LEVERAGE, LIQUIDITY AND PROFITABILITY RATIOS: ACCOUNTABILITY OF MALAYSIAN LISTED OIL AND GAS FIRMS
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Abstract

Purpose: This study examines the impact of leverage and liquidity on the profitability among the listed O&G firms in Malaysia.

Methodology: Data were gained from the audited financial statements of 22 listed O&G firms for a period of ten years (2008 – 2017) and a quantitative data methodology was utilized to analyze the study.

Main Findings: The findings demonstrated that leverage in terms of debt-equity ratio has a significant negative association on a firm’s profitability. Nevertheless, liquidity ratios are found to be insignificantly related to the profitability of the O&G industry in Malaysia.

Implications: This study contributes to raising awareness amongst the top management of firms, the analysts, and the investors in monitoring and forecasting for the firm’s profitability and the value of the firms, thus contributing to the better investment decision making.

Keywords: Leverage, Liquidity, Profitability, Oil and Gas, Debt to Equity Ratio, Debt to Asset Ratio, Proprietary Ratio, Current Ratio, Acid Test Ratio, Cash Ratio.

INTRODUCTION

The oil and gas sector (O&G) is one of the crucial industries in Malaysia and plays an important role in the development of the Malaysian economy. In 2016, the Malaysian Investment Development Authority (MIDA) had ratified 32 projects with a total investment of RM25.18 billion for the oil and gas (O&G) industry which generated other investments as well as creating various job opportunities (MIDA, 2017). In making investment decisions, potential investors look into many elements, for example, financial sustainability, performance, top management composition, and firms’ competitive advantage. The firms’ financial performance attracts attention and commentaries from academics and industry specialists. The financial performance of a firm can be examined in terms of profitability, dividend growth, and sales turnover. A study by Liargovas and Skandalis (2008) found that leverage is significantly associated with firms’ performances in Greece. Further, it is revealed that high profitability firms in Greece are young, large, and diversified with high spirit management teams. These firms retain ideal leverage ratios and high liquidity, the elements which commonly utilized in assessing the viability of their investments.

In 2014, the O&G industry confronted difficult periods due to the falling in crude oil prices. According to PricewaterhouseCoopers (PWC, 2016), the oil prices fall of between USD 35-45 per barrel consisted of 60% of dropping over from its high in 2014. PWC (2016) also reported a decline of RM27 billion in profits after tax and the 32% reduction of total revenue in 2015 as compared to the year 2014 for Petronas as the largest O &G firm in Malaysia. In that case, Petronas had also engaged precautions by administering the capital and operations expenditure in order to sustain the leverage and liquidity that would, consequently, impact the firm's profitability. Indeed, leverage management and financial liquidity play a role in leading some O&G firms to file for bankruptcy. The O&G industry is one of the sectors that is seen to be capital intensive, highly leveraged, and thus, it requires good liquidity management. Since O&G is a significant industry in the Malaysian economy and its key performance indicators are relied upon by investors in making investment decisions, it is critical to investigate the leverage and liquidity of O&G firms in the Malaysian market. From leverage and liquidity indicators, the financial health of the firms, and their ability to meet their short- and long-term obligations can directly be understood.

Prior studies have shown some relationship between leverage and liquidity and the firms’ profitability in various industries. Mulyana and Saputra (2018) studied the effect of liquidity and leverage on the firms’ value for 150 listed manufacturing firms in the Indonesia stock exchange for the period of 2011-2015. The results demonstrated that liquidity and leverage have an impact on the firms’ value. In studying food industries in Pakistan, Awan (2014) reckoned that liquidity, leverage, and inflation are directly and positively related to a firm’s profitability. By extending these works into the O&G industry in the Malaysian context, it is critical since the O&G industry is energizing the economic growth of Malaysia. Studying the O&G industry enables a comparison to be done among firms in the same industry. The Malaysian context is significant because, in the year 2016, Malaysia was ranked 28th out of 214 countries in the world that has the most complex economy. Therefore, this study examines the relationship of leverage and liquidity with firms’ profitability of 22 oil and gas firms listed on Bursa Malaysia.

