighted positive association between these two variables (Goyal, 2004; Sangeetha & Sivathaasan, 2013). Mixed results have been given through scholars in relation to the relationship between working capital and profitability. This study provides positive link with profitability ($\beta = 0.305$, $P > 0.05$) insignificantly. This supports to the acceptance of hypothesis of H2. Hypothesis (H3) is in line with the results found by Velnampy and Nimalathasan (2010). As per the above table, positive relationship is shown between firm size and profitability ($P > 0.05$), which supported to H3. Hypothesis (H4) reflecting positive connection between growth rate and profitability is not in agreement with the findings of Hoy (1992), as negative correlation is presented. Therefore, H4 is rejected. With regard non-debt tax shield, the study found a positive and significant relationship with profitability ($\beta = 0.152$, $P < 0.05$). Further, Five independent variables incorporated in this model explain 80.5 % (Adjusted $R^2$) of the variance in the profitability. This supports to the hypothesis H6 that there is a significant impact on profitability. As the overall model is statistically significant, the model adequately describes the data.

5. Conclusion
This paper empirically examined the relationship between the factors determining profitability and profitability of selected manufacturing companies in Sri Lanka for the period of 2008-2012 by using the multiple (individual, overall) regression analysis. Regression results (individual) on ROA and ROE were 76.6% and 84.7% (Adjusted $R^2$) respectively where significant is at 5% levels ($P < 0.05$). Further, these results revealed that overall model has an impact on profitability at the rate of 80.5% (Adjusted $R^2$) which was measured by capital structure, working capital, firm size, non debt tax shield and growth rate. Based on the regression analysis, the capital structure and non-debt tax shield have statistically significant and positive impact on profitability. Though other variables such as working capital and firm size have shown positive relationship, they are not significant at 5 % levels. Moreover, the growth rate has shown the negative insignificant relationship on the profitability. While the study is limited to the sample of selected manufacturing companies quoted on the Colombo stock exchange, the findings from this research could be generalized to the companies similar to this category.

6. References
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