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Firm Leverage-Cash Flow Determinants and Capital Structure Decisions in a Developing Economy

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Capital structure decisions are believed to be affected by a firm's leverage and cash flow relationship. Scope of past empirical literatures has so far identified a positive leverage-cash flow relationship under the signaling theory and a negative leverage-cash flow relationship under the pecking order theory. This paper seeks to examine the determinants of firm leverage–cash flow relationship in the Malaysian plantation industry. Our study demonstrates that there is a significant negative relationship between leverage and cash flow, which concurs with the pecking order theory. Findings further reveal a significant positive relationship between firms' investment and leverage for small and large firm groups. This suggests that firms without internal funds will issue new debts to finance for any positive investment opportunities. While firms' cash flow and dividend payout does not affect firms' leverage in general, dividend payout is found to be negatively correlated with leverage among the small firms.

JEL Codes: G32, G33, and G35

1. Introduction

Studies on capital structure have received much attention for many decades, particularly, in the fields of corporate finance and financial economics. The non-universal theories of these studies exhibit empirical evidence that could not be generalized, reasons being the conditional factors that are attached to each specific theory and presumptions of perfect capital markets. Since no one theory could offer an absolute justification of financial decisions, there exist many conditional capital structure theories which include the common trade-off, transaction cost, free cash flow, pecking order and signaling theories. The trade-off theories give emphasis on debt-tax relationship against the cost of financing, while the free cash flow theory signals high agency costs that lead to firms' overinvestment behavior. Increased in value is achieved through their cash flows that surpass positive investment opportunities. Firms' precariously take a high risk by engaging themselves with high debt levels. Transaction cost theory, on the other hand, focuses primarily on two governance structures that are attached to different levels of transaction costs. The equity governance is evidently ascertained to be more dominant than the debt governance, since the former has more influence over firms' managerial actions. Subsequently, the other two aspects of capital structure are associated with asymmetric information between managers and shareholders that will explain the firms' leverage-cash flow relationship. Though, the

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directions of the relationship contradict one another, yet, both are well-supported by vast literatures and are believed can be further reconciled using contemporaneous and inter-temporal elements (Shenoy & Koch 1996). The positive relationship is supported by the signaling theory that accounts for leverage to event changes analysis, whereas, the negative relationship is supported by the pecking theory that are based on cross-sectional analysis.

Regardless of the diverse empirical evidences portrayed by researchers, the study of capital structure primarily seeks to explain firms' financial tactics, as well as, financial decisions on funding, investment and dividends. Hence, financing matters for most corporations and their capital structure behavior is dependent upon the availability of internal funds and leverage levels. In addition, explicit transaction cost that affects leverage (Strebulaev 2007; Shivdasani & Stefanescu 2010; Faulkender et al. 2012) warrants firms to have leverage targets (Altinkilic & Hansen 2000; Leary & Roberts 2005). In relation to this, a significant number of researches further reveal that firms' leverage adjustment cost are also influenced by other reasons that demand access to capital markets. Firms would raise external funds to finance promising investments through debt or equity issuances, and generating cash beyond positive investment opportunities. In contrast, leverage can be adjusted to repay debts and pay dividends. Hence, there appears to have joint effects of adjustment costs and cash flows on leverage adjustments, which can be integrated towards the adjustment timing (Faulkender et al. 2012). Changes in market conditions also affect leverage adjustments, where high market-to-book value means a decline in next year's amount of debt, without any significant equity changes (Frank & Goyal 2004).

Other independent debt-related factors that have also been included by researchers in their capital structure model, apart from the cash flow, are liquidity, profitability, institutional investors, firm size, dividend payout, tax shield benefits, tangibility and growth. Most capital structure research concentrates on large public, nonfinancial firms with access to global markets. Indeed, Marsh (1982) shows that larger firms are more likely to issue more debt. These companies are exposed to both internal and external funds, as well as, the timing flexibility and lower cost attached to adjust their capital structures for investments. Nevertheless, superficial knowledge and understanding on relevant issues are still prevalent. Furthermore, complications and arguments are inevitable due to variation of relationships, such as, between debt and equity financing, or even debt and cash flow, within similar industries. Besides, the presence of variation over time is also evidenced, though with constant influential financial tactics.

