THE SIMULTANEITY OF FINANCING AND INVESTMENT DECISIONS IN THE PRESENCE OF CORPORATE GOVERNANCE FACTORS

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ABSTRACT

This study investigates the interdependence between financing and investment decisions in the presence of corporate governance factors of three hundred non-financial companies listed on the Main Market of Bursa Malaysia. The sample is chosen randomly over a five-year period from 2007 to 2011. Using a panel data methodology, the regression models are derived based on the simultaneous equation modeling. Six factors of corporate governance mechanisms are identified: family ownership, government ownership, state ownership, managerial ownership, board size and board composition. This is among the earliest studies in Malaysia to consider simultaneity of financing and investment decisions by adopting 2SLS estimation technique. The major contributions of this study are: first, financing and investment decisions must be determined simultaneously. The results show that both investment and financing have positive impacts on each other. This positive effect is significantly stronger for firms with high-growth opportunities than those with low-growth opportunities. Second, government link investment companies (GLICs) affect leverage positively but affect investment opportunities negatively. For that reason, the government should monitor GLICs' investments as firms controlled by GLICs have lower investment opportunities. This is especially true for low-growth firms. In contrast to GLICs, state ownership leads to higher investment opportunities especially for low growth firms. Third, managers of high-growth firms are doing their job more effectively compared to those of low growth-firms in making investment decision. Fourth, independent directors do not play a significant role regarding investment policy especially for low growth firms. Finally, since profitability is significant for all financing models, the finding of this study supports pecking order theory.

Keywords: financing, investment, corporate governance, 2SLS

ABSTRAK

Kajian ini meneliti keberkaitan di antara keputusan pembiayaan dan pelaburan dengan faktor tadbir urus korporat terhadap tiga ratus buah syarikat bukan kewangan yang disenaraikan di pasaran utama Bursa Malaysia. Sampel kajian dipilih secara rawak untuk tempoh lima tahun dari 2007 hingga 2011. Kaedah data panel digunakan dalam kajian ini yang membolehkan model regresi dihasilkan melalui pemodelan persamaan serentak. Terdapat enam faktor tadbir urus korporat yang dikenal pasti iaitu pemilikan keluarga, pemilikan kerajaan, pemilikan negara, pemilikan pengurusan, saiz dan komposisi ahli lembaga pengarah. Kajian ini merupakan kajian yang terawal dilakukan di Malaysia yang melihat kepada keserentakan keputusan pembiayaan dan pelaburan menggunakan teknik kuasa dua terkecil dua peringkat (2SLS). Dapatan kajian menunjukkan keputusan pembiayaan dan pelaburan perlu dilakukan secara serentak. Hal ini kerana keputusan menunjukkan kedua-dua pelaburan dan pembiayaan mempunyai kesan positif antara satu sama lain. Kesan positif berkenaan lebih kuat bagi syarikat-syarikat yang menunjukkan peluang pertumbuhan yang tinggi berbanding syarikat yang mempunyai peluang pertumbuhan yang rendah. Seterusnya, Syarikat Pelaburan Berkaitan Kerajaan (GLIC) menunjukkan kesan positif terhadap leveraj tetapi turut memberikan kesan negatif terhadap nilai pelaburan. Oleh itu, kerajaan perlu memantau pelaburan GLIC kerana syarikat yang dikawal oleh GLIC mempunyai peluang pelaburan yang rendah terutama syarikat yang menunjukkan pertumbuhan yang rendah. Sebaliknya, pemilikan negeri membawa kepada peluang-peluang pelaburan yang lebih tinggi terutama bagi syarikat yang mempunyai pertumbuhan rendah. Dapatan seterusnya menunjukkan para pengurus di syarikat pertumbuhan tinggi melakukan tugas mereka dengan lebih berkesan dalam membuat keputusan pelaburan berbanding pengurus di syarikat pertumbuhan rendah. Selain itu, para pengarah bebas tidak memainkan peranan yang penting berhubung dasar pelaburan, khususnya untuk syarikat pertumbuhan rendah. Akhir sekali, kerana keuntungan adalah penting untuk semua model pembiayaan, maka dapatan kajian ini menyokong *pecking order theory.*

Kata Kunci: pembiayaan, pelaburan, tadbir urus korporat, 2SLS

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IOS	Investment Opportunity Set
GDP	Growth Domestic Product
NPV	Net Present Value
OLS	Ordinary Least Square
2SLS	Two Stage Least Square
GMM	Generalized Method of Moments
GLICs	Government Linked-Investment Companies
GLCs	Government Linked Companies
MAS Berhad	Malaysia Airlines System Berhad
EPF	Employees Provident Fund
KNB	Khazanah Nasional Berhad
KWAP	Kumpulan Wang Amanah Pencen
LTAT	Lembaga Tabung Angkatan Tentera
LTH	Lembaga Tabung Haji
KKD	Kementerian Kewangan Diperbadankan
PNB	Permodalan Nasional Berhad
SOEs	State Owned Enterprises
3SLS	Three Stage Least Square
IV	Instrumental Variables
NDTS	Non-Debt Tax Shields
VIF	Variance Inflation Factor
FE	Fixed Effect
RE	Random Effect
LM	Breusch-Pagan Lagrangian Multiplier
CW	Cook-Weisberg
BP	Breusch-Pagan
EBIT	Earnings Before Interest and Tax
LTD	Long Term Debt

CHAPTER ONE

INTRODUCTION

1.0 Introduction

This chapter starts with section 1.1 which provides the background of the study. Section 1.2 presents problem statement. Section 1.3 discusses research questions. Research objectives are discussed in section 1.4. In section 1.5, the scope of the study is examined. The significance and contribution of the study are explained in section 1.6. This chapter ends with the structure of the thesis in section 1.7.

1.1 Background of the Study

The importance of corporate firms in generating a country's higher productivity and better economic growth is undeniable in today's globalization era. To play the role, the firms' managers must ensure that their corporate funds and resources are utilized efficiently so that they can be transformed into productive activities. Since managers must always adopt actions that work in favor of the interest of the shareholders, they must only invest in projects that promote greater productivity and efficiency. Such projects usually need considerable investments in current technologies, building development and promotion of products. It is the responsibility of the firm's corporate finance department to manage these financing and investment decisions.

There are many alternatives that can be employed by firms to fund or finance their investments. One of them is debt. Together with equity and retained earnings, debt is definitely among the top capital structure elements of the firm. Financial leverage is the common term used to describe the debt level employed to pay for firm assets and

planned projects. In general, financing decision refers to a decision made by a firm regarding the optimal combination of debt and equity raised which would be used to finance its investments. To date, as has been pointed out by Brealey, Myers and Allen (2006) there are many important questions regarding financial decisions remain unanswered.

Investment opportunities have a key role in the corporate finance of the organization and it indicates the future growth of the firm, which is invaluable in the prediction of the shareholders' wealth. Myers (1977) categorizes firm value into two, the present value of the assets in place and future investment and growth opportunities. The difference between the two is that the former does not depend on future discretionary investments while the latter does. Instances of discretionary investments are; investments in new projects, advertising, marketing, R&D and product development. Discretionary investments are often referred to as options. They are valued as an option where the price of such an option is deemed to be a representation of future investment required for assets acquisition. Therefore, the investment opportunity set (IOS) concept, that was pioneered by Myers (1977) is described as the level to which firm value is dependent on the firm's future discretionary expenditures.

It is pertinent to distinguish between over-investment and under-investment when exploring the concept of investment. Under-investment refers to the liquidity effect of a firm which has a debt commitment but invests less regardless of its growth opportunities. Theoretically, leverage may create potential under-investment incentives. However, the firm can minimize the influence through certain measures.

On the other hand, the theory of over-investment is described as an expenditure spent on an investment that goes over what is needed.

Basically, corporate finance deals with selection of new investment and decisions regarding the manner of financing those investments. There have been extensive studies on each of these two decisions. However, most of them have been carried out separately. It seems inappropriate to study these two decisions in isolation. Novel investments require financing; and decisions related to it may influence the value of the firm via changes in expectations of investors. Many studies only focus on measuring the impact of financial leverage on investment decision (see for example, Modigliani & Miller, 1958; Baker & Wurgler, 2002; Korajczyk & Levy, 2003; Chevalier, 2004; Molina, 2005; Childs, Mauer & Ott, 2005). They ultimately reach conflicting conclusions using various approaches. According to Mayer and Sussman (2004) the linkage between capital structure and investment decisions should be evident in instances whereby the firm decides to take considerable large investments.

This study aims to examine the effect of corporate governance mechanisms on financing and investment decisions simultaneously. Most of the previous studies only examine the effect of corporate governance mechanisms on investment (see for example, Hutchinson & Gul, 2004; Villalonga & Amit, 2006; Maury, 2006; Lerner, Sorensen & Stromberg, 2010) or the effect of corporate governance mechanisms on financing decisions (see for example, Wen, Rwegasira & Bilderbeek, 2002; Abor, 2007; Driffield, Mahambare & Pal, 2007). This study is different from previous studies in which this study investigates the effect of corporate governance mechanisms on financing and investment decisions simultaneously. In particular, this

study focuses on the internal determinants of the financing and investment decisions. Internal determinants are determinants which can be controlled by the firm whereas external determinants are factors that are beyond the firm's control (Chiou & Su, 2007). Examples of external determinants include political and economic conditions. The main objective of this study is to examine the relationship between financing and investment decisions simultaneously. In addition, this study also intends to investigate the simultaneity of financing decision and investment decision in the presence of corporate governance factors.

1.2 Problem Statement

Table 1.1 shows the annual percentage of Malaysian GDP growth rate. On average the GDP growth rate is above five percent from 2000 to 2011 except for certain years (2001 and 2009). The negative percentage of GDP in 2009 is due to the global financial crises. One way of increasing GDP growth rate is by increasing investments in Malaysia. Investments could be in terms of foreign direct investment and domestic investment by public and private sectors. In general, higher GDP reflects higher investments which consequently leads to higher financing needs.

A report by Bank Negara Malaysia showed that in the year 2011, the total gross financing raised by the private sector in Malaysia was RM82.2 billion. This amount included both the equity and debt financing. Table 1.1 and Figure 1.1 illustrate the percentage of total funds raised by both means (debt and equity) in the Malaysian capital market. It is worth noting that there has been a tremendous increment of debt financing from 50 percent in 1997 to 89 percent in 1998. The graph clearly shows the

increasing trend of debt financing and the declining trend of equity financing over the observed period, especially after the year 1997.

Table 1.1
Funds Raised in the Capital Market and GDP Growth Rate

Year	New Issues of Debt Securities (RM Million)	Debt over Total Securities (%)	New Issues of Equities (RM Million)	Equity over Total Securities (%)	GDP Growth Rate (%)
1987	-	22	-	78	-
1988	-	67	-	33	-
1989	-	43	-	57	-
1990	-	23	-	77	-
1991	-	33	-	67	-
1992	-	32	-	68	-
1993	-	52	-	48	-
1994	-	55	-	45	-
1995	-	51	-	49	-
1996	17038	52	15924	48	-
1997	19546	52	18225	48	-
1998	14152	89	1788	11	-
1999	17553	74	6087	26	-
2000	31097	84	6004	16	8.9
2001	37220	86	6124	14	0.5
2002	36195	73	13291	27	5.4
2003	51853	87	7772	13	5.8
2004	36340	85	6475	15	6.8
2005	38196	86	6315	14	5.3
2006	38887	95	1916	5	5.6
2007	67600	90	7126	10	6.3
2008	49700	90	5477	10	4.8
2009	58600	69	26045	31	-1.5
2010	52100	62	32139	38	7.4
2011	69600	85	12621	15	5.1

Source: Bank Negara Malaysia annual reports.

Findings of previous studies are in line with Figure 1.1. For example, Deesomask, Paudyal and Pescetto (2004) find that the leverage ratio in Malaysia is increasing dramatically after 1997. Correspondingly, Mohamad, Hassan and Ariffs (2007) report

that Malaysia has the highest corporate bond ratio (37.3%) issued per dollar of GDP among all the emerging markets. Based on the data that shows the importance of debt capital market over the equity capital market and even over the bank loans, the data further reveals the urgent financial needs of debt financing by Malaysian institutions (see Figure 1.1).

Based on previous discussion, it is clear that the increasing reliance of Malaysian companies on debt securities can affect their financial leverage. This at the same time could have also affected their investment value. Considering the different institutional set up and financial environment of Malaysian companies, it is important to look at the impact of Malaysian companies' corporate financing and investment decisions on each other.

