DETERMINANTS OF CAPITAL EXPENDITURE DECISIONS: ANALYSIS OF MALAYSIAN LISTED COMPANIES WITHIN THE MANAGERIAL AND PECKING ORDER HYPOTHESES

MASYHURI HAMIDI

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PS05-002-063 (A)

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NAME : **MASYHURI HAMIDI**

MATRIC NO. : **PS05-002-063 (A)**

TITLE : **DETERMINANTS OF CAPITAL EXPENDITURE DECISIONS: ANALYSIS OF MALAYSIAN LISTED COMPANIES WITHIN THE MANAGERIAL AND PECKING ORDER HYPOTHESES**

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DECLARED BY

SUPERVISOR
Assoc. Prof. Dr. Noorhayati Mansor, CMA

Signature

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ABSTRACT

DETERMINANTS OF CAPITAL EXPENDITURE DECISIONS: ANALYSIS OF MALAYSIAN LISTED COMPANIES WITHIN THE MANAGERIAL AND PECKING ORDER HYPOTHESES

This study examines Malaysian companies' decisions to invest in capital expenditure in the context of Managerial and Pecking Order Hypothesis. The main objective of this research is to determine the impact of internal cash flows, insider ownership, and investment opportunity on the capital expenditure decisions based on the two competing theories. The Pecking Order Hypothesis states that managers choose the level of capital expenditure that maximizes current shareholders' wealth regardless of their ownership stakes. On the other hand, the Managerial Hypothesis proposes that managers with relatively small ownership proportions tend to utilize higher level of internal cash flows to finance the capital expenditures than that which would maximize the wealth of the current shareholders. Thus, the Managerial Hypothesis predicts a negative relationship between the insider ownership and capital expenditure. It also suggests that investment opportunity does not affect capital expenditure. The Pecking Order Hypothesis, on the other hand, proposes a positive relationship between investment opportunity and capital expenditure since shareholders' wealth is maximized when managers optimize investment opportunities. However, this hypothesis predicts that the insider ownership does not affect capital expenditure. At the same time, both hypotheses are consistent in proposing that internal cash flow has a positive relationship with capital expenditure. This study focuses on manufacturing companies listed on Bursa Malaysia. The study period covers the year 2002 until 2006, and a total of 109 companies were chosen using purposive sampling. Therefore, the 5 year study period consists of 545 data. To test the hypotheses, multiple and ordered logistic regression models were used, where capital expenditure is categorized into five ordinal categories and the control variable is divided into four groups which are ranked to capture the variability of the capital expenditure variable. The data was analyzed using STATA program. The main findings of this research provide evidence that the internal cash flow has a positive and significant effect on capital expenditure and thus, supports both studied hypotheses. However, insider ownership and investment opportunity show a negative and significant effect on capital expenditure. Moreover, in the Malaysian context, the issue of conflicting interest between managers and shareholders does exist and the impact is significant. In conclusion, this empirical research reveals three interesting findings. Firstly, Malaysian manufacturers tend to finance their capital expenditures using internally generated cash flow rather than external debt. Secondly, even though managerial ownership in the Malaysian manufacturing companies is rather small, it does have a significant impact on the capital expenditure decisions. Finally, the negative relationship between investment opportunity and capital expenditure suggests the possibility that Malaysian companies rely mostly on internal cash flows to finance either capital expenditure projects or other investment opportunities. When both exist, there will be competition for internal cash flow and priority is given to other investment opportunity rather than capital expenditure projects.