Despite prevalent studies on leverage-cash flow relationships, not much empirical evidence about such relationships is known in developing countries, such as Malaysia. Since small and newly established firms form the majority of firms in Malaysia, an exceptional capital structure is therefore imperative not only to compete with established conglomerates, but also to generate firms' high income that will thus contributes significantly towards Malaysia's economic growth. Hence, any determinants that affect the capital structure would be of concern to Malaysia and any developing countries, as well as, prompt policy deliberations pertaining to the development of their financial

markets. It is believed that many firms in developing countries share similar business cultures and environments. Even managers from developed countries may still benefit from our findings so as to improve their financing strategies and make better financing decisions within their international environments. By examining the association between firms' leverage-cash flow relationship and exploring its determinants, policy makers and regulators may direct their attention to key drivers of Malaysian firms, particularly, in the plantation sector. In addition, situations where efforts need to be made could be identified to achieve desirable capital structure decisions. There are hardly any studies on the capital structure of firms in this sector. In developing countries, like Malaysia, the structure of plantation firms faces high operating and financial risk due to huge investment and environmental factors. All these make it important to explore the capital structure composition of this plantation industry.

This paper is divided into 5 sections. The following section reviews the capital structure literatures, followed by a section that describes the research data and methodology. Subsequently, a discussion on empirical findings is provided. Finally, the research concludes with implications and suggestions for future research.

2. Literature Review

Firms' capital structure analyses bring about issues on firm's incentive to target specific leverage ratios. An adjustment cost emerges even with a slow adjustment speed (Leary & Roberts 2005; Strebulaev 2007; Faulkender et al. 2012). The incidence of leverage adjustment occurs at times of high adjustment benefits, as well as, low adjustment cost. Regardless of positive or negative operating cash flows, large firms are more aggressive in changing their capital ratios. According to Faulkender et al. (2012), costs of assessing external capital significantly affect leverage. Specifically, firms with high cash flows and high leverage deviations take on larger capital structure adjustment, as compared to other firms with almost a zero cash flow realizations. Likewise, unconstrained firms adjust faster those constrained firms within an under-levered condition and vice versa within an over-levered condition. Thus, fluctuations in adjustment benefits and costs are the consequence of changes pertaining to the leverage gap, cash flow, investment opportunities, and access to external financing, profitability and market conditions that might change stock prices (Hovakimian, Opler & Titman 2001).

Debates on financing corporate investment give rise to the exploration and importance of leverage-cash flow relationship studies, with asymmetric information as the underlying influential factor. The above leverage-cash flow empirical evidence is derived through two famous non-tax strands of literatures, known as the signaling and pecking order theories. However, there are hardly any research works that give emphasis on both models simultaneously. Event studies on signaling studies, which reflects inter-temporal aspect (Shenoy & Koch 1996), acts upon market expectations of future cash flow as the heart of research, while pecking order theories make ways primarily towards contemporaneous aspects of the cross-sectional studies. They successfully reconcile both contradictory theories in a single research model. Their research results are similar

with Harris and Raviv (1991), as well as, Ravid and Sarig (1991) that suggest high current leverage is related to high future cash flow. Managers with asymmetric information tend to make current financial decisions on investment activities by predicting the investment future payoffs. Earlier studies, however, do not support this hypothesis (Cornett & Travlos 1989; Copeland & Lee 1991).

Signaling theory behavior emphasizes on a firm's capital choice that acts as an indicator to outside investors as private information on a firm's return opportunities are not accessible to shareholders (Michaelas, Chittenden & Poutziouris 1999). Any significant changes in capital structure would therefore reflect corporate potential performance. Hence, firms are expected not to harm investors by sending any false signals to the market. A debt financing may signify a positive indication by shareholders (Koch & Shenoy 1999), whereas, a debt issuance may signify a firm's good financial prospects, as well as, the firm's ability to pay dividend to existing shareholders (Chang & Rhee 1990). The authors further reveal a positive relationship between corporate capital structure and dividend policy. High paying dividend firms in the past also seem to borrow more (Baskin 1989). Pecking order behavior, on the other hand, generally indicates a negative leverage-cash-flow relationship (Ross 1977; cited in Shenoy & Koch 1996; Harris & Raviv 1991). The presence of asymmetric information between managers and shareholders justifies the possible undervaluation of common shares in the market and the absence of target capital structures in firms. Therefore, an internal source of financing is preferable as compared to an external source of financing, where cynical managers normally depend on the cash flow availability to support their current financing needs. Only when cash flow is insufficient, would they proceed with alternative measures by issuing debt, convertible security or equity.