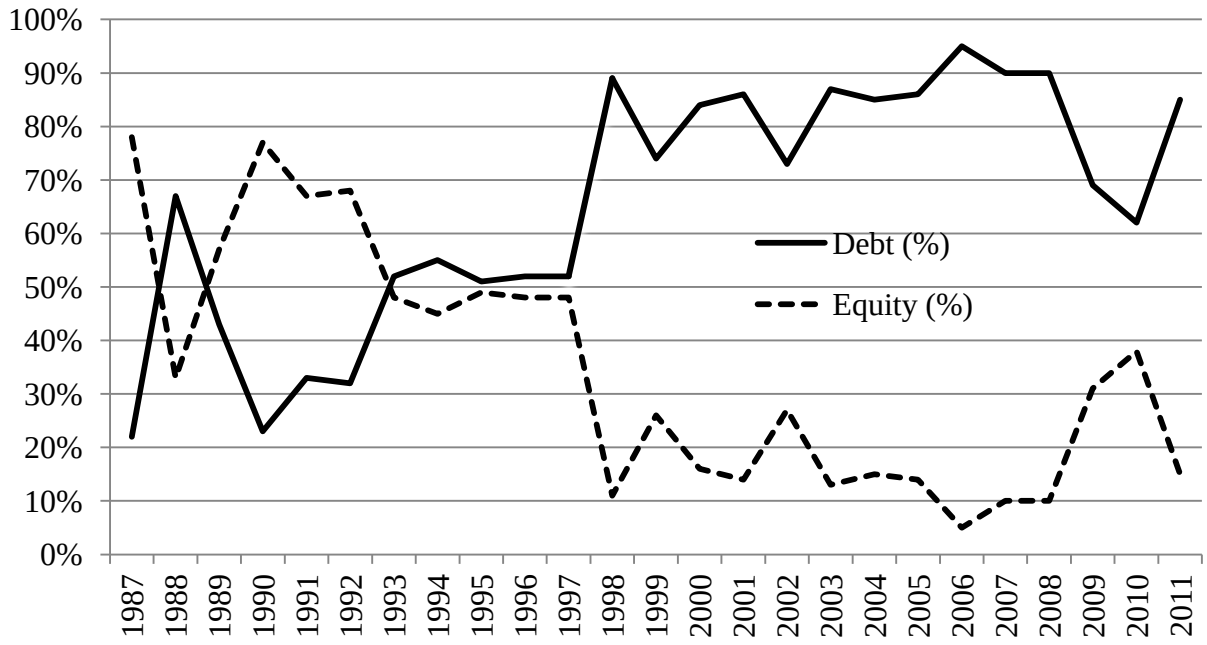

Figure 1.1
The Debt versus Equity in Malaysia

Source: Bank Negara Malaysia annual reports

The impact of debt on investment has always been the important topic in corporate finance (Odit & Chittoo, 2008). One of the great advantages of employing debt is its ability to maximize shareholder wealth. Nevertheless, the use of excessive debt can also lead to higher bankruptcy risk.

Many studies focus on measuring the impact of financial leverage on investment decision (Modigliani & Miller, 1958; Jensen, 1986; Cantor, 1990; Whited, 1992; McConnell & Servaes, 1995; Novaes & Zingales, 1995; Lang, Ofek & Stulz, 1996; Myers, 1997; Johnson, 2003; Korajczyk & Levy, 2003; Lally, 2004; Chevalier, 2004; Childs *et al*., 2005). Nevertheless, the findings of the studies are inconclusive. While some studies show positive relationship between financial leverage and investment, some studies reveal the opposite result.

There are many studies that look at the sole individual relationship of decision separately. If these two decisions are believed to be employed at the same time, then prior empirical analysis erroneous because the results become biased through endogeneity when viewing only one of the choices while ignoring other (Lin, Phillips & Smith, 2008). Therefore methodological problem calls for reexamining results of past studies on investment and financing decisions based on the best available method.

Although the review of past documented literature on financing and investment decisions shows high correlation between these two major decisions (Smith & Watts, 1992; Denis & Denis, 1993; Lang *et al*., 1996; Peyer & Shivdasani, 2001; Ahn & Denis, 2004), only a few studies that examine the simultaneous effect of these two

decisions (Baldwin, Gellatly & Gaudreault, 2002; Aivazian, Ge & Qiu, 2005; Elsas, Flannery & Garfinkel, 2006; Dang, 2007; Firth, Lin & Wong, 2008; Savignac, 2008; Francis, Hasan & Sharma, 2011; Smith, 2011). However, they do not examine the impact of corporate governance factors on financing and investment decisions. Therefore, this study fills the gap of extant literature by examining the endogenous determination of leverage and investment opportunities in Malaysia along with corporate governance factors.

The heavy reliance on debt securities in Malaysian capital market would influence investment decisions, which would affect returns and the firm's ability to settle obligations of debt. This in turn will affect the willingness of creditors to extend debts to firms. Bernanke and Gertler (1990) argue that the quantity of investment spending along with expected return is susceptible to the credit value of the borrowers. In other words, investment decisions are susceptible to financing decisions and finally under and over investment arguments stipulate the necessity of studying the effect of financing and investment decisions simultaneously.

It is well known that the emerging market environment differs from the developed market. This divergence obviously does not permit the determinants and outcomes of leverage and growth options in the developed markets to be applied in the developing markets. Due to the existence of different institutional setup and financial environment, corporate financing and investment decisions in an emerging market like Malaysia could be different from that in the developed market. According to Bekaert and Harvey (2003), firms located in emerging markets serve as a good testing

ground for some important corporate finance theories and has long been deemed by finance scholars as a challenge to explore.

The corporate governance mechanisms play important roles in Malaysia in influencing the financing and investment decisions. This is obvious because corporations in Malaysia are highly concentrated in terms of family ownership and also government and state ownership which ultimately might increase the agency cost (Himmelberg, Hubbard & Love, 2004). To what extent corporate governance influence corporate policies is still an unknown fact. The major elements of corporate governance provide added provision to both firm stakeholders and shareholders as it functions as a tool to control the agency cost.

Past studies on the relationship between corporate governance and financing decision, show that the corporate governance factors influence the capital structure of firms (Pfeffer & Salancick, 1978; Lipton & Lorsch, 1992; Berger, Ofek & Reeb, 1997; Wen *et al*., 2002; Abor, 2007). This study extends the prior studies in this area by considering the combined effect of corporate governance factors on investment decisions and financing decision. Specifically, this study intends to investigate the simultaneous effect of financing decision and investment decision in the presence of family ownership, government and state ownership, managerial ownership, board size, board composition and other control variables.

Corporate governance controls are posited to be related to information asymmetry in high growth firms by the agency theory (Bah & Dumontier, 2001; David, O'Brien & Yoshikawa, 2008). This is attributed to the fact that management is privy to

information regarding future projects of the firm while shareholders are not. In general, high growth firms are associated with high agency cost. Therefore, these firms create higher requirement for the establishment of corporate controls (Hutchinson & Gul, 2004; Maury, 2006; Lerner *et al*., 2010). It is important to examine the effects of corporate governance factors and the financial leverage decisions on investment opportunity set specifically, to investigate investment decision as a function of debt ratio, family ownership, government and state ownership, managerial ownership, board size, board composition and other control variables. Such findings can have both, practical relevance in guiding corporate financing and investment decisions and theoretical relevance in providing new evidence on the application of existing capital structure and investment theories.

Managerial ownership serves as a robust monitoring tool over the strategic decision of the firm, which eventually results in minimization of agency costs. In addition, it also reduces the opportunistic activities of management which provides the general public and lenders greater confidence. Consequently, it results in favourable borrowing criteria offered to the company. The use of debt leads to a positive relation between financing and managerial ownership as it can be used as a signal by the management to mitigate managerial entrenchment (Berger *et al*., 1997; Chen & Steiner, 1999; Bajaj, Chan & Dasgupta, 1998). However, Friend and Lang (1988) and Hasan and Butt (2009) find a negative relationship between managerial shareholding and leverage. Managerial self-interest leads to reducing the level of leverage in order to avoid the bankruptcy risk of the firm.

Managerial shareholding also affects investment decisions which then affects the firm's value (Jensen & Meckling, 1976). In addition, Morck, Sheilfer and Vishny (1988) suggest that managerial ownership can act as an effective mechanism on the alignment of interests between shareholders and manages which in turn affects the market value of the firm. However, Hasan and Butt (2009) and Wahla, Shah and Hussain (2012) find a negative relationship between managerial ownership and investment decisions. Increasing the percentage of shareholdings by managers might raise the agency problem between minority and majority shareholders which ultimately impact the investment decisions (Wahla *et al.*, 2012).

Past studies show that board's size is significantly related to the firm's decisions (Pfeffer & Selancick, 1978; Lipton & Lorsch, 1992). This is because any corporate entity board is considered to hold the last word in decision making ensuring that the firm operates efficiently and competitively.

External directors enhance the ability of the firm to safeguard itself from threats by reducing the conflict between managers and shareholders and this increases its ability to raise funds or maximize value (Pfeffer, 1973; Pfeffer & Salancick, 1978). There is a great probability that shareholders as well as debt holders will demand for a greater proportion of non-executive directors in order to effectively monitor executives and moderate the agency costs. External directors are more able to protect the debt holders and shareholders' investments because the board is controlled by independent directors. Therefore, managers face stronger monitoring which limit their personal benefits (Berger *et al.*, 1997). However, Wen *et al.* (2002) and AL-Najjar and Hussainey (2011) find a negative relationship between board composition

and leverage. This finding shows that firms use bondholders to monitor managerial decisions.

Family ownership does traditionally influence the corporate governance in Malaysian firms. Himmelberg *et al.* (2004) report that the ownership concentration of Malaysian firms is 60 %. Rachagan and Satkunasingam (2009) report that 72 % of the Malaysian companies are owned by families. Driffield *et al.* (2007) argue that in order to reduce the agency conflict between majority and minority shareholders, firms use higher debt level. They find that family ownership in Malaysia does affect financing decision positively. However, the relationship between family ownership and debt level can also be negative. For instance, family might be more risk averse and may use less debt level in order to mitigate firm risk (Gallo, Tapies & Cappuyns, 2004).

Family firms have a higher tendency to supervise management as the family wealth is closely linked to net present value projects. Many empirical studies present the positive influence of family ownership on investment decision (see for example, McConaughy, Walker, Henderson & Mishra, 1998; Villalonga & Amit, 2006; Maury, 2006). On the other hand, Negative effects between family ownership and investment decision are reported by Cronqvist and Nilsson (2003) and Yeh and Woidtke (2005). This finding shows that family firms are more risk averse and the tendency to mergers or other opportunities for expansion owing to their concern for the family bequest (Morck, Randall, Stangeland & Yeung, 2000)

Government and state ownership play a key function in corporate governance system through reducing the agency problem and monitoring managerial decisions. Li, Yue

and Zhao (2009) find that government and state ownerships affect firm's leverage decisions positively. On the other hand, Su (2010) shows that government and state ownerships lead to lower leverage. In addition, Malaysian studies that examine the influence of government ownership on investment decision show only a positive relationship (see for example, Ghazali, 2010; Najid, Afzan & Abdul Rahman, 2011). In contrast, studies from other countries report the opposite. For example, Gunasekarage, Hess and Hu (2007) and Yuan, Xiao and Zou (2008) find that ownership by government and state has negative relationship with investment decision.

To the best knowledge of the researcher, this study is among the earliest to jointly model each decision in a simultaneous framework in Malaysia along with corporate governance factors. Keeping endogeneity under control is important as it may assist in explaining the reason behind the mixed results reported by prior studies concerning their hypotheses testing. Thus, the goal of this research is to fill the gap of extant literature by proposing an equilibrium model of financing and investment.

1.3 Research Questions

In order to achieve the research objectives, the following research questions are raised:

1. Is there any simultaneous relationship between financing and investment decisions?

2. Is there any relationship between corporate governance factors and financing decision?

3. Is there any relationship between corporate governance factors and investment decision?

1.4 Research Objectives

The main objective of this study is to examine the effect of financing and investment decisions on each other. In addition to that, this study also attempts to determine if the corporate governance factors (family ownership, government ownership, state ownership, managerial ownership, board size and board composition) have an impact on financing and investment decisions for a sample of Malaysian public listed companies.

1.4.1 Specific Objectives

Specifically, the objectives of this study are:

1. To examine the effect of financing and investment decisions on each other.

2. To identify the relationship between corporate governance factors and financing decision.

3. To identify the relationship between corporate governance factors and investment decision.

1.5 Scope of the Study

The sample of the study is 300 companies listed on Bursa Malaysia from 2007 to 2011. This study uses secondary data available from the annual reports, books, magazines, newspapers and DataStream available in the library of University Utara Malaysia.

This study examines whether investment decision influences financing decision and whether leverage influences the investment decision. Since ordinary least square (OLS) is inconsistent and biased to solve the problem of the endogeneity of this research, this study uses two stage least square (2SLS) method. This method is believed to be able to alleviate potential endogenous problem. The 2SLS is an instrumental variable estimation technique where the endogenous explanatory variable instrument is acquired as the fitted values that stem from regressing the endogenous variable on all exogenous variables (Wooldridge, 2006). The 2SLS model requires one or more proper instrumental variables for each endogenous observed variable on the equation to yield unbiased and consistent estimators (Kirby & Bollen, 2009).

This study focuses on the relationship between corporate governance mechanisms (board governance and ownership structure) and financing decision. Moreover, this study focuses on the relationship between corporate governance factors (family ownership, government ownership, state ownership, managerial ownership, board size and board composition) and investment decision.