Given the problem statement above, the following objectives of this study are examined in the current study:
1. To examine the association between leverage and the firm’s profitability of O&G firms in Malaysia.

2. To examine the association between liquidity and the firm’s profitability of O&G firms in Malaysia.

The paper is organized as follows; section 2.0 reviews the literature; section 3.0 explains the hypotheses development; section 4.0 provides the research methodology; section 5.0 discusses on the analysis and findings; and finally, section 6.0 concludes and recommends the study.

LITERATURE REVIEW

O&G industry is well known as one of the largest industries, and it relies excessively on O&G products, such as fuel, energy, raw materials, and chemical products (Hazarika, 2015). Based on a report by the Observatory of Economic Complexity in 2016, Malaysia was the 18th biggest export and the 26th largest import economy in the world.1 Out of the total export for US$250B and total import of US$167B, refined petroleum export and import represented US$13.2B (5.28%) and US$11.4B (6.83%) respectively. The Malaysian government had planned various strategies and incentives to spur the growth of the O&G industry, as it is one of the target areas in the Economic Transformation Program (ETP). These policies and incentives will spearhead Malaysia into becoming a developed nation; the O&G industry is targeting a 5% annual growth until 2020.2 This demonstrates that the O&G sector plays a vital role in supporting the economic development of Malaysia.

Since the O&G industry is capital intensive, and it uses more debt as compared to equity. Therefore, most of the projects received from clients are financed via borrowings. One of the ways to fund capital intensive operations is by over-leveraging. However, high leverage O&G sometimes face difficulties in meeting their debt obligations if leverage is not efficiently managed. This may lead some oil and gas companies to file for bankruptcy. In addition, in order to prevent insolvency, firms must manage their financial liquidity efficiently. Firms are having liquidity risks when they are unable to meet short-term financial demands. Indeed, leverage and liquidity are vital elements of an economic analysis because they scrutinized closely by bankers and investors. Hence, it is worth exploring whether leverage and liquidity are related to the profitability of O&G firms in Malaysia. The study signals potential investors to receive better and more accurate information and not merely rely on a single source of information when they make decisions for investment.

Leverage is commonly referred to as the utilization of borrowed money in making an investment and thereby, acquiring a return on that investment. During a business recession, firms that borrow large sums of money are expected to have a problem in paying off their debts as they mature. Thus, they are likely to end up with high leverage and are expected to file for bankruptcy (Khan et al. 2012). On the contrary, the lower the firm's borrowings, the lower the leverage, and thereby, the risk of bankruptcy will decrease, signifying that the business to continue operating (Alkhatib, 2012).

The relationship between leverage and liquidity and the firm's profitability has been explored in prior studies. For instance, Rafique (2011) discovered that capital structure and leverage are negatively associated with firm's profitability when examining 11 listed firms in the automobile sector in Pakistan. Further, Kalpana (2014) analyzed the effect of the leverage on earnings per share of the selected steel firms traded in BSE of 10 years from 2003 to 2012. The results of the study revealed that the usage of debt and fixed cost expenses decreases the profitability of firms, suggesting the firms to reduce the debt in the capital structure, in order to increase the earnings. Another research conducted by Vithessonthi and Tongurai (2015) examined the association between leverage and firm performance in Thailand for non-financial firms during the financial crisis of 2007-2009. The study found that a higher leverage indicates that the firms are not performing while the lower leverage indicates that the firms perform better. A study in Malaysia by Ramlan and Bin Nodin (2018) investigated the relationships amongst liquidity, leverage, profitability, and firm's performance in Malaysia. They examined a sample of 21 firms on Bursa Malaysia for a period of 5 years from 2010 to 2014. Their empirical results demonstrated that profitability has the strongest effect on the firms' liquidity while leverage has a significant effect on the firms' performances.