ABSTRAK

Kajian ini mengkaji keputusan syarikat Malaysia untuk melabur di dalam perbelanjaan modal di dalam konteks Hipotesis Pengurusan dan Pecking Order. Objektif utama penyelidikan ini adalah untuk menentukan impak aliran tunai dalaman, pemilikan orang dalam dan peluang pelaburan terhadap keputusan perbelanjaan modal berdasarkan dua teori yang bersaing. Hipotesis Pecking Order menyatakan pengurus memilih tahap perbelanjaan modal yang memaksimumkan kekayaan pemegang saham semasa tanpa menghiraukan kepentingan pemilikan mereka. Di samping itu, Hipotesis Pengurusan mencadangkan bahawa pengurus dengan kadar pemilikan kecil yang relatif cenderung untuk mengunakan tahap aliran tunai dalaman yang lebih tinggi untuk membiayai perbelanjaan modal daripada memaksimumkan kekayaan pemegang saham semasa. Oleh itu, Hipotesis Pengurusan meramalkan satu hubungan negatif di antara pemilikan orang dalam dengan perbelanjaan modal. Ia juga mencadangkan peluang pelaburan tidak mempengaruhi perbelanjaan modal. Hipotesis Pecking Order, di samping itu, mencadangkan satu hubungan positif di antara peluang pelaburan dan perbelanjaan modal memandangkan kekayaan pemegang saham dimaksimumkan apabila pengurus mengoptimumkan peluang pelaburan. Walau bagaimanapun, hipotesis ini meramalkan pemilikan orang dalam tidak mempengaruhi perbelanjaan modal. Pada masa yang sama, kedua-dua hipotesis adalah konsisten di dalam mencadangkan bahawa aliran tunai dalaman mempunyai hubungan positif dengan perbelanjaan modal. Kajian ini memfokuskan kepada syarikat pengilangan yang disenaraikan di Bursa Malaysia. Tempoh kajian meliputi tahun 2002 hingga 2006 dan sejumlah 109 syarikat dipilih menggunakan persampelan purposif. Oleh itu, tempoh kajian 5 tahun ini mengandungi 545 data. Untuk menguji hipotesis, model regresi berganda dan lojistik teratur digunakan di mana perbelanjaan modal dikategorikan kepada lima kategori ordinal dan pembolehubah kawalan dibahagikan kepada empat kumpulan yang ditarafkan untuk menunjukkan perubahan pembolehubah perbelanjaan modal. Data dianalisis menggunakan program STATA. Dapatan utama penyelidikan ini menyediakan bukti bahawa aliran tunai dalaman mempunyai kesan positif dan penting ke atas perbelanjaan dan oleh demikian, menyokong kedua-dua hipotesis yang dikaji. Walau bagaimanapun, pemilikan orang dalam dan peluang pelaburan menunjukkan kesan negatif dan penting ke atas perbelanjaan modal. Tambahan lagi, di dalam konteks Malaysia, isu kepentingan bersaing di antara pengurus dan pemegang saham wujud dan impaknya adalah penting. Kesimpulannya, penyelidikan empirikal ini mendedahkan tiga dapatan yang menarik. Pertama, pengilang Malaysia cenderung untuk membiayai perbelanjaan modal menggunakan aliran tunai yang dihasilkan secara dalaman dan bukannya hutang luaran. Kedua, walaupun pemilikan pengurusan di dalam syarikat pengilangan Malaysia adalah kecil, ianya mempunyai impak yang penting ke atas keputusan perbelanjaan modal. Akhir sekali, hubungan negatif di antara peluang pelaburan dan perbelanjaan modal mencadangkan kemungkinan syarikat Malaysia bergantung kebanyakannya kepada aliran tunai dalaman untuk membiayai sama ada projek perbelanjaan modal atau peluang pelaburan yang lain. Apabila kedua-duanya wujud, akan berlaku persaingan untuk aliran tunai dalaman dan keutamaan akan diberikan kepada peluang pelaburan yang lain dan bukannya projek perbelanjaan modal.

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AIC	Akaike information criterion
BIC	Bayesian information criterion
BOD	Board of director
BVA	The book value of total assets
Capex	Capital expenditure
CEO	Chief executive officer
COMDIV	Total value of dividends declared on common stock
D & C SHRS	Shares owned by managers and executive boards
EBIT	Earning before interest and tax
GDP	Gross domestic product
GLS	Generalized least squares
H1	First hypothesis
H2	Second hypothesis
H3	Third hypothesis
ICF	Internal cash flow
INC	Operating income before depreciation
INTEXP	Gross interests expense on short and long-term debt
IO	Insider ownership
IOP	Investment opportunity
ISEM	Istanbul Stock Exchange Market
JSE	Jakarta Stock Exchange