1.6 Significance and Contribution of the Study

This research extends prior studies in this area by examining financing and investment decisions simultaneously, this would help firms to improve their value and meet investor information needs. Hence, the first major contribution of the study is to examine the relationship between financing and investment decisions in such a simultaneous manner. This study contributes to the theoretical body of knowledge by analyzing the impact of investment decision and financing decision simultaneously because such studies in this area are almost non existing in Malaysia. It is important to study the simultaneous effect of investment and financing decisions because it will produce better models and more effective econometric data analysis methods between theories and testing in corporate finance (Smith & Watts, 1992). In addition, many theories have been used to explain financing, investment and corporate governance. Therefore, the second contribution of this study is to improve the application and insight into the decision theories, in an emerging economy like Malaysia.

Previous studies show that corporate governance plays a key function in explaining the financing and investment decisions. Therefore, the third contribution of this research is to investigate the role of ownership structure on both financing and investment decisions. Since most Malaysian firms are traditionally governed by families, this might increase the agency cost and serve the managers' interests (Himmelberg *et al.*, 2004). Thus, it is important to study the effect of family ownership on financing and investment decisions in Malaysian firms in such simultaneous manner.

This study attempts to examine the effect of the Government Link Investment Companies (GLICs) and state ownership on financing and investment decisions. This study is important because many Malaysian firms are controlled by large shareholders such as GLICs and state ownership that have a significant role in protecting the interest of minority shareholders. Thus, this study hopes to serve as an indicator of these firms' performance. Hashim and Devi (2008) report that there is lack of evidence to describe the effect of institutional investors on decisions made by the Malaysian firms. Therefore, conducting such a study would add to the understanding of leverage and growth options in Malaysia with its unique institutional set up.

The forth contribution of this research is to investigate the role of board governance on financing and investment policies. Board of directors monitors the top management actions in order to protect the benefits of minority shareholders. Abor (2007) emphasizes a need for future research to examine the relationship between board characteristics and corporate policies such as financing decision.

As far as the author's knowledge is concerned, this study is among the earliest in examining the relationship between financing and investment decisions simultaneously after controlling for the corporate governance factors.

1.7 Structure of the Thesis

This thesis consists of five chapters. Chapter one is an introduction to the study which contains a background, problem statement, research objectives, research questions, the scope of the study, the significance of the study and the structure of the thesis. The literature review is presented in chapter two which begins with theories of the

interaction between decisions joined with related empirical studies. It ends with a summary in the last part of the chapter.

Chapter three presents the theoretical framework, research process, hypothesis development, measurement of the variables, model specification and sample selection. Chapter four includes data analyses and research findings. Chapter five discusses the major findings. In this chapter, a conclusion is drawn in line with the objectives set followed by recommendations for further research.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter discusses research documented by prior literature related to this study. Relevant literature is reviewed to provide foundation knowledge to the issue under study. The rest of the chapter is divided into eight sections. Section 2.1 discusses the main underlying theories, followed by section 2.2 which provides the empirical evidence on the relationship between financing decision and investment decision. Section 2.3 provides the empirical evidence on the simultaneous relationship between financing decision and investment decision. Section 2.4 discusses the corporate governance reforms in Malaysia. Section 2.5 illustrates the empirical evidence on the impact of corporate governance factors on financing and investment decisions. Section 2.6 illustrates the empirical evidence on the impact of instrumental variables on financing and investment decisions. Section 2.7 illustrates the empirical evidence on the impact of control variables that have a potential influence on financing and investment decisions. Finally, Section 2.8 ends with a summary.

2.1 Underlying Theories

This section takes a look at more detailed theories that are related to financing and investment decisions. First, free cash flow theory is related to both financing and investment decisions. Second, the Modigliani and Miller theorem, static trade-off theory, pecking order theory, signalling theory, contracting perspective theory, information asymmetry, asset specificity and market timing theory are related to only

financing decision. Finally, cash flow theory, neoclassical theory and Q theory are related to only investment decision.

The theoretical model of the determination of financing and investment decisions in Malaysian context studied in this study is based on these theories.

2.1.1 Theories Related to Financing and Investment Decisions

The only theory that might explain the association between financing and investment decisions in the firm is free cash flow theory. The free cash flow problem proposed by Jensen (1986) relies on the principal agency theory and the analysis of conflicts between managers and shareholders. The agency problem is associated with imperfect and asymmetric information; managers are the agents of shareholders, however this relationship is fraught with contradictory interests. It states that managers tend to act in a way that is more inclined to serve their own interests rather than those of shareholders.

Agency costs are divided into two categories, agency costs of equity and agency costs of debt. The agency costs of equity are based on the fact that while managers bear the responsibility and costs of a performed activity, they are not able to profit from the entire gain. Hence, they will become more inclined to obtain perquisites and transferring the firm's assets into personal benefits than managing the firm the optimal way (Pike & Neale, 2009). Dividend payouts reduce the free cash flow under management's control, hence mitigating the risk of wasting cash flows on negative NPV projects. Free cash flow is the cash flow beyond what is required to finance all positive net present value projects. It is believed that managers are more interested in

the growth of their firms. For that reason, they tend to invest in all projects regardless of the NPVs. Jensen (1986) argues that growth enhances managers' power as it puts more resources under their control. Furthermore, growth increases managers' perquisites, since compensations are usually associated with growth. This problem is more sever when organizations generate large free cash flows. The issue lies in how to encourage managers to apply this cash flow efficiently. Introducing debt to capital structure could alleviate the agency problem by reducing the resources under managers' control. Debt is more effective than dividend payouts in reducing agency costs. The payout of cash to shareholders and dividend promises are not static but can be altered in the future. However, with debt issuance managers are forced to pay interest and principals in a way that cannot be changed; otherwise the cost of default will increase, hence threatening the future of the organization. Issuing more debt to repurchase stock is also an effective way in encouraging managers to make better use of the free cash flow. However, increased leverage will affect firm value and consequently increase the cost of financial distress (Jensen, 1986).

Using debt to control management actions is called by Jensen (1986) as the controlling hypothesis. However, it is not necessarily applicable in all types of organizations. It is more important in large mature firms that have large free cash flows but low growth prospects or investments with positive NPV. For such organizations, the effect of agency costs could be very steep (Jensen, 1986).

In relation to this, Jensen (1986) argues that over-investment problem would occur where managers tend to extend the firm scale even if it would lead to accepting poor projects and minimizing the welfare of shareholders. The ability of management to

undertake poor projects is limited by the free cash flow availability, and this limitation can be further curtailed through issuing debt. Hence, one mechanism that assists in resolving overinvestment issue is issuing debt, which implies a negative association between financing and investment decisions for weak growth firms.

2.1.2 Financing Decision Theories

Financing decision can be explained using the Modigliani and Miller theory, the static trade off theory, the pecking order theory and the timing theory.

2.1.2.1 The Modigliani and Miller Theorem

This theory was introduced in 1958 by Franco Modigliani and Merton Miller. Based on this theory the firm value is not impacted by the financing choice as it functions in a perfect capital market devoids of costs of transactions, taxes, asymmetric information, costs of bankruptcy, and the fact that both individuals and firms are able to borrow and lend at the same interest rate. The changes in capital structure of any firm will not create value given the specific assumptions. Rather the investment decisions are the only determinant of the firm's value (Modigliani & Miller, 1958). Despite the theory depends on unrealistic assumptions, it considered as the base ground research for factors that affect leverage. In the face of such evidence, several studies have rejected the theory of capital structure irrelevancy.

2.1.2.2 Static Trade-off Theory

This theory focuses on taxes and posits that the trade-off between default costs and tax advantages may predict debt level. The static trade off theory has several advantages. It provides a simple and rational explanation of the benefits of

introducing debt to capital structure. The theory states that leverage can reduce taxes but high levels of leverage can induce financial default. The trade-off theory suggests that growth firms have less tangible assets and are expected to borrow less than mature firms with low investment opportunities but high free cash flows.

Although the trade-off theory has a significant impact practically, Myers (1989) argues that special or random events cannot be explained by the simple static trade-off theory. For example, asset disposals and anticipated good operating revenues can reduce a firm's leverage below the optimum level. Conversely, an unexpected downturn in revenues might leave a firm above its optimal leverage ratio. This relationship between profitability and financing decision is probably the most important argument against the trade-off theory. In practice, high profitable firms tend to borrow less, whereas firms with low profitability borrow more. Yet the trade-off theory would envisage the opposite, suggesting that highly profitable firms have more income to put out on debt issuing and to protect itself from tax payments. However, none of these arguments deny the impact of the static trade-off theory on firms' determination of the optimal level of capital structure (Myers, 1989).

The contention that the greater the expected cost of bankruptcy, the more beneficial is the equity because large firms have lower default risk and more diversified, they should generally have higher debts. Tangible assets of distressed firms go through smaller loss of value and hence, firms that have considerable tangible assets should also possess higher debt level compared to their counterparts that possess more intangible assets such as technology and research firms. Moreover, because growth firms lose more value when they are distressed, the theory posits a negative leverage-

growth relationship. Several empirical studies support such claim (Rajan & Zingales, 1995; Barclay, Smith Jr. & Morellec, 2006; Frank & Goyal, 2007).

Additionally, the higher the taxes, the greater will be the tax advantage and this is the reason firms having higher tax rates are expected to have higher leverage compared to their low tax rates counterparts. In contrast, firms possessing considerable high level of non-debt tax shields such as depreciation, are not expected to employ high amount of debt. Graham (1996) supports the tax factor while Titman and Wessels (1988) reveal a positive correlation between leverage and non-debt tax shields. On the other hand, Wright (2004) demonstrates that leverage in the context of the corporate sector is notably stable from 1900-2002, despite the significant difference in the tax rates and Graham and Harvey's (2001) survey that covered 392 CFOs reveals that 45% of the respondents believe that tax consideration has a significant role in their capital structure selections.

Profitable firms are expected to have greater debt, lower costs of bankruptcy and more valuable tax shields. According to empirical studies, a negative relationship exists between profitability and financing decision (e.g. Titman & Wessels, 1988; Rajan & Zingales, 1995; Fama & French, 2002; Frank & Goyal, 2007). This leads to the several results; first, based on empirical evidence, leverage is negatively related to the expected costs of bankruptcy and as such, firms change their capital structure to align with their target ratios and second, evidence, albeit inconclusive, shows the significance of tax factor in terms of capital structure and the latter's sensitivity towards the former. Third, a negative debt-profitability correlation does not support the theory.

2.1.2.3 Pecking Order Theory

According to this theory, because of the information asymmetry that exists between markets and firm managers, projects are financed first through internally produced financial resources, then by safe debt issuance, followed by risky debt and lastly by new equity issuance (Myers, 1984). Contrary to the trade-off theory, this theory posits that the appeal to tax shields and financial default cost are less important. Instead, it focuses on leverage change with regard to changes in internal cash flows, dividend payments, or investment opportunities. This theory also gives a clarification to the negative relationship between profitability and financing decision. Given that firms generally involve in new investments to sustain good growth, according to information asymmetry, the least profitable firm will end up issuing more debt to be able to fund its investments (Myers, 1989).

The pecking order theory takes into consideration the issues arise due to the asymmetric information between managers and outside investors. Information asymmetry suggests that managers of a firm know more about their business than investors and their actions are signals about firm performance to its investors. When managers issue new equity it is generally an indication to the investors that the company is overvalued. As a result, investors always react negatively to the announcements of equity issuance. Consequently, this will drive managers either to forgo positive NPV investments or to issue excessively high debt levels that may threaten the future of the company. These contradictions lead to the following arguments. First, internal funds in form of retained earnings are more favourable than external equity. Second, financial slack, i.e. disposal of real assets, cash or marketable securities, is possible. Lastly, debt is more attractive than equity, simply because it is

cheaper and less risky (Myers, 1989; Talberg, Winge, Frydenberg & Westgaard, 2008).

Literature reports mixed results concerning the theory. Shyam-Sunder and Myers (1999), Lemmon and Zender (2007) and Kamath (1997) report support for the pecking order theory whereas Chirinko and Singha (2000) and Leary and Roberts (2010) fail to report any support for pecking order theory. Frank and Goyal (2003) reveal the highest support for the theory is among large firms.

However, pecking order theory could explain negative debt-profitability correlation. Effective firms make considerable use of internal funds for financing and because firms of low quality possess less revenues and retained earnings compared to those of high quality, they have to take recourse from external sources in the form of debt.

2.1.2.4 Signalling Theory

Ross (1977) proposes the signaling theory on the basis of the effect of information asymmetries on financing decision. The model contends that management employs several methods including debt and cash flow level to minimize the information asymmetry existing between shareholders and management.

Signals sent by capital structure changes are reliable owing to the fact that the firm will be bankrupt if the future cash flow is non-existent (Ross, 1977). Additionally, it is contended that investors generally relate high debt with higher quality and higher future cash flow. For instance, firms having high growth options are more likely to

face greater disparities in information and are hence expected to display higher debt levels that reflect higher quality.

On the contrary, lower quality firms may not imitate high quality firms in taking more debt as they possess greater expected bankruptcy cost at any debt level. Hence, the signaling effect postulates that a positive correlation exists between financing and investment decisions (Smith & Watts, 1992).

2.1.2.5 Contracting Perspective Theory

This theory posits that firms faced with significant growth opportunities do not have a tendency to issue debt based on two issues namely, the under-investment issue and the asset substitution issue.

