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The Linkage between Leverage, Tobin's Q, Cash Flow and Sale on Firms' Investment

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Abstract
Purpose: To identify the effect of the leverage, Tobin's Q, cash flow and sales on company's investment.
Design/methodology/approach: A pool data set of firms listed under Bursa Malaysia, using correlation and regression method to analyse the data.
Findings: Reveals that the Tobin's Q and leverage are insignificant on the firm investment, while cash flow and sale are both have positive relationship and impact on firm investment.
Research limitations/implications: This study limited to 61 largest companies chosen from top 100 index (FBM100) and the period of study is 2011-2019.
Practical implications: Benefited to financial expertise, potential investors, board of directors, management and future researchers.
Originality/value: Provide readers a view and understanding of the leverage and some other determinants used and the firm investment.
Paper type: Research paper

Keywords: Firm investment, Leverage, Tobin's Q, Cash flow, Sale

Introduction

The term of leveraging comes from the use of borrowed money as the source of financing when investing to increase the asset base of the company and achieve returns on venture capital. The significant topic in finance is the leverage-investment relationship. For financial managers, both investment decisions and capital structure are two important decisions. In paper done by Myers (1977), he notes that the future correlation between debt and investment can be motivated by controlling the potential externalities triggered by debt to ensure an effective investment strategy. However, there is no conclusion in the finance literature on the effect of leverage on firm investment (Vo, 2019). Financial leverage appears in having both direct and indirect qualities as a medium for debt financing across different sources of corporate funding. When issuing the debt, the companies must bear the payment with the interest and principal. The high leverage company refers to their debt is more than their equity.

Modigliani and Miller (1958) proposed that a company's investment strategy could only be focused on certain variables that would improve a company's profitability, cash flow or sale. Numerous empirical researches have challenged the leverage irrelevance theory of Modigliani and Miller. Modigliani and Miller's proposal of irreverence would only be true if the ideal assumptions of market underlying their analysis are met. However, the business world is marked by numerous imperfections market, systematic limitations and asymmetrical information costs. There will be conflicted between shareholders and management of the company due to an agency problem and may result in incentives for underinvestment or overinvestment. The main concerns in finance as mentioned earlier, is either financial debt has any influence towards investment policies. Studies performed shows that the use of more leverage has a negative impact on investment. In addition, the researcher also pointed out that leverage has a positive effect on the investment of the company, a study involving 29 companies with sectors in Pakistan that differ (Muzaffar, 2015). Therefore, we have to see whether this relationship holds for the firms in Malaysia. Hence, this study is to identify the impact of the leverages, Tobin's Q, cash flow and sale as addition to the independent variables on investment of the firms.

More than one subsequent article, however, claim that beyond the basics outlined by Modigliani and Miller (1958), there is a distinct significant determinant. Furthermore, since businesses need value-generating investments, further understanding of corporate investment drivers in the decision-making process is clearly necessary (Vo, 2019). The contradictory theoretical and empirical outcomes in the present literature inspire this paper. With additional variables of Tobin'Q, sale and cash flow which refers to the fundamental determinants claimed by Modigliani & Miller, together with leverages will indicates a new result by applying in Malaysia. Hence, this study is tended to identify the impact between leverages, Tobin's Q, sale and cash flow on the firm investment.

Literature Review

The literature discusses the influence of leverage on the firm investment. For this respect, Muzaffar (2015) found insignificant result of leverage using long term debt divided by total asset on the firm investment. In addition, Franklin and Muthusamy (2011) also indicated the same for the medium and large Indian pharmaceutical companies listed under Bombay stock exchange, however they were used total liabilities to total asset. In contrast to insignificant results, Aivazian et al. (2005), Vo (2019) as well as Odit and Chittoo (2008), all determines the significant negative result of the leverage on the firm investment. Based on the opinion from Aivazian et al. (2005) and Odit and Chittoo (2008), the debt overhang is indicated a low growth company, the opportunities of investment may reduce due to a short of potential investment opportunities, poor management results, or other reasons. They both viewed the low growth firm has a greater negative influence of leverage on the firm investment. This make Vo (2019) study contrary because, based on his study, the high growth firm has the stronger negative impact. Moreover, the study from Lerskullawat (2018) found the same results as Chang et al. (2020) where the leverage ratio of firms had a negative effect on the firm investment. John and Muthusamy (2011) on the other hand determine a positive significant for small firms on the leverage impacted the investment.