MH	Managerial hypothesis
MIDA	Malaysian Investment Development Authority
MITI	Ministry of International Trade and Industry
MOF	Ministry of Finance Malaysia
MR	Multiple regression analysis
NPV	Net present value
NYSE	New York Stock Exchange
NZ	New Zealand
OLM	Ordered logistic model
OLR	Ordered logistic regression
OLS	Ordinary least squares
PFDIV	Total amount of preferred dividend
POH	Pecking order hypothesis
PPE	Property, plant and equipment
Stata	Data analysis and statistical software
TAX	Total income taxes
TFA	Total fixed asset
TOTSHRS	Total amount of stock issued
UK	United Kingdom
US	United State
VIF	Variance inflation factor

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CHAPTER 1

INTRODUCTION

1.1 Background

The level of capital expenditure generally varies by countries. It depends largely on the stages of economic development of the countries (i.e., modern, developed, or underdeveloped countries) (Simos, 2006). In developing countries, if the level of economic development is low, the capital expenditure is usually low. The high level of capital expenditure, as observed in developed economies, reflects the greater level of investment in these countries (Mansfield, 1988; Chen *et al.*, 2003). The capital expenditure has also been linked directly to firm performance (McConnell and Muscarella, 1985). When managers unexpectedly increase or decrease their capital expenditure, they will give a positive or negative signal about the firm's available positive net present value of the projects (Trueman, 1986). It is due to the valuation of capital expenditure which is considered to be related to the individual firm's growth. Additionally, firms which have a higher (lower) change in capital expenditure than their industry average will signal a positive (negative) valuation (Lev and Thiagarajan, 1993).

The variations in the capital expenditure of a firm are also strongly and positively associated with excess returns (Kerstein and Kim, 1995). Nevertheless, the amount of capital expenditure to be deployed is likely to be determined by internal cash flow and insider ownership (Griner and Gordon, 1995), which have sometimes given positive or negative impact on a firms' growth. Moreover, the investment in capital expenditure can boost the level of the gross national product of countries which have a greater level of investment. A higher level of investment in a country reflects economic growth (Dornbusch and Fisher, 1987).

In 2006, The Institute for Economics Researchers at the University of Munich (Ifo) conducted a survey on corporate executives from around the world. The survey revealed that corporations spent more on capital expenditure in 2006 than in 2005, for instance, on new technologies and structures making capital expenditure grow continually, since an increase in consumption and investments led to an expansion in the patterns of demand, production, productivity, and employment which shaped global economic growth during the period 2006–2007 (Simos, 2006).

Based on the Business Expectations Survey of Limited Companies by the Department of Statistics (DOS), Malaysia, it showed a drastic increase in capital expenditure in manufacturing companies from RM17 billion in 2003 to RM27.7 billion in 2005, followed by a decrease in 2006 to RM23 billion. Incidentally, there is also a corresponding increase in Gross Domestic Product (GDP) from 45 percent in 2005 to 51 percent in 2006 (Public Bank, 2007). Thus, it can be deduced that the capital expenditure deployed contribute significantly to economic development during that period.

The investment activities of executives from the world's top-twelve markets based on capital expenditure, known as G12, have a combined gross domestic products (GDP), expressed in US dollars, of 84 percent of total global output. They raise capital expenditure in order to increase gross domestic product (Simos, 2006). It was found that the G12's investment on capital expenditure in 2006 was higher than the preceding year. As a result of the accelerated global economic growth, the executives were optimistic of the future economic outlook as indicated by an increase in their capital expenditure. This is in line with the study done by Lacker (1983) which states that long-term performance plans has a positive relationship with increase capital expenditure investments. In addition, Bromiley (1986) identify that investment growth in a country might arise through corporate capital expenditure.

Corporate capital expenditure can be financed either by internal or external funding. According to Myers and Majluf (1984), Park and Pincus (2000), Myers (2001), and Frank and Goyal (2003), various explanations on internal funding have been postulated. Firstly, internal funds provide managers not only with greater flexibility but also readily available finance, which then result in faster implementation of the investment plans. Additionally, managers often retain the option of raising funds externally. However, Husnan (1997) states that external funding is more costly and less preferred as compared to internal funding.