2.1.2.5.1 Under-Investment Problem

The under-investment problem occurs when maximizing firm value is not equivalent to maximizing equity value (Myers, 1977). This issue underlies the firms issuance of only risky debt as this may be supported by assets-in-place. Management may take action on behalf of the shareholders to avoid undertaking positive present value investments to stay away from debt holders' potential payoffs. This highlights that with other things constant, the lower the assets-in-place, the lower will be the debt level.

Another problem that may occur is the second category of agency costs, i.e. the agency costs of debt. It focuses on the relationship between shareholders, bondholders and managers. When debt level increases, it transfers default risk to bondholders

while managers and shareholders carry the company's investment decisions. The problems occur when managers start to act in a way that benefits themselves or shareholders. To overcome this problem, the bondholders can put some restrictions on the use of their money to mitigate the potential for financial default (Belkaoui, 1999).

Firms' growth prospects are determined by the future value of their investments. However, levered firms will have to consider the value of future investments and the value of debt payments, and therefore will employ investments, for which their value exceed the value of the debt. This may drive firms to avoid investing in positive NPV projects, if their expected future cash flows equal the reimbursement of the debt. Hence, they will reject a positive investment opportunity, increasing the risk on debt holders. Consequently, debt holders will demand higher payments, which in turn will raise the firm's financial risk and may lead to greater variability in income. This underinvestment problem suggests that shareholders of firms with more growth opportunities favor equity financing to reduce the cost requirements of debt holders. Further, it proposes that if firms have to utilize debt, owners will rather focus on short term debt contracts (Bah & Dumontier, 2001).

2.1.2.5.2 The Asset Substitution Problem

Asset substitution or risk shifting refers to a situation when a firm uses proceeds from its debt to invest in high- risk investments instead of low-risk assets. Although high-risk investments yield high returns, the additional profit only benefits the shareholders. The bondholders will only receive fixed payments. Nevertheless, the bondholders are affected by the high-risk due to higher probability of debt default (Jensen & Meckling, 1976). This has a low probability of occurring when there are

more assets because it is relatively easy for outsiders, (e.g. auditors) to track the assets in terms of their existence and value (e.g. plant, land and building). However, when a firm has considerable intangible assets, it provides them with a solid basis for asset substitution as external monitoring of such assets is improbable. Other things constant, firms faced with significant growth opportunities refrain from issuing debt in comparison to those faced with low growth opportunities.

Asset substitution problem deals with the substitution process from low risk assets to high risk investments in a firm. Consequently, this situation expropriates value from the firm's bondholders, as it increases the risk of bankruptcy, without giving them any additional advantages. Clearly, the effectiveness of investments is complicated to evaluate, mainly due to the time lag between investments and return. However, it suggests that when managers obtain financing for their projects, they may act in a way that transfers risk to lenders. Financing investment opportunities through debt may therefore increase agency costs of debt as a result of managers' tendency to undertake high risk investments. Growth opportunities are also proven to be harder to oversee, hence giving managers an extra freedom to invest according to their own interest. The asset substitution to more risky investments and the transfer of value leads to dissatisfaction of the firm's bondholders. Consequently, they will either be disinclined to issue debt or request an increased premium to cover the general risk associated. According to the asset substitution hypothesis, growth firms are more inclined to use equity financing than debt (Bah & Dumontier, 2001; David *et al*., 2008).

2.1.2.6 Information Asymmetry

Generally, firm managers are better informed about characteristics of firms' cash flow and investment opportunities than investors. In this regard, Myers and Majluf (1984) create a model in which capital structure is proposed to minimize the inefficiencies in the investment decision of the firm stemming from information asymmetry. They reveal how managers, who are better informed, let go of positive NPV projects in an attempt to heighten the existing shareholders' best interests.

The information asymmetry phenomenon is more significant for firms with high growth options. Bah and Dumontier (2001) discuss two reasons for this relationship. First traditional conventional products appeal more to outsiders as they are not familiar with the advanced characteristics of specific firms' products. Second, growth firm's projects are often surrounded by confidentiality to not disclose sensitive information to competitors, due to a high level of secrecy in a highly competitive business. Such firms will consequently have less access to security markets and are less keen on using external funding to lower the risk of revealing sensitive information that could be used by competitors. Therefore, these hazards imply that growth firms should rely less on debt financing than equity.

2.1.2.7 Asset Specificity

Investments add more knowledge based intangible and specific assets to firm's total assets. According to the asset specificity problem, firms with low level of specific assets should be more leveraged given that these assets can be used as collateral. Further, debt usually entails lower transaction costs and less complicated governance mechanisms than equity.

Shareholders are more involved in firms' strategic decisions than debt holders, however debt contracts force managers to pay out future cash flows, and in the case of default debt holders have the right to cause the firms liquidation, while shareholders have no such claims as dividends can be altered in the future. According to this hypothesis, assets are specific as long as they are not redeployable, hence value of such assets are higher for the firm than others. Consequently, the liquidation value of such assets is ambiguous, and as monitoring them is much harder, debt holders will request higher risk premiums. Thereby, equity is more preferred when firms have more specific assets, i.e. involve more in growth activities, as debt will increase the transaction costs significantly. Moreover, firms with specific assets employ a workforce with specific knowledge/experience and they offer their customers specific products/services, hence the liquidation cost of such firms will be much higher as staff cannot easily find other workplaces that suit their job-specific proficiencies and customers cannot find substitutable products (Bah & Dumontier, 2001; David *et al*., 2008).

2.1.2.8 Market Timing Theory

The introduction of the market timing theory was attributed to Baker and Wurgler (2002). According to the theory, the current capital structure refers to the total outcome of the prior attempts to time the equity market. It posits that firms time to issue equity when it is overvalued and purchase the equity back when it is undervalued. As a result, stock prices fluctuations impact the capital structures of the firm. Two types of equity market timing can lead to similar capital structure dynamics.

The first type considers rational economic agents in which firms are considered to directly issue positive information release that results in minimizing the asymmetry issue between stockholders and management. This minimization is consistent with the stock price increase. Firms gear their timing opportunities in reaction to it.

On the other hand, the second theory posits that economic agents are irrational (Baker & Burgler, 2002). Because of their irrational behaviour, a time-varying stock pricing of the firm occurs where management issue equity upon perceiving irrationally low cost of equity and repurchases the same when it is irrationally high. This market timing version does not require an inefficient market and it does not need managers' prediction of accurate stock returns. It is assumed that managers are generally confident of their market timing.

Equity timing has a consistent influence on the firm's capital structure according to Baker and Wurgler (2002). They refer market timing as the weighted average of external capital requirements throughout the prior years, where weights are used as the firm's market to book values. They also show that leverage changes significantly and positively associate with the market timing measure and that the capital structure of the firm refers to the total outcome of previous efforts geared towards timing equity market.

According to the model, firms steer clear of issuing equity during bad economy and only do so when the economy improves. When the economy becomes better, the firms issue large equity. In this regard, a positive relationship between equity issues and

business cycle is reported by several studies (e.g. Choe, Masulis & Nanda, 1993; Bayless & Chaplinsky, 1996; Baker & Wurgler, 2000).

Past studies show that overvalued firms always issue equity whereas their undervalued counterparts wait until the misevaluation cost is low enough to be offset by the benefits of novel projects (Korajczyk, Lucas & McDonald, 1990; Loughran & Ritter, 1995). Based on empirical reports, price performance is a must for equity issues decisions (Rajan & Zingales, 1995; Baker & Wurgler, 2002; Kamath, 1997; Graham & Harvey, 2001) but evidence backing investor's overpayment of shares or its absence is still inconclusive. In this regard, some researchers claim that investors are inclined to be overoptimistic during insufficiently high forecasts of new issues by analysts and when management manipulate earnings prior to going public (Baker & Wurgler, 2002; Teoh, Welch & Wong, 1998).

Similarly, Chang, Dasgupta and Hillary (2006) reveal the impact of information asymmetry on the firm's incentive to time the market. Specifically, they highlight that firms with low information asymmetries possess lower incentives to time market, whereas those followed by fewer analysts make infrequent but larger equity issues.

In conclusion, literature supports the notion of market timing theory where managers wait for the improvement of market conditions, and for high return of stocks, and before issuing, firms adopt window-dressing or improve their performance.

2.1.3 Investment Decision Theories

There are three theories, which can be applied to explain the investment decision. They are the cash flow theory, neoclassical theory and Q theory. Each theory is presented below.

2.1.3.1 Cash Flow Theory

There are three variants within the cash flow theory rubric; they are liquidity model, managerial model and information-theoretic model (Samuel, 1996). According to Samuel (1996), only quantity variables like outputs (such as GDP and stock price) and liquidity matter in the cash flow model.

2.1.3.1.1 Liquidity Model

On the basis of this theory, investment hinges on internal finance in that investment may be limited by the internal funds supply. Prior profit levels may also be utilized as proxy for future levels and may play a role in decisions pertaining to capital expenditure (Duesenberry, 1958; Meyer & Kuh, 1957; Kuh, 1963; Meyer & Glauber, 1964; Meyer & Strong, 1990).

This theory can be considered to shed a light on the presence of financing hierarchy that comprises one of the well-documented facts that relate to corporate finance. The firms' financial sources are; internal finance, external debt and finally new equity. Donaldson (1961) and Koch (1943) contend that before taking external debt, firms generally sell cash and investments.

2.1.3.1.2 Managerial Model and Information Theoretic Model

The managerial model and information theoretic model can be referred to as the liquidity theory version (Samuel, 1996). The two models emphasis on the internal finance role as the basic determinant of investment decisions, where they predict a positive cash flow-investment relationship.

In the perspective of information theory, both internal and external finances are not considered as alternatives because of the existence of information asymmetries between insiders and outsiders. On the other hand, in the managerial theory's perspective, internal finance is used as recourse because it brings about managers' discretionary behaviour that may offset the interests of the shareholders. In other words, management may attempt to fulfil their objectives that are opposite to those of the shareholders' by pursuing growth maximizations or perquisites overconsumption (Samuel, 1996).

From the two theories, the managerial approach is proposed first by Marris (1963, 1964) but both theories' formal modeling and testing is carried out by Grabowski and Mueller (1972). Specifically, the information theoretic method to investment stems from Akerloff's (1970) work on lemons market, where he present that information asymmetries could distract normal market functions and in some cases, lead to their destruction. The issues are noted to be serious in some markets. Additionally, significant applications of the lemons framework are brought forward by Stiglitz and Weiss (1981) and Myers and Majluff (1984). According to them, information asymmetries could lead to credit rationing. They also expound on the existence of financing hierarchy in their study. It is also argued by Greenwald, Stiglitz and Weiss

(1984) that under conditions of credit rationing, capital availability rather than cost of capital, is significant for decision making when it comes to investment.

Furthermore, the managerial theory of investment posits that management chooses to use internal funds because of their easy access and malleability to managerial growth vision. In this regard, the marginal cost of capital is notably less for internal finance than for external finance, indicating inequality of the shareholders' opportunity cost of capital.

2.1.3.2 Neoclassical Theory

Modigliani and Miller (1958) prove that the internal and external financing are deemed as accurate substitutes. Thus, the financial marginal cost is equal to the opportunity cost of capital of shareholders.

Meanwhile, Jogenson (1971) propose neoclassical model of investment that states investment decisions basically depend on the cost of capital, and decisions concerning investment and finance are undergone by the firm separately. The model offers a structural formation of investment decisions based on the profit maximizing behavior of the firm. In this model, only price variables such as taxes and rate of interest are considered.

2.1.3.3 Q Theory

Brainard and Tobin (1968) and Tobin (1969) propose the Q theory - a theory that is considered to be contrary to the output oriented models in that it highlights investment on a financial basis in terms of portfolio balance. Stated differently, the theory is

based on Q ratio, the ratio of the market value of capital to the replacement cost of firm's assets.

Tobin (1969) argues that a firm's manager should undertake a new project if the project's Q is greater than one (the market value is larger than its cost). Consequently, shareholders would agree that the firm undertakes this new investment instead of distribute its cost as dividends because their stock value will increase. Therefore, this ratio provides an incentives barometer for investments.

In a related study, Blanchard, Rhee and Summers (1993) investigate the stock market role as a signal to managers in relation to investment decisions. They stress on the issue of whether management acknowledges the signals given off by the stock market or Q ratio when they undertake decisions concerning capital expenditure, despite the fact that their basic valuations do not match with the market valuation. Hence, Q theory considers firms with value in excess of unity as those having investment opportunities. As these firms are expected to possess positive net present value projects, their announcements of increases in capital expenditures are deemed to be positively received by the market.

2.2 The Empirical Evidence on the Relationship between Financing Decision and Investment Decision

Table 2.1 illustrates the literature on the relationship between financing decision and investment decision. Majority of financial economists are of the consensus that financial leverage affects firm's investment decision (McConnell & Servaes, 1995; Lang *et al*., 1996; Aivazian *et al*., 2005, Ahn, Denis & Denis, 2006). Nevertheless, two contentions stood out concerning this topic. The first group of contention is

proponent of the negative relation between financing and investment decisions in the context of low growth firms (Lang *et al*., 1996; Aivazian *et al*., 2005; Fukuda, Kasuya & Nakajimi, 2005; Yuan & Motohashi, 2009). The second contention claims a negative association between leverage and investment among high growth firms (McConnell & Servaes, 1995; Ahn *et al*, 2006). Higher growth in firm investment indicates the firm's greater ability to increase investment through borrowing. Contrastingly, the market value of low growth firms is less than the documented value of their assets and this discourages companies to borrow and to invest to a lesser extent in the capital market.