Other than leverage, liquidity is a key element in analyzing performance and a useful tool to manage the assets of a firm. Liquidity determines how fast the assets of the firm can be transferred. The liquidity level of a firm is the most critical indicator of the firm's profitability. A study by Mc Gowan, Billah and Jakob (2015) suggested that the liquidity level of a firm indicates whether the firm is able to meet short-term obligations without incurring any losses. Liquidity also denotes the current assets in the form of cash or readily convertible into money after deducting current liabilities (Dahivat, 2016). Research related to liquidity can be trailed from the studies on working capital management (WCM) and the firm's profitability. Although previous studies discovered mixed results, most of the studies suggested that there is a negative relationship between WCM and the firm's profitability. Malik and Saif (2013) studied the relationship between corporate financial strategies related to liquidity management and corporate performance. The study employed a purposive sample of 30 firms covering the years 2002 to 2011, showed that current ratio, inventory turnover, and receivable turnover have a significant positive association with performance while quick ratio had a negative association with firm's performance. Manyo and Ogakwu (2013) examined the effect of liquidity on return on assets of 46 firms.

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1 Accessed on 11 May 2019; https://atlas.media.mit.edu/en/profile/country/mys/
2 Accessed on 11 May, 2019. https://www.nst.com.my/news/nation/2017/07/256487/oil-gas-and-energy-sector-see-five-cent-annual-growth-till-2020
listed on the Nigerian Stock Exchange from 2000-2009. Their findings demonstrated that liquidity had a significant positive impact on return on assets (ROA), implying that a unit change in liquidity results in a corresponding increment of the ROA.

From the review of the literature above, it is found that many studies explored the relationship between leverage and liquidity and profitability in various industries and context suggesting the important to extend the course in another industry and context. The survey of theories directs the ability of the trade-off hypothesis to rationalize the expectation. According to the trade-off hypothesis, a firm's profitability impacts its targeted debt ratio, thereby it is reflected in the firm's choice of securities issued and its observed debt ratios (Hovakimian, Hovakimian, and Tehranian, 2004). This theory also describes that an optimal capital structure is achieved by balancing the tax advantage of debt financing and leverage related costs, such as financial distress and bankruptcy, given the firm's assets and investments constant. According to Myers (1984), firms that embrace this theory could be held as setting a debt ratio target and are increasingly reaching the target. The Trade-off theory also proposes that higher profitable firms have a higher debt ratio target. The higher profitability firms have higher tax savings from debt, a lower probability of bankruptcy, and a higher over-investment, and consequently, these involve a higher debt ratio target. For liquidity, the Trade-off theory proposes that firms are aiming for an optimal level of liquidity to balance the cost and benefit of holding cash. The prices of holding cash comprises of a low rate of return on these assets due to liquidity premium and, possibly, tax disadvantage. The advantage of holding cash is the firms can save on transaction costs to raise funds and on the necessity to liquidate their assets for making payments. Additionally, liquid assets can be used to finance its operations and invest if another medium of funding is not available (Umobong, 2015).

Although, there have been prior studies that investigated the association between leverage and liquidity on profitability, there had been mixed results. Further, there have been limited studies analyzed in the context of Malaysia. Leverage is critical in the O&G industry as the current environment indicates significant leverage challenges for the sector. The O&G firms are demanded to maintain optimal financial leverage in order to gain a free cash flow in increasing their profitability. Further, proper liquidity management will ensure that firms are not faced with the consequences of liquidity problems. Since the O&G industry is a capital-intensive industry and firms will usually seek fund for their operations using leverage, it is viable to examine further the association of leverage, liquidity and firm profitability in the industry. The following section explains the hypotheses development.

**HYPOTHESIS DEVELOPMENT**

The following section begins with a hypothesis for leverage and firms’ profitability and the next section explains a hypothesis on liquidity and firms’ profitability.