Initially, issuing equity measures are not so popular among established firms due to asymmetric information being ignored (Baskin 1989). Firms will only borrow when their investment needs are greater than the expected inelastic supply of retained earnings. Even with asymmetric information incidence, equity financing is still limited because this type of financing is contingent upon the unpredictable future value of the security. Consequently, lower information costs associated with debts become firms' foremost safest source of funding. With its preference ranking of financing sources, pecking order theory has been known among some researchers as a good descriptor of corporate or financing behavior (Shyam-Sunders & Myers 1999; Frank & Goyal 2003), though others criticize this view based on either the undersimplified or oversimplified version of their statistical models (Jung, Kim & Stulz 1996; Fama & French 2005). Leary and Roberts (2010) extend similar research, where their finding converges towards the tradeoff theory when firm's debt is allowed to vary with mixed theories' variables in their model. They further claims that pecking order behavior is more incentive conflict driven, rather than information asymmetry driven.

Over and above these findings, pecking order theory does not provide sufficient support of capital structure policies in Europe (Gaud, Hoesli & Bender 2007). Apart from the operating and market performance, the capital structure is being affected by national environments. Firms are considerably in good position since they are not in their

maximum debt boundary, and face minor suffering even if they are below the target leverage level. Profitable firms that are likely to have higher retained earnings would prefer internal financing over external financing so as to avoid conflicts. Paying higher dividends are also observed to be a better measure than reducing debts for these firms. The same researchers further demonstrate that investment projects with good future prospects are funded through equity issuance, especially firms with high tangibility. Tangibility is positively related to long term debt financing and negatively related to short term financing (Feikadis & Rovolis 2007). Equally, firms will issue debt and increase dividends when projects' returns are unpredictable. Other empirical results that take into account measures of firms' profitability or earnings (Vogt 1992; Delcoure 2007; Kayhan & Titman 2007), debt, capital structure and dividends (Jensen, Solberg & Zorn 1992) show comparable negative relationships, despite using different methodologies.

Generally, the mixed relationship between capital structure and firms' performance has been well-established by many researchers (Harris & Raviv 1991; Wald 1999; Brav et al. 2005; Ibrahim 2009). While firm size is expected to have a negative relationship with debt ratio, high-profit firms are believed to be associated with low debt level. Problems pertaining to asymmetric information are seen to be less critical in large firms as compared to small firms Rajan & Zingales 1995; Zhou & Xiao 2006). Subsequently, these large firms are also associated with high retained earnings (Allen 1991; Tong & Green 2005; Huang & Song 2006). Research in UK done by Bennett and Donnelly (1993) used both short-term debt and long-term debt in relation with firm's size, profitability and asset structure. They found that size and profitability are significant in determinant of long-term debt but not the short-term debt. However, the studies in emerging economies exhibit slightly different results. Short term and long term debts are positively related with profitability, while long term debt is negatively related with profitability. When firm size is included, only long term and total debts are negatively related with profitability (Abor 2007). In contrast with the above findings, Harris and Raviv (1991) claims that firm size, as well as, dividends have no effects on capital structure.

Studies done by Krishnan and Moyer (1996) on USA, Germany, Japan and Italy, and Singhania and Seth (2010) on India report that firm's growth and size has significant positive relationship with firm's debt. Smaller firms, in particular, have more growth opportunities that the assets they have (Myers 1984; Hall, Hutchinson & Michaelas 2000; Zhou & Xiao 2006). Similarly, Baskin (1989) show that leverages is positively related to past growth, while negatively related to past profits. On the contrary, large firms have lesser financial distress problem and their previous year profits are negatively related to debts. In support of similar view, is the work done by Rajan and Zingales (1995) and Wald (1999). Their results indicate the presence of a significant negative relation between firm's profitability and their debt ratio in USA, UK and Japan. A profitable firm with high retained earnings is associated with high growth and investment opportunities. A spare capacity of borrowing power exists as the firm can issue additional debts to invest. Ho, Lam and Sami (2004), in accord with Singhania and Seth (2010) also reveal that growth companies in Hong Kong have lower debt equity

ratios. On top of these, debt-liquidity and debt-interest coverage ratio relationships exhibit similar trend.