In a related study, Myers (1977) examines the potential externalities generated by debt on firm's investment strategy. He proposes that debt overhang lessens the shareholder-management incentives to invest in positive NPV projects as benefits partially accrue to the creditors rather than fully to the owners. Hence, firms that are highly leveraged are not as inclined to control valuable growth opportunities in comparison to their low-leveraged counterparts. In this background, a related under-investment theory stresses on the effect of liquidity in such a manner that firms with large debt commitment invest less despite the growth opportunities nature.

In another related study, Denis and Denis (1993) look into the influence of highly leveraged transactions on managerial discretion concerning investment policy. They analyze 39 leveraged recapitalizations and they show a significant decrease in capital expenditures after increase in leverage. Peyer and Shivdasani (2001) also examine the internal appropriation of resources in the context of diversified firms completing a leverage recapitalization. Their study involves diversified firms undergoing a

leveraged capitalization for the years 1982-1994. They show that significant increase in leverage impact investment policy.

In a related study conducted by McConnell and Sevaes (1995), they concentrate on the relationship between corporate value, leverage and equity ownership. They reveal a positive relationship between investment and leverage among low-growth firms and a negative relationship between the same variables among high-growth ones. McConnell and Sevaes's (1995) findings show that higher debt level is valuable in the context of low-growth firms since it could be used as a controlling mechanism which prevents managers from wasting free cash flow. The findings also are in agreement with hypothesis stating that leverage leads to under-investment among high-growth firms.

In another similar study, Lang *et al*. (1996) use a significant sample comprising of U.S. industrial firms for the years 1970 until 1989. On the basis of pooling regression, they find a significant negative relationship between financing and investment decisions for firms characterized by low growth. A similar approach is used by Aivazian *et al*. (2005) but they employ the panel data regression instead. The results are similar to those obtain by Lang *et al*. (1996) indicating that leverage does not minimize firm growth (those that have good investment opportunities). The findings support the agency theories concerning corporate leverage, specifically the theory postulating that debt has a key function of disciplining for firms having low growth opportunities. Hence, it can be stated that these findings are in line with the hypothesis that leverage minimizes over-investment and maximizes firm value.

The association between financing and investment policies among diversified firms are examined by Ahn *et al*. (2006). Their study data is gathered for the years 1982 to 1997. The regression result shows a negative effect of leverage on investments for firms having strong growth options but a positive effect of leverage for those having weak growth options. The results are consistent with McConnell and Servaes's (1995) results.

Yu, Chen and Hsieh (2008) examine investment, leverage and firm value. They reveal that a firm's value from investments, leverage and main bank relationship greatly hinges on the Tobin's Q quantile effects. The direct effects of the same factors are insignificant in conventional OLS regression, but significant in quantile regression. The advantages of firms with high investment over their low counterparts increase with the firm value for high Q firms, but advantages of firms with low investment over high ones increase with firm value for low Q firms. Also, for low Q firms, investment and leverage are complementary to each other whereas for high growth firms, they are substitutes.

While the above studies examine the effect of financing decision on investment decision, a related research strand investigates how growth opportunities affect financing decision. In a related work, Smith and Watts (1992) focus on the empirical relationship among corporate policy decisions and the characteristics of the firm. Data on the industry level was collected from 1965-1985 to identify the measures of the investment opportunity of the firm such as the availability of growth options and size of the firm, and their relationship with firm financing. The result of their cross-sectional regression analysis reveals a negative leverage-growth opportunities

relationship. Similarly, Jung, Kim and Stulz (1996) show that firms having valuable growth opportunities have a higher tendency to issue equity in their marginal financing decisions.

Moreover, Childs and Triantis (2000) study the effect on firm value and credit spread of risky debt when equity holders over-invest or under-invest in the growth opportunity. They reveal that the suboptimal investment incentives greatly decrease firm value and optimal leverage. On the other hand, Bah and Dumontier (2001) investigate the choice of capital structure of firms that are considerably engaged in investments and present that growth firms display lower debt and dividend payment levels in a significant manner compared to non-growth firms. They argue that firms having high growth opportunities have a tendency to issue equity compared to those having no growth options, and the employment of new equity increased along with investments. They conclude that firms that are heavily into investment activities display lower debt and longer time to maturity with higher cash levels in comparison to their non-growth counterparts.

The relationship between corporate policy decisions is investigated by Jones and Sharma (2001) among Australian companies. Their study uses a sample of 810 firms over a period of nine years. The results of their regression analysis show that the growth factor is not related to corporate policy decisions on low growth firms but is significantly related to lower debt-equity ratios and lower dividend yields when applied to high growth ones.

In a more current study, Ridha and Bajka (2010) investigate the effect of investments on leverage of Swedish life science industry firms for the period from 2005-2009. They show a negative relationship between firms' growth and their level of leverage. Finally, Elsas, Flannery and Garfinkel (2011) evaluate the determinants of leverage among U.S. 1801 firms and study how these firms paid for 2093 very large investments in the years 1989-2006. They present that large investments are primarily externally financed and firms issue securities that propel them towards target debt ratios.

Table 2.1

Summary of the Literature on the Relationship between Financing Decision and Investment Decision

Author (s) (Period)	**Methodology**	**Key Findings**	**Measurement of Leverage and Investment**	**DV**
Denis and Denis (1993) (1984-1988)	OLS regression.	There is a significant reduction in capital expenditures following the increase in leverage.	Leverage is measured as total debt to total assets. Investment is represented by capital expenditures to sales.	Investment.
McConnell and Servaes (1995) (1976 - 1988)	OLS regression.	There is a positive relation between investment and leverage among low-growth firms and a negative relation between investment and leverage among high-growth firms.	Leverage is represented by market value of debt divided by the estimated replacement value of assets. Investment is represented by Tobin's Q.	Investment.
Lang *et al*. (1996) (1970 - 1989)	Pooled OLS regression.	There is a strong negative relation between leverage and investment only for firms with low growth, but not for high growth firms.	Leverage is the ratio of the book value of short-term and long-term debt to the book value of total asset. This paper uses three investment measures. The first is net investment divided by last period's fixed assets. The second measure is the capital expenditures' growth rate. The third measure is the ratio of the number of employee's growth rate.	Investment.

Table 2.1 (Continued)

Author (s) (Period)	**Methodology**	**Key Findings**	**Measurement of Leverage and Investment**	**DV**
Peyer and Shivdasani (2001) (1982 - 1994)	OLS regression.	Large increases in leverage affect investment policy.	Leverage is measured as total debt to total assets. Investment is represented by capital expenditures to sales.	Investment.
Bah and Dumontier (2001)	OLS regression.	There is a negative relation between financing decision and investment decision.	Leverage is measured as total debt to total asset ratio and long term debt to total asset ratio. Investment is a dummy variable equals 1 if the firm is an R&D intensive, equals 0 otherwise.	Investment.
Ahn *et al*. (2006) (1982 - 1997)	OLS regression.	There is a negative impact of leverage on investment for firms with strong growth opportunities and positively correlated with leverage for firms with weak growth opportunities.	Leverage is measured as of the end of the last year in both book and market values terms. Investment is measured as the ratio of net investment to sales.	Investment.
Yu *et al*. (2008) (1994 - 2004)	OLS regression.	Low growth firms, investment and leverage complement each other. For high growth firms, investment and leverage substitute each other.	Leverage is the total liabilities divided by total assets. Investment is Tobin's Q.	Investment.

Table 2.1 (Continued)

Author (s) (Period)	Methodology	Key Findings	Measurement of Leverage and Investment	DV
Smith and Watts (1992) (1965 - 1985)	OLS regression.	Negative relationship between leverage and growth opportunities.	Leverage is represented by equity to value ratio (E/V). Investment is the ratio of book value of assets to firm value (A/V).	Financing.
Childs and Triantis (2000) (1980 - 2000)	OLS regression.	High investment incentives significantly lead to low leverage.	Leverage is measured as total debt to total asset ratio. Investment is the volatility of assets in place.	Financing.
Jones and Sharma (2001) (1991 - 1998)	Pooled OLS regression.	High growth firms are found to be associated with significantly lower debt-equity ratios and significantly lower dividend yields.	Leverage is debt to equity ratio. This paper develops a composite measure of various proxies of the investment opportunities.	Financing.
Ridha and Bajka (2010) (2005 - 2009)	OLS regression.	There is a negative relationship between firms' growth and leverage level.	Four measures of leverage are used in their study, total debt over total capital, total debt over total equity, EBIT over interest expenses and short term debt over total debt. Investment is R&D expenditures over sales.	Financing.

Table 2.1 (Continued)

Author (s) (Period)	Methodology	Key Findings	Measurement of Leverage and Investment	DV
Elsas *et al*. (2011) (1989 - 2006)	OLS regression.	Large investments are mostly externally financed and that firms issue securities that tend to move them toward target debt ratios.	Leverage is the ratio of new equity and debt issues to total investment expenditures. Investment is the sum of firm's capital expenditures.	Financing.

2.3 The Empirical Evidence on the Simultaneous Relationship between Financing Decision and Investment Decision

Extant literature on the simultaneous impact of financing and investment decisions include Baldwin *et al*. (2002), Aivazian *et al*. (2005), Dang (2007), Savignac (2008) and Smith (2011). Table 2.2 summarizes the literature on the simultaneous relationship between financing decision and investment decision.

Specifically, Baldwin *et al*. (2002) use a sample of 3000 Canadian firms in the years from 1983-1986, and conclude a bidirectional relationship between capital structure and investment decision. Firms dedicating a greater level of their investment expenditure show lower debt intensive structures after industry and firm level covariates are controlled. Moreover, debt-intensive structures also curtail investments although the above relationships hinge on the debt type in the asset mix. In other words, it is the long term debt to total assets that negatively relates to investments.

Aivazian *et al*. (2005) look into the effect of financial leverage on the investment decisions of the firms via the use of Canadian public traded firms' information. They show leverage is negatively associated with investment and such negative association is significantly higher for firms having low growth opportunities compared to their counterparts having high growth opportunities. They examine the results strength through the use of alternative empirical models (2SLS regression) along with the instrumental variable technique to tackle with the issue of endogeneity existing in the leverage-investment relationship. Their results support the agency theories of corporate leverage, particularly the theory positing that leverage has disciplining role for low growth opportunities firms.

In a related study, Dang (2007) examines the firms' financing-investment decisions interactions in light of under-investment and over-investment incentives. Their sample comprises of 670 UK firms for the years 1995 to 2003. Based on the analysis, growth opportunities negatively and directly impact leverage at a significant level of 5%. This outcome is aligned with the leverage models proposed by Rajan and Zingales (1995) and Johnson (2003). These proposed models advocate the notion that firms minimize leverage activity to counteract possible under-investment incentives according to forecasts (Myers, 1977). Minimizing the amount of debt helps alleviate the risky debt overhang cost that generates issues related to underinvestment.

The above finding is supported by previous studies like Lang *et al*. (1996) and Aivazian *et al*. (2005). It is aligned by the postulation of the agency theory concerning the negative correlation between financing and investment decisions. It is also in line with the under-investment framework because of two reasons; first, when under-investment incentives are not appropriately alleviated because of high costs related to adjustments of leverage. Second, when high growth options are not acknowledged as appropriate in the early phases, high leverage ratio is expected to increase the under-investment cost and in turn, it limits the level of investment.

Savignac (2008) conduct an estimation of the effect of financial constraints on innovation while considering the fact that the potential of financial constraints to occur hinges on the ex-ante capital structure and the economic performance of the company. While considering the financial constraint variable's endogeneity, they reveal that financial constraints significantly minimize the potential for firms to have

innovative activities. Their results are based on the French Ministry of Industry's survey that involved 5500 industrial French firms.

Smith (2011) conduct an analysis of firm start-ups and examined the association between financing option and subsequent innovation behaviour by carrying out a longitudinal panel study involving 4,928 businesses started-up in 2004. He utilizes a two-stage analysis and report that a high leverage is connected with the decreasing number of new copyrights/patents.

Table 2.2

Summary of the Literature on the Simultaneous Relationship between Financing Decision and Investment Decision

Author (s) (Period)	**Methodology**	**Key Findings**	**Measurement of Leverage and Investment**
Baldwin *et al*. (2002) (1983 - 1986)	OLS and 2SLS regression.	The relationship between capital structure and investment decision is bidirectional.	Leverage is represented by long-term debt to total assets. Investment is represented by R&D expenditures.
Aivazian *et al*. (2005) (1982 - 1999)	2SLS regression.	Leverage is negatively related to investment and this negative effect is significantly stronger for firms with low growth opportunities than those with high growth opportunities.	They use two measures of leverage, total liabilities to total assets and long term debt to total assets. Investment is measured as net investment deflated by lagged net fixed assets.
Dang (2007) (1995 - 2003)	2SLS and GMM regression.	Investment has a negative impact on leverage. Moreover, he shows that the estimated coefficient on lagged leverage is negative at the 1% significance level. These results also hold when a single equation approach is employed to estimate the investment model in which leverage is treated as exogenous.	Leverage is measured by total debt divided by market value of equity plus book value of debt. Investment is measured by capital expenditures less depreciation divided by fixed assets.