**Leverage and firms’ profitability**

The Trade-off theory supports that leverage has a negative association with firm profitability when the firms utilize high leverage. Since the leverage is used to finance the operations and thus incurring high borrowing cost that subsequently decreasing the firm’s profitability (Onofrei, Tudose, Durdureanu, and Anton, 2015). Consistent with the theory, Ahmad, Salman and Shamsi (2016) showed the significant negative association between leverage and profitability of the firms in the cement manufacturing sector of Pakistan. In that study, profitability as the dependent variable was measured as the ratio of net income after tax to total assets, while leverage served as an independent variable and it was measured as the ratio of the total debt to total assets. In another study conducted by Dalci (2018) on 1,503 listed manufacturing firms in China, it is revealed that the relationship of leverage and profitability is inverted U-shaped. In this inverted U-shaped relationship, the positive impact of financial leverage on profitability is because of the tax shield. Meanwhile, the negative impact is due to some institutional characteristics of China that the listed Chinese firms suffer such as bankruptcy cost, financial distress, severe agency problems and information asymmetry. The contention from trade-off theory are coherent with the findings of other prior studies such as Titman and Wessels (1988) and Yoon and Jang (2005). Accordingly, the hypothesis of is as follows:

**H1: Leverage is negatively associated to the firm’s profitability.**

**Liquidity and firms’ profitability**

Efficient liquidity management requires planning and controlling current assets and liabilities that eliminates the risk of the incapability of the firms in meeting short-term liabilities and prevents the surplus in these asset investments. The Trade-off theory contends that firms are targeting an optimal level of liquidity to balance the cost and benefit of holding cash. The cost of holding cash involves a low rate of return on the assets, as a result of the liquidity premium and the possible tax disadvantage. The benefit of holding cash includes the saving of transaction costs in raising funds and assets are not required to be liquidated the assets to make payments and thereby, improving their profitability (Umobong, 2015). Ehiedu (2014) asserted that the efficient management of liquidity, working capital, and cash are the factors that influence the health and profitability of the firms. The possibility of short of cash is decreased in the presence of liquid assets. Ehiedu (2014) discovered that there is a significant positive relationship between current ratio and profitability as measured by return on assets (ROA). The firms should provide an adequate level of liquidity that will not affect their going concern status and thereby allowing sufficient profitability and return from their investments. Saleem and Rehman
(2011) examined the association between liquidity and profitability of the O&G companies of Pakistan. Consistent with the trade-off theory, their study found that liquidity and profitability are closely related. Working capital management intends to strike a balance between liquidity and profitability in the investment decision-making. Corporate managers strategize effectively to achieve optimal liquidity in maximizing the profit. Although, there are mixed findings from prior literature, consistent with the proposition by trade-off theory, the second hypothesis is proposed as follows:

**H2:** Liquidity is positively associated to the firm’s profitability.

## RESEARCH METHODOLOGY

In this study, the data that comprised of 22 O&G companies in Malaysia as samples covering a period of 2008 to 2017, was gathered from the secondary sources provided by Eikon Thompson Reuters, an external data provider and published annual reports. The list of the O&G is available in the appendix.

A review of the literature revealed that the measurement of profitability consisted of return on assets (ROA) and returned on equity (ROE) ratios have been used and tested by many prior studies in various accounting and economic fields (Achchutan and Kajananthan, 2013; Velnampy, 2013). Therefore, they are utilized as dependent variables in the two separate regression models. There are two main independent variables tested in this study, namely, leverage and liquidity. They were measured via leverage and liquidity ratios. Prior literature used mainly debt to equity ratio, debt to asset ratio, and proprietary ratio to proxy for leverage ratio. The debt to equity ratio (DER) is measured by calculating the firm’s total debt compared to total equity (Heikal, Khaddafi, and Ummah, 2014). It is a measure of the relationship between the capital contributed by creditors and the capital contributed by owners. A lower DER usually denotes an additional financially secured business. Firms with a higher DER are seemed to be riskier to creditors and investors than firms with a lower ratio. Debt to asset ratio (DAR), also recognized as a solvency ratio, measures a firm's total liabilities as a percentage of its total assets. A lower debt ratio usually indicates a more stable and sustainable business because a firm with a lower ratio also has a lower level of debt. The proprietary ratio is used as a ratio that represents the leverage ratio for this study. The proprietary ratio, also known as net worth ratio or equity ratio, is used to compute the accuracy of the capital structure of a firm. It is determined by dividing the stockholders' equity by total assets (Kemal, 2011b).