Last, but not least, the effect of asset liquidity on leverage are widely researched and have been in debates for many years. Firm size can be used as a proxy for asset liquidity when other variables are insignificant. Additionally, liquidity of properties can represent the cost of financial distress (Giambona, Harding & Sirmans 2008). According to Sibilkov (2009) study on U.S. public companies, which results are in accord with Shleifer and Vishny (1992), higher asset liquidity increases leverage. Stronger asset liquidity-leverage is stronger for firms with smaller fixed assets-debt ratio and those with high probability of defaults. In addition, similar positive relationship is found between asset liquidity and secured debt. Further analysis, conversely, reveals a curvilinear asset liquidity-unsecured debt relationship. However, the effect is dependent upon managers' discretion in disposing such assets (Myers & Rajan 1998). Hence, higher asset liquidity is attached to cheaper sales of assets and value diversion from bondholders. This type of managerial control leads to a reduction in agency problems. Adjustments of capital structure are then claimed to be irregular since hefty leverage adjustment costs force firms to diverge from their targeted leverage ratios (Welch 2004; Strebulaev 2007). The expected costs of distress are considerably economically sizeable and substantial as compared to leverage adjustment costs and the benefits of debt. This finding might well-explained the reason why bankrupt firms incur low leverage ratio (Ju et al. 2005).

3. Methodology and Research Design

We extract our data for this study from the Malaysian Bourse. We choose the plantation sector as our sample, since it is the second largest sector. Though the finance sector is the biggest sector, the financial institutions are observed to be highly regulated and have different capital structures as compared to other commercial firms. There are 46 firms in the plantation industry. Due to incomplete data, only 40 firms are chosen which comprise of a mixture of small and large size firms. Our study also includes the effect of firm size on leverage-cash flow relationship between and among firms of the two size categories. This study does not consider the impact of the global crisis on capital structure. All data over the period of 2008 - 2011 are extracted from the respective firms' annual reports. Our final sample consists of a balanced panel of 40 companies and 160 observations.

Based on the association between a firm investment, cash flow, cash stock, Tobin's Q, profitability, current ratio, dividend payout and debt financing, the following hypotheses are formulated:

H1. There is a relationship between investment and the leverage
H2. There is a relationship between cash flow and the leverage
H3. There is a relationship between cash stock and the leverage
*H*4. There is a relationship between Tobin's Q and the leverage
*H*5. There is a relationship between profitability and the leverage

*H*6. There is a relationship between current ration and the leverage
H7. There is a relationship between dividend payout ratio and the leverage

This paper seeks to analyze the relationship between firms' leverage and cash flow. We have also included factors such as liquidity, tangibility, profitability and growth. The following regression model is used:

$$D_{it} = b_1 I_{it} + b_2 CF_{it} + b_3 CS_{it} + b_4 Q_{i,t-1} + b_5 P_{it} + b_6 TANG_{it} + b_7 CR_{it} + b_8 DIV_{it} + e_{it}$$

D_{it} denotes debt to assets ratio which is a proxy to the firm's leverage level; $b_1 I_{it}$ denotes firm's investment of the year; $b_2 CF_{it}$ denotes cash flow and $b_3 CS_{it}$ denotes cash stock at beginning of the year which represents the internal cash available in the firms. $b_4 Q_{i,t-1}$ denotes Tobin's Q which represents firm's growth and investment opportunities of the firm within the year; $b_5 P_{it}$ denotes firm's profitability; $b_6 TANG_{it}$ denotes tangibility; $b_7 CR_{it}$ denotes current ratio; $b_8 DIV_{it}$ denotes dividend payout ratio; and e_{it} denotes the error term.

Firms with high leverage will have lower investment due to lack of funds. On the other hand, firms may issue more debts to finance additional investment activities which would bring higher returns. Thus, investment can be an important predictor here. Cash flow and cash stock represent the internal cash available in the firms that can be use for any firms' activities. It is believed that Tobin's Q represents a firm's investment opportunity and future growth. High Tobin's Q may result in firm's issuing new debts for additional investment activities.

The firms' liquidity will be proxied by current ratio which shows firms' ability to pay back their debts. In the traditional trade-off theory, it is believed that firms with high current ratio should increase their leverage due to their low default risk. On the other hand, pecking order theory claims a negative relationship between liquidity and leverage as firms with high liquid assets will prefer to use internally generated funds to finance their investment activities. Firms may pay out dividends to share holders when they have free cash flow. Thus, the internal cash flow is not available anymore for firms' other activities like investment. Thus, firms need to obtain additional debts. The firm's size is not included in this regression, because we will run the regression analysis based on market capitalization, sales value and total assets size. All of the variables computation is listed in Table 1.