Table 2.2 (Continued)

Author (s) (Period)	**Methodology**	**Key Findings**	**Measurement of Leverage and Investment**
Savignac (2008) (1997 - 1999)	Probit model regression.	Financial constraints significantly reduce the likelihood that firms have investments activities.	Leverage is represented by banking debt ratio. Investment is represented by innovation =1 if the firm has innovative activities, =0 otherwise.
Smith (2011) (2004 - 2006)	2SLS regression.	High leverage is associated with a decreasing number of investments activities.	Leverage is represented by debt to equity ratio. Investment is measured by new innovation through the production of new patents or new copyrights by the firm by the end of the third follow-up period.

2.4 Corporate Governance Reforms in Malaysia

The weaknesses of corporate governance in Malaysia were exposed in Asian financial crisis of 1997. Since then, Malaysia has taken many active steps to improve the corporate sector and improving its corporate governance system. In 1998, a High Level Finance Committee was established by the Malaysian government to consider the establishment of framework for the corporate governance and develop optimal approach and policy for the corporate sector in Malaysia.

In March 2000, the Malaysian Code on Corporate Governance was first issued. This event is considered as an important major reform in the corporate governance. In October 2007, the finance committee on corporate governance issued the revised Malaysian Code on Corporate Governance to improve the quality of the board of public listed companies and strengthening the audit committee. Recently, Malaysian Code on Corporate Governance (2012) was introduced to strengthen the importance of board structure and board composition.

Bursa Malaysia Listing Requirements recommend that a director must not hold more than ten directorships in public listed firms and fifteen directorships in private firms to allow for active and smooth participation. However, the size of a board is not covered in the Malaysian Code of Corporate Governance.

Malaysian Code on Corporate Governance (2012) suggests that one third of the board has to be independent. The independent director is independent of management and has no business or other relationship to the company.

2.5 The Empirical Evidence on the Impact of Corporate Governance Factors on Financing and Investment Decisions.

This section consists of two sub-sections which provide the empirical evidence on the relationship between corporate governance factors and financing decision as well as the empirical evidence on the relationship between corporate governance factors and investment decision.

2.5.1 The Empirical Evidence on the Relationship between Corporate Governance Factors and Financing Decision

The term corporate governance has been defined in countless of ways. For instance, Metrick and Ishii (2002) describe corporate governance from the viewpoint of the investor as the promise of repaying a return on capital invested and to run the firm business efficiently in terms of investment options. The above definition indicates that the nature of the firm structure affects the firm's accessibility to the capital market. Meanwhile, the Cadbury Committee (1992) defines corporate governance as the systems directing and controlling companies.

Mayer (1997) considers corporate governance in two ways – aligning investors and managers' interest, and running the firm for the investors' benefit. Corporate governance is concerned with the association between mechanisms of internal governance and

society's conception of corporate accountability (Deakin & Hughes, 1997). Moreover, corporate governance was defined by Keasey, Thompson and Wright (1997) as including the structures, processes, cultures and systems that are significant to successful organizational operations. Meanwhile, Shleifer and Vishny (1997) describe corporate governance as the ways in which financial suppliers assure themselves of obtaining return of investment. Hence, the term can be summed up as the firm's established measures, processes, and responsibility and accountability statements to guarantee that it does well in terms of performance.

Friend and Lang (1988), Berger *et al*. (1997), Wen *et al*. (2002) and Abor (2007) examine the impact of corporate governance on firm's financing decisions. Their findings indicate the firm's nature of corporate governance affects its financing decisions. The primary characteristics of corporate governance that are expected to impact the financing decisions of the firm are; family ownership, government and state ownership, managerial ownership, board size and board composition. Nevertheless, the empirical evidence on corporate governance and capital structure are few and provide inconclusive results.

2.5.1.1 Family Ownership

Family companies are expected to use less debt in their financing mix for various reasons. First, family owners are likely to give more consideration to the financial distress and bankruptcy risks of debt. These two debt costs as proposed by the trade-off theory are due to their undiversified portfolios (Anderson & Reeb, 2003; Margaritis & Psillaki, 2010). Controlling families invest a great part of their wealth in their companies,

but even more important is the investment of family human capital in the business. As a consequence, family firms will have less debt in their financing mix due to the risk aversion of owner families (Gallo *et al*., 2004). Second, from corporate governance perspective, debt can be seen as a monitoring device that disciplines managers and large shareholders. Thus, if family owners seek to enjoy the private benefits of control, they will try to avoid using too much debt because of the monitoring role and potential constraints imposed by the creditors (King & Santor, 2008). These two arguments suggest a negative relation between family control and debt, and imply that controlling families could be pursuing their own personal objectives at the expense of other firms' shareholders.

On the other hand, family firms might prefer debt financing as opposed to equity financing for control motivations (Romano, Tanewski & Smyrnios, 2000; Lopez-Gracia & Sanchez-Andujar, 2007; King & Santor, 2008; Ellul, 2008; Croci, Doukas & Gonenc, 2011). By using more debt in their financing mix, owner families avoid the dilution of their control of the company and, at the same time, reduce the risk of a hostile takeover (King & Santor, 2008). The preference for debt rather than equity is consistent with pecking order theory.

Family firms can use debt to signal to the market that they have valuable investment opportunities and they are capable to serve the debt. Higher debt levels means the firms are subject to the scrutiny of creditors, which will contribute to alleviating agency conflicts. Family firms which are perceived to be less risky will have easier access to debt

financing, thus, they tend to use more debt (Margaritis & Psillaki, 2010). In brief, it is not clear whether family control and leverage are positively or negatively related. There are theoretical arguments to support either point of view. To date, the empirical evidence on the effect of family ownership on the financing policy is not conclusive either.

Anderson and Reeb (2003) find that family firms use similar amounts of debt as compared to non-family firms in the United States. Margaritis and Psillaki (2010) confirm Anderson and Reeb's results and provide empirical evidence that ownership type does not significantly influence a firm's debt usage. However, they show that higher levels of ownership concentration are associated with higher leverage, which suggests that block holders perceive debt as a governance mechanism that can be used to reduce the agency costs of managerial discretion and that these benefits of debt outweigh its potential bankruptcy costs. Nadaraja, Zulkafli and Masron (2011) show that family ownership in Malaysia does not significantly influence financing decision. Consistent with the dilution of control explanation, King and Santor (2008) find that family firms with no control-enhancing mechanisms issue more debt. Similarly, Ellul's (2008) main findings support the preference for debt by family-controlled corporations, in line with higher control motivations by owner families. Furthermore, Wu, Chua and Chrisman (2007) reveal a negative relation between family involvement and equity financing among small and medium sized enterprises, thus supporting the view that keeping tight control of the business is of paramount importance for family owners. Table 2.3 summarizes the relationship between family ownership and leverage.

Table 2.3

Summary of the Literature on the Relationship between Family Ownership and Leverage

Author (s) (Period)	**Methodology**	**Key Findings**	**Measurement of Leverage and Family Ownership**
Romano *et al*. (2000) (1997)	Principal Components Analysis (PCA) and OLS regression.	A positive relationship between family ownership and leverage.	Leverage is measured as respondents were requested to indicate the proportion of funding which was derived from debt, family loans, capital and retained profits, and equity (Total = 100%). Family ownership is measured as having block holder controlling 20% or more of the votes.
Lopez-Gracia and Sanchez-Andujar (2007) (1997-2004)	Pooled OLS regression.	Leverage is positively related to family ownership.	Leverage is measured as total debt to total asset. Family ownership is measured as family owning more than 50%.
King and Santor (2008) (1998 - 2005)	Pooled OLS regression.	A positive relationship between family ownership and leverage.	Leverage is measured as total debt to total assets. Family ownership is measured as having block holder controlling 20% or more of the votes.
Ellul (2008) (1992 - 2006)	OLS regression.	Leverage is positively related to family ownership.	Leverage is measured as total debt to total assets. Family ownership is measured as the founder, or descendents of his/her family is the largest block holder and has an ownership stake of at least 10% of cash flow rights.

Table 2.3 (Continued)

Author (s) (Period)	**Methodology**	**Key Findings**	**Measurement of Leverage and Family Ownership**
Croci *et al*. (2011) (1998 - 2008)	OLS regression.	A positive relationship between family ownership and leverage.	Leverage is defined as the ratio of book value of financial debt to the book value of total assets. Family ownership in which a family or individual is the largest shareholder with more than 10% of voting rights.
Anderson and Reeb (2003) (1993 - 1999)	OLS and 2SLS regression.	A negative relationship between family ownership and leverage.	Leverage as the ratio of long term debt to total assets. Family ownership is measured as having block holder controlling 20% or more of the votes.
Gallo *et al*. (2004) (1995)	OLS regression.	Leverage is negatively related to family ownership.	Leverage is measured as the total debt to total assets. Family ownership is measured as having block holder controlling 20% or more of the votes.
Wu *et al*. (2007) (1998 - 2000)	OLS regression.	A negative relationship between family ownership and leverage.	Leverage is measured as the equity to asset ratio. Family ownership got value of one, if the family owned more than 50% of the firm.

Table 2.3 (Continued)

Author (s) (Period)	**Methodology**	**Key Findings**	**Measurement of Leverage and Family Ownership**
Margaritis and Psillaki (2010) (2003 - 2004)	OLS regression.	Leverage is negatively related to family ownership.	Leverage is measured as total debt to total assets. Family ownership is measured as three different ranges of ownership holdings: low concentration with no shareholder holding more than a 25 percent stake in the company, intermediate concentration with the largest shareholder(s) holding between 25 and 50 percent and high concentration representing equity holdings in excess of 50 percent.
Nadaraja *et al* (2011) (2001 - 2006)	Fixed effect model	Leverage is not related to ownership by families.	Leverage is measured as debt ratio. Family ownership is measured as having block holder controlling 5% or more of the votes.

2.5.1.2 Government and State Ownership

There are differences between government and state ownership but it is impossible to distinguish between the two (Le & Buck, 2009). Nevertheless, in Malaysia, a unique environment is present where government and state ownership can be clearly differentiated. In particular, government linked companies (GLCs) are indirectly run by the government of Malaysia with the help of other government-linked investment companies (GLICs). As an example, Malaysia Airlines System Berhad (MAS Bhd.) is controlled by Khazanah Nasional Berhad (KNB). GLICs refer to government-controlled institutions whereby the government appoints and approves board members and senior management. The government holds the right to provide operational funds and to guarantee unit holders capital. Additionally, the government involves in making decisions such as contracting awards, strategies of mapping, financing and restructuring, and GLCs' acquisition and divestments (direct or otherwise) (Lau & Tong, 2008).

There are seven GLICs use in this study, namely Employees Provident Fund (EPF) or Kumpulan Wang Simpanan Pekerja, National Treasure Limited or Khazanah Nasional Berhad (KNB), Pension Trust Money Group or Kumpulan Wang Amanah Pencen (KWAP), Armed Forces Fund Board or Lembaga Tabung Angkatan Tentera (LTAT), Pilgrimage Fund or Lembaga Tabung Haji (LTH), Ministry of Finance Incorporation or Kementerian Kewangan Diperbadankan (KKD), and National Capitalisation Limited or Permodalan Nasional Berhad (PNB).

These GLICs are monitored by the Malaysian government and they can be separated into two different groups based on their source of funds, and this can be seen as in Figure 2.1. The first group has their funds provided by the government while the second one is provided by the unit holders. KNB, KKD and KWAP are under the first group and the others are under the second group.