The static measurement of liquidity reveals the relationship between current assets and short-term liabilities. Three fundamental ratios of liquidity are utilized in prior studies as proxies of the liquidity ratios. Firstly, the current balance which is the most frequently used ratio for assessing the liquidity level of the firm. The current ratio is a gross measure of liquidity in that it compares merely all liquid assets with all current liabilities (Rehman, 2014). Secondly, the cash ratio that indicates the immediate liquidity of the firms is a good indicator for the firm's short-term liquidity. A meagre cash ratio implies that the firm is having immediate problems in paying the firm's financial obligations. Thirdly, acid test ratio is the least frequently used ratio as compared to the ratios mentioned above (Cicirko, 2010). It reflects only the most liquid part of the current assets, which is monetary resources, including entirely liquid cash. It demonstrates which claim of liabilities the firm could be settled immediately using its funds. This ratio processes the direct liquidity level. It relays the best liquid assets to current liabilities.

Although there are many proxies for leverage and liquidity ratios, all the ratio proxies cannot be tested in the same model because some of them are positively correlated with each other. All the above proxies were calculated in the initial analysis. Pearson correlations were run initially to identify the possible multicollinearity problem in the model. Because of the high correlation between the variables, some of the variables, as indicated in prior literature, were dropped from the analysis. In ensuring there is no multicollinearity problem exist in the current study, DER was used to proxy for leverage, while ACR and CHR were employed to represent liquidity ratios. Firm size was used as a control variable.

The regression analysis that is used frequently is the multiple regression analysis to ascertain the association of several independent variables with a dependent variable and is modelled as follows:

\[ Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \epsilon \]

Where:

\( Y \) = Estimated value of Total Profitability as measured by either ROA or ROE.

\( X_1 = \text{DER} \) – measured as Total Liabilities to Total Equity

\( X_2 = \text{ACR} \) – calculated as Cash + Accounts Receivable + Short Term Investments to Current Liabilities

\( X_3 = \text{CHR} \) – measured by Cash + Marketable Securities to Current Liabilities

\( X_4 = \text{FIRM SIZE} \) – measured by Total Asset, \( \epsilon \) = Random error.

## RESULTS AND DISCUSSIONS

The descriptive analysis of the variables furnishes the basic features of the data in the study. The analysis displays the mean, median, standard deviation, minimum and maximum score of the five variables used in this study. The sample data...
involved 22 firms and data was gathered for ten years from 2008-2017 that added up to N=220 for the purpose of this study. The descriptive analysis of the variables over the study period are presented in Table 1.

In this study, the test of normality was conducted to confirm that the variables are standard when the skewness and kurtosis are within the range of ±2, as indicated by in Field (2013). The mean of ROE (0.4002) seemed to be higher than the standard of ROA (0.2859). In general, the O&G firms, listed on Bursa Malaysia keep their DER from 2008 to 2017 at 1.0093. This implies that the total liabilities, on average, are 101% of equity, or, it can be said that the creditors provide RM1.01 for each ringgit provided by equity to finance the assets or operation activities. The average ACR for the oil and gas firms is 1.3874, signals to the ability to repay the current liabilities over 12 months.

| Variables   | Mean  | Std. Dev. |
|-------------|-------|-----------|
| ROA         | 0.2859| 0.6485    |
| ROE         | 0.4002| 0.8746    |
| DER         | 1.0093| 0.6474    |
| ACR         | 1.3874| 0.5977    |
| CHR         | 0.5369| 0.5955    |
| FIRM_SIZE   | 14.6433| 1.4971   |

Based on Table 2, both leverage ratio (DER) and liquidity ratio (ACR) have a relationship with the firm's profitability ratios (ROE and ROA) of the O&G industry. However, liquidity ratio of Cash ratio is not significantly related to both profitability ratios. The results show that none of the independent variables correlate positively with each other. In that case, there is no multicollinearity problem exist in the two regression models tested. Also, variance inflation factor (VIF) is inspected for all regressions, having less than 10.