Table 1: Study variables

Variables	Definition
Debt Ratio (D_{it})	Ratio of total liability of the year to net assets of the year
Investment (I_{it})	Ratio of capital expenditure on fixed assets of the year
Cash Flow (CF_{it})	Ratio of cash flow to sales of the year
Cash Stock (CS_{it})	Ratio of cash and cash equivalent to net fixed assets of the year
Tobin's Q ($Q_{i,t-1}$)	Ratio of firm market value to firm book value beginning of the year
Profitability (P_{it})	Ratio of net profit before taxes to total assets of the year
Tangibility ($TANG_{it}$)	Ratio of net fixed assets to total assets of the year
Current Ratio (CR_{it})	Ratio of total current assets to total current liability of the year
Dividend (DIV_{it})	Ratio of dividends to total net income of the year

4. Discussion of Findings

Table 2 shows the sample sizes and descriptive information on the firms' data of the nine variables. The sample mean debt ratio is equal to 13.85 (s.d. = 14.5); sample mean investment is equal to 4.37 (s.d. = 4.4); the sample mean cash flow is equal to 27.66 (s.d. = 22.7); the sample mean current ratio is equal to 36.17 (s.d. = 42.1); the sample mean Tobin's Q is equal to 1.28 (s.d. = 0.8) and the sample mean dividend payout ratio is equal to 28.48 (s.d. = 24.7). Cash stock has the highest variability of data distribution where Tobin's has the lowest variability of data distribution. In brief, the high standard distribution of the variables here is due to different characteristics of the sample firms, such as firm size, number of years established and so on.

Table 2: Descriptive statistics of the mean values and standard deviations (s.d.)

Debt Ratio	Investment	Cash Flow	Cash Stock	Tobin's Q	Profitability	Tangibility	Current Ratio	Dividend Payout Ratio
13.85 (14.5)	4.37 (4.4)	27.66 (22.7)	36.17 (42.1)	1.28 (0.8)	7.86 (5.1)	50.6 (21.9)	6.37 (13.5)	28.48 (24.7)

(standard deviations in parentheses)

Table 3 shows the correlation coefficient of all dependent and independent variables. There is a strong negative relationship between leverage and cash flow of -0.455 with a p-value of 0.000. Debt ratio has many significant correlations with the other variables such as investment, cash flow, cash stock, Tobin Q, tangibility, current ratio and dividend payout ratio. There is another strong negative relationship between cash stock and tangibility with a correlation coefficient of -0.632 and a p-value of 0.000 < 0.01. Since there are many strong correlations among the independent variables, multicollinearity among the other seven independent variables are tested in the regression analysis.

Table 3: Pearson correlation coefficient matrix

Variables	Debt Ratio	Investment	Cash Flow	Cash Stock	Tobin's Q	Profitability	Tangibility	Current Ratio
Debt Ratio	1							
Investment	0.290*	1						
Cash Flow	-0.455*	-0.102	1					
Cash Stock	-0.348*	-0.272*	0.463*	1				
Tobin Q	0.240*	0.217*	-0.055	0.105	1			
Profitability	-0.141	0.148	0.411*	0.126	0.345*	1		
Tangibility	0.191**	0.349*	-0.384*	-0.632*	-0.072	-0.152	1	
Current Ratio	-0.345*	-0.298*	0.215*	0.566*	-0.189**	-0.153	-0.482*	1
Dividend Payout Ratio	-0.178**	-0.127	0.096	0.076	0.229*	0.213*	0.004	-0.009

**. Correlation is significant at the 0.01 level*

***. Correlation is significant at the 0.05 level*

Table 4 represents the relationship between the firms' leverage and the eight independent variables. With the first step multicollinearity test, the VIF values are lower than 5, which are within the range of 1.188 to 2.480. Thus, there is no collinearity among the independent variables and none of the independent variables will be dropped from the regression model. The regression model has a p-value of 0.000 (<0.01) with a R^2 value of 0.369. The result is significant and 36.9% of the variance in the investment levels can be explained by the independent variables. Based on the result, cash flow has a significant negative relationship with leverage (p-value 0.002 < 0.01). This explains that firms with high cash flow will have low debt level, which is in accord with the pecking order behavior that generally indicates a negative leverage - cash flow relationship. Our finding is also consistent with Harris & Raviv (1991) research of a significant negative leverage - cash flow relationship. Other independent variables such as investment, Tobin's Q, tangibility and current ratio also have strong relationships with leverage at p-value of less than 0.05. Tobin's Q shows a significant (at 0.05 level) positive relationship, which reflect firms will issue more debt for investment funding when there are any investment opportunities. Current ratio has negative coefficients and p-value of 0.016 at 0.05 significant levels. This significant negative relationship has supported the pecking order theory. Both cash stock and dividend payout ratio do not significantly affect the leverage levels. This means firms are not paying dividend by issuing debts.