Next, internal funding may not involve extra costs, such as legal, accounting, and underwriting fees, whereas external funding might involve flotation costs (Smith, 1977). Lastly, internal funds might not be publicly available. There is asymmetric information between managers and investors about the firm's investment opportunities; if managers' information about their firms' investment plans were made public, the market may undervalue the firm's future shares relative to the value that would be assessed (Myers and Majluf, 1984; Myers, 1984). Therefore, firms that require relatively more external funding will have lower capital investment compared to those that employed internal funding. According to Muller and Peev (2007), firms with good investment opportunities and large internal cash flows can fund their investments without resorting to the external capital market.

The issues of capital expenditure decisions continue to be of interest to researches due to the crucial link between capital expenditure investment and strategic decision process at the corporate level. For example, McConnell and Muscarella (1985) state that capital expenditure has a positive impact on a company's performance. Numerous studies have attempted to merely explore the concepts of capital expenditure (e.g., Kuh and Meyer, 1957; Dusenberry, 1958; Jorgenson, 1963; Kuh, 1963; Jorgenson and Siebert, 1968; Grabowski and Mueller, 1972; and Elliot, 1973). However, these researchers have failed to provide a clear explanation on the factors influencing capital expenditure decisions, thus, making it more pertinent to explore these issues further.

Investigation of factors that influences capital expenditure has continued to the present day. The evolving body of literature has contributed to our understanding of the determinants of capital expenditure levels, for instance, works by Nair (1979), Berndt *et al.* (1980), Larcker (1983), Fazzari and Athey (1987), Fazzari *et al.* (1988), Waegelein (1988), Madan and Prucha (1989), and

Gaver (1992). It might be due to competing issues between two existing theories of capital expenditure determination factors, namely, the Managerial and Pecking Order Hypotheses. Both theories support internal cash flow as essential in influencing the level of capital expenditure (Griner and Gordon, 1995). The Managerial Hypothesis holds the view that there is an inverse relationship between insider ownership and capital expenditure (Myers and Majluf, 1984; Sartono, 2001). On the other hand, the Pecking Order Hypothesis argues insider ownership has no impact on capital expenditure (Griner and Gordon, 1995; Myers and Majluf, 1984). To justify the relevancy of both theories within the context of the Bursa Malaysia, further empirical research is needed to support such arguments.

The relationship between capital expenditure and internal cash flow was first studied by Myer and Majluf (1984). Shin and Kim (2002) continually studied that relationship and conclude that there is a positive relationship between capital expenditure and internal cash flow. They also state that the sensitivity of a firms' investment to growth opportunities after size-adjustment is smaller for firms with high cash holdings (i.e., internal cash flow) compared to firms with low cash holdings. Moreover, firms with high cash holding invest more than firms with low cash holdings. On a quarterly basis, there is a difference in capital expenditure between the first quarter and fourth quarter in terms of size-adjusted companies. The fourth quarter capital expenditure for large firms is significantly greater than the first quarter, but less efficient for large firms than for small- and medium-sized firms. It is less efficient because large firms tend to have more divisions where it becomes more difficult for headquarters to allocate capital and monitor expenditure efficiently, with attendant higher agency costs.

A considerable amount of literature on capital expenditure has been published. Among these is the study of internal cash flow as a determinant factor of capital expenditure (e.g., Myers, 1984; Myers and Majluf, 1984; Griner and Gordon, 1995; Sartono, 2001). Although it has been established that internal cash flow is an important determinant, equivocal arguments have emerged from two contradictory concepts in managing corporate finance, i.e., the Pecking Order theory and Managerial Hypothesis. Both views are based on the role of manager as agent and shareholder as principal. Such divergent views may lead to conflicts in the decision process of capital expenditure.

The conflict between managers and shareholders could be explained further by several theories, such as the agency theory (Keasey *et al.*, 1997). Agency theory identifies potential agency problems within a company, which in turn affects corporate behaviour in different ways (Jensen and Warner, 1988). Shleifer and Vishny (1986) point out that the agency problem may arise between shareholders, as the owner, and other company shareholders based on the distribution of power within the organization.