| ROE  | ROA  | DER  | ACR   | CHR   | FIRM_SIZE |
|------|------|------|-------|-------|-----------|
| ROE  | 1.000| 0.643***| -0.210***| 0.121***| 0.056 | 0.031 |
| ROA  | 0.643***| 1.000| -0.206***| 0.093***| 0.073 | 0.069 |
| DER  | -0.210***| -0.206***| 1.000| -0.298***| -0.197***| -0.133** |
| ACR  | 0.121***| 0.093***| -0.298***| 1.000| 0.266***| 0.023 |
| CHR  | 0.056| 0.073| -0.197***| 0.266***| 1.000 | -0.068 |
| FIRM_SIZE | 0.031| 0.069| -0.133**| 0.023| -0.068 | 1.000 |

From the table, DER that represents liquidity has a significant relationship (p<0.01) with both firm profitability ratios (ROA and ROE) for the O&G firms listed on Bursa Malaysia. The result is consistent with Akinmulegun (2012), Aishwarya and Pavithra (2016), Ahmad, Salman and Shamsi (2016), and Ramlan and Bin Nodin (2018). However, liquidity ratios, where ACR and CHR as proxies, are not significant variables, thus they are not the indicators of firms profitability of the O&G firms listed in Malaysia, as revealed in table 3 below. This result suffers the effect of mixed findings from prior studies where Rehman et al. (2015) found a positive relationship, while Malik and Ahmed (2013) discovered a negative relationship between liquidity with firm’s performance.

**CONCLUSION AND RECOMMENDATION**

Examining the O&G industry is critical as the industry in Malaysia is targeting an annual growth of 5% in the Economic Transformation Programme (ETP). The findings in this study is that leverage has a significant negative relationship with the firm's profitability. However, liquidity is found to have an insignificant relationship with profitability. Therefore, this study presents a vital alarm for O&G companies to manage well the leverage as it has a great significant impact on firm profitability. A leverage decision for a firm is important because the leverage management style will give a high impact on the firm's profitability and thus indicating the ability of the firm to sustain in the industry. Additionally, the combination of debt and equity is very important, thus suggesting, in order to achieve an ideal capital structure, firms...
need to decrease their cost of capital, thereby contributing to the improving health of the company. The outcome of this study contributes to raising awareness amongst the top management of firms, the analysts, and the investors in monitoring and forecasting for the firm’s profitability and the value of the firms, thus contributing to the better investment decision making.

### Table 3: Hypothesis

| Model | Standardized Coefficients | Standardized Coefficients |
|-------|---------------------------|---------------------------|
|       | DV = ROA                  | DV = ROE                  |
|       | Beta t                    | Beta T                    |
| 1     | (Constant)                |                           |
|       | 0.245 0.774               |                           |
|       | DER -0.185*** -2.596      | -0.190*** -2.676          |
|       | ACR 0.029 0.401 0.064     | 0.894                     |
|       | CHR 0.032 0.458 0.002     | 0.031                     |
|       | FIRM_SIZE 0.046 0.680     | 0.004 0.060               |
| N     | 220                        | 220                       |
| Adjusted R^2 | 0.050 0.31           | 0.031                     |

Notes: ***. ** and * represent statistical significance at 1, 5, and 10 percent levels respectively (using two-tailed tests). The number of observations made is 220. ROA is Net Income / Total Assets; ROE is Net Income / Shareholders’ Equity; CHR is (Cash + Marketable Securities) / Current Liabilities, Firm Size is Total Assets

This study is not without its limitations. This study only focuses on the firms that are listed in the primary market of Bursa Malaysia. Firms that are not listed in the primary market were excluded. Therefore, it is suggested for future research to include O&G firms that are not listed on Bursa Malaysia. Besides, future research could also focus on the firms’ performances instead of firms’ profitability by adding corporate governance elements such as board size, role duality, and board composition. Firm’s performance could also be measured by using margin ratio, for example, return on sales ratio.

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