Tobin's Q which is the growth opportunities of the firm been explored in this study. The Q ratio tests whether a firm or an aggregate market is substantially overvalued or undervalued. Firms with the positive coefficient on Tobin's Q tends to invest more (Vo, 2019). In this research of Muzaffar (2015), shows insignificant results between the Tobin's Q and firm investment, this may argue the theory of Modigliani and Miller. However, the study from Vo (2019) and Aivazian et al. (2005) found that significant positively impact between leverage and firm investment, this will strengthen and proves the theory of Modigliani and Miller. Based on Odit and Chittoo (2008) study, one possible reason could be that when low-growth companies make profits, the profits are ploughed back into the company's investment activities. In addition, high profitability would also draw investor funds for growth and development.

The other variable that also has been studied according to the theory of Modigliani and Miller are sales and cash flow. Both independent variables have been used in many studies to measure their impact on the firm investment. Vo (2019) presented a significant result of sale and firm investment, where high sale of the company will reduce the firm investment if there is decreasing of net worth, then the firm tend to not making any investments. Aivazian et al. (2005) found contradict result, sales said to have a positive significant effect on the firm investment, also cash flow have a positive significant result toward fir investment. Muzaffar (2015) figure out that sale and firm investment is insignificant which means there is no impact, while for cash flow presented a positive impact on the firm investment.

Theoretical Framework and Hypotheses Development

Long-term Debt to Total Asset
Tobin's Q
Cash Flow
Sale

→ Firm Investment

Figure 1: Theoretical Framework

H_1: A significant relationship between long-term debt to total asset on firm investment.
H_2: A significant relationship between Tobin's Q on firm investment.
H_3: A significant relationship between cash flow on firm investment.
H_4: A significant relationship between sale on firm investment.

H_1: A significant impact between long-term debt to total asset on firm investment.
H_2: A significant impact between Tobin's Q on firm investment.
H_3: A significant impact between cash flow on firm investment.
H_4: A significant impact between sale on firm investment.

Method

61 yearly financial data were taken from Thompson Reuters with no missing data. The sample covers period spans from year 2011 until 2019 based on the availability of data. The data then analysed based on correlation and the pooled ordinary least square (POLS) regression method using Stata10 software. Correlation test used to identify the relationship while regression test employed to test the significant impact of the variables.

$$I/K = \alpha + \beta 1_i (LTTA)_i + \beta 2_i (Q)_i + \beta 3_i (CF/K)_i + \beta 4_i (SALE/K)_i + \varepsilon_i$$

Equation 1

Where,
I = Dependent variable, presented as the net investment (capital structure-depreciation) of the firm
K = K is referring to the net fixed assets
α = Constant number of equations
β = Regression coefficient
LTTA = Independent variable where the book value ration of long term's debt to total asset
Q = Independent variable, presented by the market value of total assets of the firm divided by the book value of the assets
CF = Independent variable, presented by the earnings before income tax and its depreciation
SALE = Independent variable, presented by the net sales divided by net assets

ε = Residual term

Findings
Correlation Analysis

Table 1: Pearson Correlation Coefficient Test

	I/K	LTTA	Q	CF/K	Sale/K
I/K	1.0000				
LTTA	0.0514	1.0000			
Q	-0.0407	0.2983	1.0000		
CF/K	0.7409	0.0369	-0.0196	1.0000	
Sale/K	0.8578	0.0515	-0.0051	0.5961	1.0000

Correlation test above shows the relationship between LTTA, Tobin's Q, cash flow and sale and firm investment. LTTA and Tobin's Q found to have very weak relationship with firm investment while both cash flow and sale have high positive correlation with firm investment. There is no proof of high multicollinearity as the highest correlation shown a moderate relationship as shown by the relationship between sale and cash flow, only at 59.61%. The rest of them are low correlated with each other.