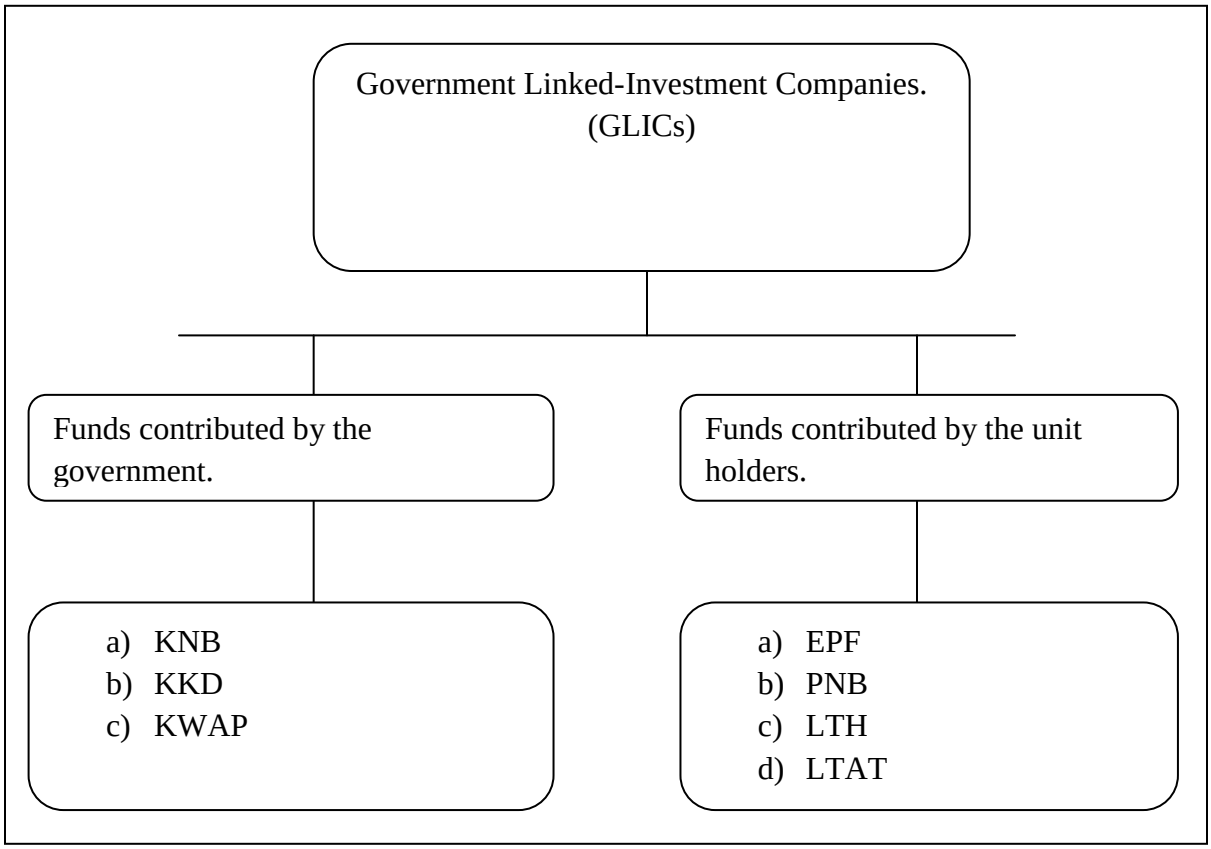

Figure 2.1
Categories of GLICs

KNB was incorporated on September 3, 1993, under the companies Act 1965. Its primary responsibilities are to manage the country's financial assets and to make strategic investments on behalf of the government.

Sharing the same goal as KNB, which is to promote economic growth, Kementerian Kewangan or Perbendaharaan Malaysia (KKD), is described as a corporate body set up by the Ministry of Finance (Incorporation) Act 1957. Its primary responsibilities are to guarantee economic growth characterized by sustainability and continuity, back national competitiveness and economic flexibility, ensure effective and strict financial management, undertake equitable sharing of national wealth, and improve life quality and the well-being of society.

Similarly, the Retirement Fund (Incorporated), also referred to as KWAP was established on 1st March, 2007 under the Retirement Fund Act 2007 (Act 662). It was mainly set up to help the Federal Government in distributing the fund towards the cost of payment of pension, gratuity or other benefits provided under the written law for public service officers and employees of statutory bodies and local authorities in a way that is authorized by the Ministry of Finance.

EPF was set up in 1951 and is deemed to be the world's first mandatory national pension fund for employees working in the private sector. EPF, as Malaysia's largest contractual savings institution, is a critical financial intermediary, offering a main source of long-term investment capital and it forms the core pillar of the country's social policy and social security system. In fact, the monthly contributions are invested in several approved financial instruments for income generation such as Malaysian Government Securities, money market instruments, loans and bonds, equity and property.

Another GLIC is PNB, which was incorporated on March 17, 1978. It was set up to be the pivotal instrument of the government's New Economic Policy in the hopes of promoting shared ownerships in the corporate sector among Bumiputera, and of developing options for appropriate Bumiputera professionals to contribute in wealth creation and management. The PNB group is managing funds totaling approximately RM150 billion and as such, it is deemed as the country's top investment institution characterized by a diversified portfolio of interests including unit trusts, institution property trust, property management and asset management.

LTH was established in 1962 with the objective of urging Malaysian Muslims to set aside some savings to perform pilgrimage in Mecca. This GLIC role has evolved over the years, from a saving depository to providing depositors returns. The investment advisory board of LTH includes Islamic scholars who ensure syariah compliant investments.

The final GLIC is LTAT, which is a statutory body set up by the act of Parliament, Tabung Angkatan Tentera (TAT) Act 1973 (Act 101). It was set up for the provision of retirement and benefits to members of armed forces ranks (compulsory contributors) and for enabling officers and mobilized members of the volunteer forces in the service to take part in the saving program.

In line with government ownership, state ownership also plays a crucial role in leading to a better company's performance. State ownership refers to the state owned assets or control over any asset in the country at state level. In Malaysia, this includes but not

limited to Johor Corporation, State Economic Development Corporations, Permodalan Negeri Selangor Berhad, Yayasan Islam Terengganu, Lembaga Kemajuan Perusahaan Pertanian Negeri Pahang, and Tabung Warisan Negeri Selangor.

Direct state ownership is frequently linked to the pursuit of political aims at the expense of the firm's stakeholders (Shleifer & Vishny, 1994). This is also supported by Dewenter and Malatesta (2001) whose study involved a sample of the world's 500 firms. They reveal that state owned enterprises (SOEs) are more highly leveraged and they do not perform as well as private firms. However, recent literature shows that firm specific and country specific factors in firms' leverage options vary throughout countries (Jong, Kabir & Nguyen, 2008; Akhtar & Oliver, 2009; Delcoure, 2007), and it particularly concentrates on the impact of state ownership and regional institutions upon the capital structure decisions of the firm. In addition, evidence from Brandt and Li (2003) and Cull, Xu and Zhu (2009) indicate that private firms are denied access to bank loans and they have to find recourse in significantly expensive trade credits.

Similarly, Li, Yue and Zhao (2009) reveal that state ownership positively relates with firm's leverage decisions. Meanwhile, Firth, Lin, Ping and Wong (2009) present that the state being a minority owner assists private firms to acquire external fund, particularly large firms.

High levels of government ownership may lead to increased moral hazard problems (Buck, Liu & Skovoroda, 2008). This could lead to negative relationship between

government ownership and leverage. Su (2010) shows that firms controlled by government possessed less leverage compared to their non-government controlled counterparts. Moreover, an insignificant relationship between state ownership extent and leverage is reported by Huang and Song (2006), Zou and Xiao (2006) and Hovey (2007). Therefore, the evidence is inconclusive as to the relationship between government or state ownership with leverage.

Table 2.4 summarizes the relationship between government and state ownership and leverage.

Table 2.4

Summary of the Literature on the Relationship between Government and State Ownership and Leverage

Author (s) (Period)	**Methodology**	**Key Findings**	**Measurement of Leverage and Government and State Ownership**
Dewenter and Malatesta (2001) (1975 - 1995)	OLS regression.	A positive relationship between leverage and government and state ownership.	Leverage is measured as total liabilities divided by assets. Government and state ownership is reported in Fortune magazine that distinguishes government-owned from privately owned firm.
Li *et al*. (2009) (2000 - 2004)	OLS regression.	Leverage is positively related to government and state ownership.	Leverage is measured as the total liabilities divided by total assets. Government and state ownership obtained from the National Bureau of Statistics.
Su (2010) (2000 - 2006)	OLS regression.	A negative relationship between leverage and government and state ownership.	Leverage is measured as the book value of total debts divided by the book value of total assets, the book value of total debts divided by the sum of the book value of total debts and market value of equity and the book value of long term debts divided by the sum of the book value of total debts and market value of equity. State ownership is measured as a dummy variable that takes one if government is the ultimate owned.

Table 2.4 (Continued)

Author (s) (Period)	**Methodology**	**Key Findings**	**Measurement of Leverage and Government and State Ownership**
Huang and Song (2006) (1994 - 2000)	OLS regression.	The relationship between government ownership and leverage is not significant.	Leverage is measured as the total liabilities ratio. State ownership is measured as total percentage of state ownership.
Zou and Xiao (2006) (1993 - 2000)	Pooled OLS regression.	There is no significant relationship between government ownership and leverage.	Leverage is measured as total debt to book value of total assets, total debt to market value of the firm, long term debt to book value of total assets and long term debt to market value of the firm. State ownership is normally held by government agencies (Bureau of State Assets Management) or wholly state-owned companies.
Hovey (2007) (1999 - 2005)	OLS regression.	The relationship between government ownership and leverage is not significant.	Leverage is measured as the total debt to equity ratio. State Ownership obtained from various Taiwan Economic Journal.

2.5.1.3 Managerial Ownership

Agency theory concludes that debt can play a very important role in supervising operator activity to protect shareholder's interest and reduce agency problem (Grossman & Hart, 1980) while information asymmetry theory suggests that debt could be used as a positive signal for the firms.

Berger *et al*. (1997) and Chen and Steiner (1999) find that managerial ownership and leverage are positively related. Bajaj *et al*. (1998) suggest that debt can be used as a signal by the management to mitigate managerial entrenchment, and find that insider ownership is positively related with leverage level of the firm.

However, Friend and Lang (1988), Jensen, Solberg and Zorn (1992), Hasan and Butt (2009) and Uwuigbe (2014) find negative relationship between managerial ownership and leverage. Their findings show that managers reduce the level of leverage to avoid the bankruptcy risk of the firm.

Finally, Ruan, Tian and Ma (2009) find a non-linear relationship between managerial ownership and financing decision. They show that at low managerial ownership level debt ratio is high. However, at higher managerial ownership level, managers start to seek private benefits. Therefore, the level of debt goes down.

Table 2.5 summarizes the relationship between managerial ownership and leverage.

Table 2.5

Summary of the Literature on the Relationship between Managerial Ownership and Leverage

Author (s) (Period)	**Methodology**	**Key Findings**	**Measurement of Leverage and Managerial Ownership**
Berger *et al*. (1997) (1984 - 1991)	OLS regression.	Leverage is positively related to managerial ownership.	Leverage is measured as the total debt divided by assets. Managerial ownership is defined as CEO direct stockownership.
Jensen *et al*. (1992) (1982 - 1987)	3SLS regression.	Leverage is negatively related to managerial ownership.	Leverage is measured as a ratio of long term debt to the book value of total assets. Managerial ownership is defined as a percentage of shares held by insiders.
Hasan and Butt (2009) (2002 - 2005)	Pooled OLS regression.	A negative relationship between managerial ownership and leverage.	Leverage is measured as debt to equity ratio. Managerial ownership is measured as percentage of shares held by members of board disclosed in annual financial reports.
Chen and Steiner (1999) (1991 - 1993)	2SLS regression.	Leverage is positively related to managerial ownership.	Leverage is measured as the total debt divided by assets. Managerial ownership is measured as a percentage of shares held by insiders.
Friend and Lang (1988) (1978 - 1983)	OLS regression.	Leverage is negatively related to managerial ownership.	Leverage is measured as the total debt divided by assets. Managerial ownership is measured as a percentage of shares held by insiders.

Table 2.5 (Continued)

Author (s) (Period)	**Methodology**	**Key Findings**	**Measurement of Leverage and Managerial Ownership**
Ruan *et al*. (2009) (2002 - 2007)	OLS regression.	A non-linear relationship between managerial ownership and financing decision.	Leverage is measured as debt ratio. Managerial ownership is measured as percentage of shares held by members of the board.
Uwuigbe (2014) (2006 - 2011)	OLS regression.	Leverage is negatively related to managerial ownership.	Leverage is measured as the total debt divided by assets. Managerial ownership is measured as a percentage of shares held by insiders.

2.5.1.4 Board Size

Any corporate entity's board is deemed to be the top decision making body responsible for ensuring that firms operate in an efficient and competitive manner. Pfeffer and Selancick (1978) and Lipton and Lorsch (1992) find that board size has a significant association with the financing decision made by the firm.

Table 2.6 summarizes the relationship between board size and leverage and shows mixed results regarding the effect of board size on financing decision. Specifically, firms that have large boards have a tendency to maintain low debt ratio and prefer to issue equity (Berger *et al*., 1997). The underlying notion is that a large board eventually translates to the board's coercion of management to depend less on debt to improve the value of the firm as high leverage level could lead to financial distress (Hasan & Butt, 2009).

On the other hand, a positive impact is reported by Wen *et al*. (2002), Abor (2007) and Saad (2010). These findings show that large boards display more entrenching because they are monitored by regulatory entities and they focus on high debt level to improve the value of the corporation. This may also be explained through the hardness of reaching an agreement in decision making, and hence this situation leads to the weakening of corporate governance and high dependence on leverage. Moreover, in a study by Anderson, Mansi and Reeb (2004) they report that the cost of debt is lower for firms with larger boards owing to the creditors' perception that these firms primarily have effective monitoring mechanisms in place. However, Wiwattanakantang (1999) shows no association between board size and leverage.

Table 2.6
Summary of the Literature on the Relationship between Board Size and Leverage

Author (s) (Period)	**Methodology**	**Key Findings**	**Measurement of Leverage and Board Size**
Wen *et al*. (2002) (1996 - 1998)	OLS regression.	A positive relationship between board size and leverage.	Leverage is measured as the total debt divided by assets. Board size is defined as number of directors.
Abor (2007) (1998 - 2003)	OLS regression.	Leverage is positively related to board size.	Leverage is measured as the total debt divided by assets. Board size is defined as number of board members for a firm.
Berger *et al*. (1997) (1984 - 1991)	OLS regression.	A negative relationship between board size and leverage.	Leverage is measured as the total debt divided by assets. Board size is defined as number of directors.
Saad (2010) (1998 - 2006)	OLS regression.	A positive relationship between board size and leverage.	Leverage is measured as the total debt divided by assets. Board size is defined as number of directors.
Hasan and Butt (2009) (2002 - 2005)	Pooled OLS regression.	A negative relationship between board size and leverage.	Leverage is measured as the total debt divided by assets. Board size is defined as number of board members for a firm.