Table 4: Investment regressions of the sample firms with all key independent variables

Variables	Coefficient (b)	Standard Error	t-value	p-value
Constant	30.038	4.979	6.033	0
Investment	0.583**	0.261	2.233	0.027
Cash Flow	-0.189*	0.061	-3.090	0.002
Cash Stock	-0.050	0.042	-1.201	0.232
Tobin's Q	3.243**	1.335	2.430	0.016
Profitability	-0.400	0.271	-1.474	0.143
Tangibility	-0.160**	0.066	-2.440	0.016
Current Ratio	-0.608**	0.248	-2.452	0.016
Dividend Payout Ratio	-0.057	0.044	-1.289	0.200

Note: N = 160; R^2 = 0.369; Adjusted R^2 = 0.331; F-statistic = 9.656; p-value = 0.00
Regression model: $D_{it} = b_1 I_{it} + b_2 CF_{it} + b_3 CS_{it} + b_4 Q_{i,t-1} + b_5 P_{it} + b_6 TANG_{it} + b_7 CR_{it} + b_8 DIV_{it} + e_{it}$

** Significant level at 0.01*
*** Significant level at 0.05*
**** Significant level at 0.10*

We also test a new regression model without cash stock and dividend ratio since they are among the highest p-value in previous analysis. The following regression model is used:

$$D_{it} = b_1 I_{it} + b_2 CF_{it} + b_3 Q_{i,t-1} + b_4 P_{it} + b_5 TANG_{it} + b_6 CR_{it} + e_{it}$$

This is to retest on the relationship between leverage with firms' cash flow and other significant variables. Table 5 shows that the regression model's explanatory power of R^2 has slightly decrease to 0.338 and appear to be unlikely to explain better variations in leverage. Profitability still has a p-value > 0.05, but significant at 0.10 level; Tobin's Q and tangibility are all significant at 0.05 level. Profitability exhibits a negative relationship with leverage at -0.418, which follows the pecking order theory. Investment, cash flow and current ratio has significant relationships with leverage at 0.01 levels. These indicate firms with high liquidity tend not to issue debts for funding. On the other hand, high investment opportunities and firm investment activities have also increase these firms leverage level as it is funded by issuing debts.

Table 5: Investment regressions of the sample firms without cash stock and dividend payout ratio as independent variables

Variables	Coefficient (b)	Standard Error	t-value	p-value
Constant	24.682	4.460	5.534	0.000
Investment	0.725*	0.249	2.906	0.004
Cash Flow	-0.239*	0.058	-4.128	0.000
Tobin's Q	2.727**	1.263	2.159	0.032
Profitability	-0.418***	0.251	-1.667	0.098
Tangibility	-0.114**	0.057	-1.995	0.048
Current Ratio	-0.299*	0.089	-3.349	0.001

Note: N = 160; R^2 = 0.338; Adjusted R^2 = 0.311; F-statistic = 12.509; p-value = 0.000

Regression model: $D_{it} = b_1 I_{it} + b_2 CF_{it} + b_3 Q_{i,t-1} + b_4 P_{it} + b_5 TANG_{it} + b_6 CR_{it} + e_{it}$

** Significant level at 0.01*

*** Significant level at 0.05*

**** Significant level at 0.10*

Previous research reveals that firm size has significant effect on firms' leverage as large firms may have higher accessibility to external funds. On the other hand, small firm size does not have much opportunity to issue debts as they have higher default rate and low assets to back up the debts. Therefore, large firms are known to have more investment opportunities and higher ability to issue additional debts or equity to finance their investment activities as compared to small firms.

Many studies have included firm size as the control variable in their models. There are several measurements for the firm size. In our study, we use three different measurements to proxy the firm size; (1) market value, (2) sales value, and (3) total assets. The number of observations in small and large firm size groups is different due to these three different measurements. To categorize the plantation firms into small and large firm size groups, we use the mean size of each measurement. Those firms' size that falls under the mean value will be categorized as small firm group; firms' size that is larger than the mean value will be categorized as large firm group. Subsequently, we run the regression analysis separately according to each of the measurements. Thus, any differences between the coefficient of the independent variables across the small and large firm size groups will show the effect of firm size on leverage. Based on the previous regression results, the next hypothesis is formulated:

H8. There is a relationship between firm size and the leverage regression model

Table 6 provides the information of the leverage regression based on firm's market value. For the small firms' market value group, there is a significant relationship between the independent variables and firms' leverage level. R^2 value of the model is high at 0.342 with p-value at the significant level of 0.000. Cash flow and dividend payout ratio have significant negative coefficients at 0.05 levels. Both Tobin's Q and investment show positive relationships with leverage at p-value > 0.10. Since this is consistent with the previous research finding, we can also conclude that small firms will fund their investment activities by issuing new debts. All other independent variables do

not have significant coefficients. For the large firm size group, there is multicollinearity and cash flow (VIF = 9.402 > 5) has been dropped from the model. The new model R^2 value at 0.892 (p-value = 0.000), shows both profitability and current ratio have significant negative coefficients with leverage. On the other hand, Tobin's Q is significant at 0.000 level with a positive coefficient. Subsequently, investment, tangibility and dividend payout ratio are not significantly related with firms' leverage.