Regression Analysis

Table 2: Pooled Ordinary Least Square (POLS)

Variables	Firm investment		
	Coefficient	Standard error	P>|z|
LTTA	0.6828	0.8467	0.420
Tobin's Q	-1.0147	0.5568	0.069
Cash Flow	0.6300	0.0406	0.000
Sale	0.1177	0.0042	0.000
c	0.9633	0.3930	0.015
R square	0.8188		
Adjusted r square	0.8174		
F-statistic	60759		
Prob(F-stat)	0.000		

81.74% of R-square in the model represents the variation in independent variables which able to explain the dependent variable of firm investment. The rest of 18.26% in firm investment is explained by variables which are not taken into this study. The model is fit and strong as the value of probability F-statistic is significant. POLS test above indicates that all independent variables are significant at 1% besides leverage which represented by LTTA and Tobin's Q, and both variables of cash flow and sale are positively affecting the firm investment.

Random Effect Analysis

Table 3: Breusch-Pagan Lagrangian Multiplier (BP-LM) Test

	Var	Sd=sqrt(Var)
Firm Investment	40.77158	6.385262
e	7.055709	2.656258
u	0	0
Prob>chi2	0.1348	

Researcher fails to reject null hypothesis for above test, hence pool data method is a best fitted model for this study. The above test is done for researcher to pick a pools data method or panel data method.

Discussion

Table 4: Discussion

Explanatory Variables	Coefficient	Result	Supported Authors
LTTA	0.6828	Insignificant	Odit & Chittoo (2008)
Tobin's Q	-1.0147	Insignificant	Franklin & Muthusamy (2011)
Cash Flow	0.6300	Significant	Odit & Chittoo (2008)
Sale	0.1177	Significant	Odit & Chittoo (2008)

Result in Table 4 are retrieved from Table 2. The equation of regression logarithm is written as follows:

$$I/K = 0.9633 + 0.6828\,(LTTA)_i - 1.0147\,(Q)_i + 0.6300\,(CF/K)_i + 0.1177\,(SALE/K)_i + \varepsilon_i$$

Equation 2

Based on the results, it shown that sale and cash flow are significantly positive influenced the firm investment, which supported by Odit and Chittoo (2008). Any 1% increase in cash flow, will increase the firm investment by 63% while any 1% increase in sale, will increase the firm investment by 11.77%%. This shows that companies are utilising their tangible assets and hence have high ability to produce high volume of sales. While positive significant of cash flow indicates that the companies are rely much on their free cash flow to raise their investments, as it is the lowest cost of financing (Odit & Chittoo, 2008). LTTA found to be not significantly influenced the firm investment, LTTA has no impact on the firm investment. As per Odit and Chittoo (2008), these insignificant result shows that the companies are depending on the capital market in order to obtain fund, and not rely on their leverage to increase the investment. In other words, by entering capital market, they can easily raise funds without relying on leverage. Tobin's Q which measures the growth opportunities shown insignificant result toward firm investment. Franklin & Muthusamy (2011) figure out the same results where any 1% increase in Tobin's Q will not give any impact on firm investment.

Conclusion

This paper expanded earlier empirical research on the linkage between leverage and investment in several important aspects. It investigated the impact among Malaysian firms using a pool data set of 61 largest companies listed under Bursa Malaysia between years 2011-2019. The result shows that leverage is not significantly influenced the firm investment, whereby cash flow and sale are significant.

Limitations and Suggestions for Future Research

The recommendations in this view is that the study can be used as the basis for further research in this area and the observation period is to be increased for that purpose and the sample size should also be increased by including more firms from many sectors or it can be the sample are in the same sectors but in large number of firms. Besides, future researcher is encouraged to expand the variables or add more variables to give a different finding. The recommendations and suggestions above will generate more interesting results and benefited to others.

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