The two agency-based arguments led to the discussion of the Pecking Order and Managerial Hypotheses. According to the Pecking Order Hypothesis set forth by Myers (1984), and Myers and Majluf (1984), managers choose the level of capital expenditure that maximises the wealth of current shareholders, regardless of the managers' ownership stake in the firm. Since information asymmetry exists between managers and potential shareholders, managers are forced to utilise internal cash flow for capital investment as compared to external sources.

The Pecking Order Hypothesis supports that there is no significant relationship between capital expenditure and insider ownerships, because the managers' investment decisions do not depend on the level of ownership. It can be said that the Pecking Order Hypothesis attempts to promote the wealth of shareholders (Griner and Gordon, 1995).

According to the Pecking Order Hypothesis, the capital expenditure increases in line with the increase in the investment opportunity. Therefore, there is no conflict of interest (agency problem) between managers and principals in relation to the use of capital expenditure (Griner and Gordon 1995; Sartono, 2001).

In accordance with the Managerial Hypothesis, managers who have small stocks ownership in a firm tend to use internal cash flow in undertaking a higher level of capital expenditure in comparison with the level in which they are capable to maximise the current stockholders' wealth (Griner and Gordon, 1995). Agency theorists posit that managers usually tend to maximise their interests with regards to decision making process of capital expenditure. Therefore, they would prefer to choose internal cash flow for capital expenditure rather than paying dividend to the shareholders because external borrowing could expose the firm to bankruptcy risk, and simultaneously affect their position in the firm. Shareholders, on the other hand, would prefer external borrowing so that the available cash flow can be used to maximise dividend payouts.

The Managerial Hypothesis predicts that relationship between the level of capital expenditure and the insider ownership is negative. According to the Managerial Hypothesis, there might be a conflict of interest between managers and stockholders that lead to over-investment. In this condition, the managers try to increase their welfare by undertaking capital expenditure without taking into account of the stockholders' welfare, and also without considering current investment opportunity.

The work of Griner and Gordon (1995) demonstrates that both the Pecking Order and Managerial Hypotheses support that internal cash flow is an important determinant of the level of capital expenditure. Both hypotheses show a different prediction in terms of the role of insider ownership. Based on Pecking Order Hypothesis, insider ownership has no effect on capital expenditure. However, based on Managerial Hypothesis, the insider ownership has a negative effect on capital expenditure, whereby the higher the insider ownership, the lower or smaller the capital expenditure and vice versa.

The studies on the determinants of capital expenditure interpret the significance of internal cash flow in a Pecking Order framework but did not attempt to test this explanation against the managerial alternative (for example the works of Fazzari and Athey, 1987; and Fazzari *et al.*,1988). Furthermore, based on the Pecking Order Hypothesis, if the future investment opportunity is likely to have a good outcome, managers attempt to take that chance to increase shareholders' welfare.

Aggarwal and Samwick (2003) supported that investment might be able to increase managers' incentives. The findings noted that incentive from compensation investment might affect firm performance; therefore, there is tendency for the managers to have private benefits through increasing investment.

According to Griner and Gordon (1995), managers who rely on internal cash flow to finance capital expenditure are not motivated by conflicts of interest between managers and current shareholders. Rather, it was a consequence of information asymmetries between managers and potential new shareholders. It can be concluded that shareholders do not need to sacrifice their ownership to management in order to provide managers with incentives when making capital expenditure decisions. Stulz (1990) argues that information asymmetries hinder shareholders from knowing when internal cash flows and over-investment take place. He added that managers over-invest when internal cash flow is high, and conversely, under-invest when cash flow is low due to the difficulty in raising capital from the market to finance viable projects.

There are other minor issues involved. According to Park and Shenoy (2002), the aggregate capital expenditure has an immediate rather than long-term effect on bond issues. In the short run, an increase in aggregate bond issue may lead to a decrease in aggregate stock issues. In other words, an increase of capital expenditure may have impact on the stock issues. However, in the long-run, an increase in stock issues also leads to an increase in bond issues. This pattern suggests that capital expenditure and interest rate changes precede bond issues—if the capital expenditure increases, bonds would be a first financing choice, and equity is issued subsequently. Thus, future external financing will be aggravated with the increase in any type of financing (Park and Shenoy, 2002).

Furthermore, the developing body of literatures revealed empirical evidence to support the relationship between capital expenditure and future abnormal