Results of investment regression based on firm's sales size are shown in Table 7. The model of small firm size group has p-value and R^2 value of 0.307 and 0.000 (p-value < 0.05) respectively. Similarly, Tobin's Q has a significant positive relationship with leverage at 0.10 level. Both current ratio and dividend payout ratio are found to have significant negative coefficients. Investment, cash flow, cash stock, profitability and tangibility do not show any significant relationship. Cash stock has been dropped from the large firm size group model due to multicollinearity. This model is significant (p-value = 0.000 < 0.01) with an R^2 value of 0.826. The result is quite similar to the large group with market value measurement. Cash flow is found to have a significant negative relationship with leverage at 0.05 level, while cash stock has been dropped from the model.

Table 8 shows the investment regression based on the firm's total assets size. The model fits the small firm size group (p-value < 0.01, R^2 = 0.332); cash flow, Tobin's Q, and dividend payout ratio have significant relationships with firms' leverage. For the large firms' total assets group, the cash stock has once again been dropped from the model. The model shows a good fit at R^2 value of 0.863 (p-value <0.01). Tangibility is found to have a negative significant relationship with firms' leverage, where this result is inconsistent with the result above.

Based on the three firm size measurement regressions, it can be concluded that the results are quite similar and consistent. The model fits significantly for both small and large firm size groups and highly fit with the large firm group at almost 90%. Tobin's Q has consistently exhibits high positive coefficient and t-value for all small and large firm size analysis. This concludes that Tobin's Q is strongly correlated with firm leverage regardless of the firm size being small or large. In contrast, firm investment and tangibility have five consistent results, which relationships are not significant with leverage in the analysis above. Dividend payout ratio has a consistent negative significant result in the small firm size group. This explains that small firms leverage level is affected by their dividend payout. However, this does not apply to the large firm size group, probably because they have strong financial status. Profitability is found to be significantly correlated with large firms' debt, but not the small firms. This concurs with the pecking order theory where firms prefer to use their internal funds before issuing new debts. However, the small firms' profitability, though with a negative correlation, is not significant. This could be due to their small size of profit which is insufficient to fund for new investment activities. Moreover, they need to invest in positive value investment activities for future growth.

Table 6: Investment regressions for firms based on firms' market value

Sample information			Regression estimates									
Group	Mean firm size	N	Investment	Cash flow	Cash stock	Tobin's Q	Profitability	Tangibility	Current Ratio	Dividend Payout ratio	R^2	p-value
Small	RM 463.1m	128	0.62***	-0.24**	-0.04	3.50***	-0.02	-0.04	-0.26	-0.12**	0.342	0.000*
Large	RM 9,207.1m	32	0.12	-	0.14***	5.00*	-1.46*	-0.15	-4.64*	-0.03	0.892	0.000*

** Significant level at 0.01*
*** Significant level at 0.05*
**** Significant level at 0.10*

Table 7: Investment regressions for firms based on firms' sales

Sample information			Regression estimates									
Group	Mean firm size	N	Investment	Cash flow	Cash stock	Tobin's Q	Profitability	Tangibility	Current Ration	Dividend Payout Ratio	R^2	p-value
Small	RM 257.6m	130	0.38	-0.10	-0.03	3.33***	-0.37	-0.06	-0.50***	-0.11**	0.307	0.000*
Large	RM 5,361.5m	30	0.04	-0.51**	-	4.44*	-0.83***	-0.07	-2.87*	-0.10	0.826	0.000*

** Significant level at 0.01*
*** Significant level at 0.05*
**** Significant level at 0.10*

Table 8: Investment regressions for firms based on firms' total assets

Sample information			Regression estimates									
Group	Mean firm size	N	Investment	Cash flow	Cash stock	Tobin's Q	Profitability	Tangibility	Current Ration	Dividend Payout Ratio	R^2	p-value
Small	RM 700.3 m	127	0.48	-0.26*	-0.03	3.33***	-0.09	-0.04	-0.27	-0.12**	0.332	0.000*
Large	RM 7,000.3 m	33	-0.17	0.01	-	4.54*	-1.23*	-0.15***	-4.08*	-0.05	0.863	0.000*

** Significant level at 0.01*
*** Significant level at 0.05*
**** Significant level at 0.10*

Finally, the mean values of all significant independent variables are compared in both small and large firm size groups based on the three firm size measurements. These independent variables are cash flow, Tobin's Q, profitability, current ratio and dividend payout ratio. The following hypotheses are formulated:

H9. The mean cash flow is different between small and large firm size groups
H10. The mean Tobin's Q is different between small and large firm size groups
H11. The mean profitability is different between small and large firm size groups
H12. The mean current ratio is different between small and large firm size groups
H13. The mean dividend payout is different between small and large firm size groups

Table 9 displays the t-value test on the differences in mean value of the independent variables from two different firm size groups. There is a hierarchical difference in the coefficients where cash flow for the large firm size group is not significantly different from the small firm size group under market value and total assets measurement. Tobin's Q, profitability and current ratio, however, show significant results (p-value < 0.10) in all three firm size measurements. Hence, there are significant differences between the small and large groups. These results support the regression result earlier, where both profitability and current ratio are significantly related to leverage in large firms' size group rather than small firm size group. Though there are significant differences for Tobin's Q in the two firm size groups, yet, it still plays an important role in both groups correlation with firm's leverage. Dividend payout ratio shows two significant different results that support the regression analysis earlier. It is significantly correlated with firm's leverage under the small firm size group.

In brief, the relationships between leverage and independent variables have clear results in small and large firms' size group. Investment, cash stock and tangibility are not significantly related; while Tobin's Q is significantly related in both firm size groups. Profitability and current ratio tend to have significant relationships in large firm group. On the other hand, dividend payout ratio only shows a significant relationship with leverage in small firms' size group, while cash flow shows a mixed result.

Table 9: t-values of the independent variables in the small and large firm size group.

	Cash Flow	Tobin's Q	Profitability	Current Ratio	Dividend Payout Ratio
Firm market value measure of firm size					
t-value	-1.30	-4.22*	-5.68*	2.11**	-2.29**
Firm sales measure of firm size					
t-value	5.56*	-3.13*	-1.99**	3.71*	-1.05
Firm total assets measure of firm size					
t-value	-1.13	-3.28*	-3.70*	2.79*	-1.77***

** Significant level at 0.01*
*** Significant level at 0.05*
**** Significant level at 0.10*

5. Conclusion

The positive leverage-cash flow relationship is supported by the signaling theory that accounts for leverage to event changes analysis, whereas, the negative relationship is supported by the pecking order theory that are based on cross-sectional analysis. Our study concludes that there is a significant negative relationship between leverage and cash flow, which support the pecking order theory. On the contrary, Tobin's Q shows a strong positive relationship with leverage for all small and large firm groups. This shows the importance of debts to fund for any positive investment opportunities. Since firms' investment activities have significant positive relationship with leverage, firms will issue new debts to fund for investment activities when there is no internal fund available. Subsequently, both firms' cash stock and dividend payout do not affect firms' leverage level in general. However, dividend payout is found to have a negative correlation with leverage for the small firm size group. These firms will demand for additional debts. Paying dividend not only exposes firms to more monitoring, but can also limit discretion over free cash flow. Our results, however, are limited to the Malaysian the plantation sector. Though these results could be of benefits in making better capital structure decisions, especially, of similar sector and country status, caution should still be warranted as capital structures of the plantation sector could vary from one country to another.

Future research may consider a larger sample size (e.g. all firms listed on the Malaysian Bourse) scope of capital structure theories (the combination of both tax and non-tax driven theories). This would enhance better comparisons among a wider range of various industries and countries, as well as, to confirm all previous research results. Results findings would improve and tend to be more accurate. It is also believed the existence of different leverage-cash flow relationship in different time periods will affect research results. Thus, research can be extended based on different time periods -

before, during and after the global/financial crisis. This comparison may helps to forecast the possibility of crisis in future. Firms' financial flexibility gives a space capacity for the firms in issuing new debts rather than depending on the internal funds. Thus, financial flexibility can be included as a predictor for future study, as this variable has a consistent tendency to affect internal funds availability and cost of external funds for investment activities. In summary, results from this study are edifying and can be of high value to researchers, especially, those who study on developing countries. Moreover, this research makes a significant contribution that could be used as a platform for management, as well as, governments of developing countries to focus on their investment efforts for sustainability and growth.

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