Table 2.6 (Continued)

Author (s) (Period)	Methodology	Key Findings	Measurement of Leverage and Board Size
Wiwattanakantang (1999) (1996)	OLS regression.	board size is not related to leverage	Leverage is measured as the total debt divided by assets. Board size is defined as number of board members for a firm.

2.5.1.5 Board Composition

The nature of the board composition (proportion of non-executive members to total members) and capital structure relationship is still ambiguous. Based on the resource dependence theory proposed by Pfeffer (1973) and Pfeffer and Salancick (1978), a firm with more external directors improves its ability to protect itself against the external environment and risks. In other words, the firm's ability to raise funds or increase its value is enhanced. Hence, a greater number of non-executive directors in a firm is linked to high debt level.

Similarly, the contention that firms that have more external directors have a tendency to obtain more debt supports the resource dependence theory (Abor, 2007; Berger *et al*., 1997; Kajananthan, 2012). However, some studies (Wen *et al*., 2002; Al-Najjar & Hussainey, 2011) report a negative relationship between external directors' proportion and leverage suggesting that low percentage of independent directors leads to higher leverage, which shows that firms will use creditors to monitor the directors of the firm.

Table 2.7 summarizes the relationship between board composition and leverage.

Table 2.7
Summary of the Literature on the Relationship between Board Composition and Leverage

Author (s) (Period)	**Methodology**	**Key Findings**	**Measurement of Leverage and Board Composition**
Berger *et al*. (1997) (1984 - 1991)	OLS regression.	Leverage is positively related to board composition.	Leverage is measured as the total debt divided by assets. Board composition is defined as a percentage of outside directors.
Abor (2007) (1998 - 2003)	Pooled OLS regression.	A positive relationship between board composition and leverage.	Leverage is measured as the total debt divided by assets. Board composition is defined as a number of outside directors to total number of directors for firm.
Wen *et al*. (2002) (1996 - 1998)	OLS regression.	Leverage is negatively related to board composition.	Leverage is measured as the total debt divided by assets. Board composition is defined as a percentage of outside directors in the board.
Al-Najjar and Hussainey (2011) (1991 - 2002)	Pooled OLS regression.	A negative relationship between board composition and leverage.	Leverage is measured as long term debt to equity ratio. Board composition is defined as a percentage of outside directors in the board.

2.5.2 The Empirical Evidence on the Relationship between Corporate Governance Factors and Investment Decision

The present study does not generally highlight corporate governance and firm performance but it investigates the way governance structures influence the investment and growth opportunities of the firm.

On the basis of agency theory, corporate governance practices are related to information asymmetry and such asymmetry is higher for growth firms because their managers are privy to confidential information regarding future projects value and their actions are hidden from shareholders. Therefore, higher agency costs of shareholder/manager are related to high growth firms, and these firms require more stringent corporate controls (Hutchinson & Gul, 2004).

Similarly, according to Smith and Watts (1992), the transparency of management's actions decreases with the rising investment opportunities of the firm. This could be explained by the fact that the growth options value is measured by discretionary management expenditure, where assets in place require no investment (Gaver & Gaver, 1993). Previous studies show that corporate governance influences firms' investment decisions (e.g. Hutchinson, 2002; Maury, 2006; Lerner *et al*., 2010).

The primary corporate governance characteristics that have been reported to impact firm's investment decisions are family ownership, government and state ownership, managerial ownership, board size and board composition.

2.5.2.1 Family Ownership

Families control a significant proportion of corporations worldwide (Burkart, Panunzi & Schleifer, 2003). A study by Claessens, Djankov, Fan and Lang (2002) shows that more than two-thirds of the firms in East Asia are under family control. Similarly, Anderson and Reeb (2003) reveal that founding families constitute one-third of the S&P 500 corporations in the U.S. and 44% of the total firms in Western Europe are controlled by families (Faccio & Lang, 2002).

Finance literature sheds a light on the potential conflicts of interest that occurs between large, powerful owners and the stakeholders of the firms (Croci & Petmezas, 2010). Fama and Jensen (1985) document that large, undiversified shareholder are more likely to advocate investment rules on the basis of their personal risk preferences as opposed to market-based rules preferred by non-family shareholders. In addition, according to Gompers and Lerner (2000), influential family owners have a tendency to invest in projects corresponding to their investment circles while disregarding the shareholders' interests. Other studies note that large, influential owners can minimize agency problems among firm stakeholders. Edmans (2009) contends that the existence of block holders eases up managerial pressure to undertake myopic investment decisions.

Some other studies contended that family ownership can lead to superior investment decisions because of two reasons; family owned firms reach superior decisions regarding investment as they possess higher firm specific knowledge and they have longer-term investment outlook. Also, family owned firms decrease the principal-agent issue and

promote management and shareholders' incentive consistency (Fama & Jensen, 1983). In other words, families have a higher tendency to oversee management as the family wealth is closely linked to net present value projects. Many empirical studies support the positive influence of family ownership such as Anderson and Reeb (2003), McConaughy, Walker, Henderson and Mishra (1998), Villalonga and Amit (2006) and Maury (2006).

Contrasting arguments have also been documented concerning family ownership in that it is reported to have a negative impact on investment because of three reasons; the first reason lies in the fact that family owners employ control-enhancing mechanisms to acquire private advantages from the firm although it may go against the minority shareholders' interests (Lease, McConnell & Mikkelson, 1984). The second reason is attributed to family-controlled firms display of excessive risk-aversion and the tendency to take on mergers or other opportunities for expansion owing to their concern for the family bequest (Morck *et al*., 2000). The final reason is that family firms often obtain family members' participation in the strategy-making process of the firm (Eddleston & Kellermanns, 2007) and in the employment of employees on the basis of their status rather than their qualifications and experience (Kellermanns & Eddleston, 2004). Consequently, management and governance bodies in such firms are ineffective and they are marked by less professionalism (Martinez, Stohr & Quiroga, 2007). These negative effects are also contended by Faccio, Lang and Young (2001), Claessens and Fan (2002), Cronqvist and Nilsson (2003) and Yeh and Woidtke (2005).

Table 2.8 summarizes the relationship between family ownership and investment.

Table 2.8

Summary of the Literature on the Relationship between Family Ownership and Investment

Author (s) (Period)	**Methodology**	**Key Findings**	**Measurement of Investment and Family Ownership**
McConaughy *et al*. (1998) (1986 - 1988)	OLS regression.	Investment is positively related to family ownership.	Investment is measured as the market to book value ratio. Family ownership indicated as dummy variable.
Anderson and Reeb (2003) (1993 - 1999)	OLS and 2SLS regression.	A positive relationship between family ownership and investment.	Investment is defined as the market value of assets minus the book value of assets, scaled by total assets.
Villalonga and Ami (2006) (1994 - 2000)	OLS regression.	Investment is positively related to family ownership.	Investment is measured as a ratio of the firm's market value to total assets. Family ownership is defined as a ratio of the number of shares of all classes held by the family to total shares outstanding. At least 5% of the firm's equity.
Maury (2006) (1998 - 2003)	2SLS regression.	A positive relationship between family ownership and investment.	Investment is measured as a ratio of the firm's market value to total assets. Family ownership is set equal to one if the largest controlling shareholder holding at least 10% of the voting rights is a family, an individual, or an unlisted firm, and zero otherwise.

Table 2.8 (Continued)

Author (s) (Period)	**Methodology**	**Key Findings**	**Measurement of Investment and Family Ownership**
Cronqvist and Nilsson (2003) (1991 - 1997)	OLS regression.	Investment is negatively related to family ownership.	Investment is measured as the ratio of the market value of total assets to the replacement cost of total assets. Family ownership controlling shareholder holding at least 25% of the voting rights.
Yeh and Woidtke (2005) (1998)	OLS regression.	A negative relationship between family ownership and investment.	Investment is measured as the sum of the market value of equity and the book value of debt divided by the book value of assets. Family ownership is the largest control rights when summing direct and indirect voting rights (30%).

2.5.2.2 Government and State Ownership

Government or state control influences corporate investment decisions because they have to fulfil certain public policy goals. In addition, the investment decision making is also influenced by the agency problems inherent in state ownership. The general belief regarding this type of ownership is that such ownership will serve as a monitoring mechanism that would lead to superior performance after controlling for certain firm characteristics (Ab Razak, Ahmad & Aliahmed, 2008). A more accurate contention would be that with the government intervention, the firm's management is highly conscious of the significance of increasing shareholder's value and not of self-serving interests (Lau & Tong, 2008). Also, several studies claim that government-controlled firms are managed more effectively (e.g. Caves & Christensen, 1980; Kay & Thompson, 1986; Kole & Mulherin, 1997; Ramirez & Tan, 2004; Ang & Ding, 2006).

Empirical studies on the relationship between government ownership and investment decision measured by Tobin's Q in Malaysia show only a positive impact (Mat Nor *et al*., 2002; Ab Razak *et al*., 2008; Lau and Tong, 2008; Sulong and Mat Nor, 2010; Ghazali, 2010, Najid *et al*., 2011). Their results show that government has an effective controlling role and lead to better growth opportunities. In addition, managers of government investment companies have incentives to supervise the firm value due to their promotion that is connected to the performance of the firm.

On the other hand, Shleifer (1998) argues that government or state ownership do not encourage managers to innovate, implement reduction of costs, and improve the firm

value. Consequently, managers might become risk averse because the government can fire them if they do not perform well. Thomsen and Pedersen (2000), Wei and Varela (2003), Gunasekarage *et al*. (2007), Yuan *et al*. (2008) report a negative relationship between government or state ownership and investment decision. Their results means that higher government or state ownership in listed companies have insignificant role to control managers. Therefore, decrease the value of the firm by not taking valuable investment opportunities.

Table 2.9 summarizes the relationship between government and state ownership and investment decision.

Table 2.9

Summary of the Literature on the Relationship between Government and State Ownership and Investment

Author (s) (Period)	**Methodology**	**Key Findings**	**Measurement of Investment and Government and State Ownership**
Ramirez and Tan (2004) (1994 - 1998)	OLS regression.	A positive relationship between government and state ownership and investment.	Investment is Tobin's Q. Government and state ownership is measured as GLICs percentage of firms.
Ang and Ding (2006) (1990-2000)	OLS and 2SLS regression.	Investment is positively related to government and state ownership.	Investment is Tobin's Q. Government and state ownership is measured through government agency (Temasek) and its GLC subsidiaries, and Temasek must hold an effective ownership interest of around 20% or more in a listed company.
Mat Nor *et al*. (2002) (1990 - 2001)	Pooled OLS regression.	A positive relationship between government ownership and investment.	Investment is Tobin's Q. Government ownership is measured as percentage of total equity of government ownership.
Ab Razak *et al*. (2008) (1995 - 2005)	Fixed effect model.	A positive relationship between government ownership and investment.	Investment is Tobin's Q. Government ownership is measured as cut off point of 20% of the voting shares of the company.
Lau and Tong. (2008) (2000 - 2005)	OLS regression.	A positive relationship between government ownership and investment.	Investment is Tobin's Q. Government ownership is measured as the percentage of KNB equity in each of the 90 GLCs firm-year.

Table 2.9 (Continued)

Author (s) (Period)	**Methodology**	**Key Findings**	**Measurement of Investment and Government and State Ownership**
Sulong and Mat Nor (2010) (2002 - 2005)	GLS regression.	A positive relationship between government ownership and investment.	Investment is Tobin's Q. Government ownership is measured as percentage of total equity of government ownership.
Ghazali (2010) (2002)	OLS regression.	A positive relationship between government ownership and investment.	Investment is Tobin's Q. Government ownership is measured as greater than zero percentage of the voting shares of the company.
Najid *et al*. (2011) (2001 - 2006)	OLS regression.	A positive relationship between government ownership and investment.	Investment is Tobin's Q. Government ownership is measured as percentage of total equity of government ownership.
Thomsen and Pedersen (2000) (1990 - 1995)	OLS regression.	A negative relationship between government ownership and investment.	Investment is Tobin's Q. Government ownership is measured as percentage of total equity of government ownership.
Wei and Varela (2003) (1994 - 1996)	OLS regression.	A negative relationship between government ownership and investment	Investment is Tobin's Q. Government ownership is measured as percentage of total equity of government ownership.

Table 2.9 (Continued)

Author (s) (Period)	**Methodology**	**Key Findings**	**Measurement of Investment and Government and State Ownership**
Gunasekarage *et al*. (2007) (2000 - 2004)	OLS regression.	A negative relationship between government ownership and investment	Investment is Tobin's Q. Government ownership is measured as percentage of total equity of government ownership.
Yuan *et al*. (2008) (2001 - 2005)	OLS regression.	A negative relationship between government ownership and investment	Investment is Tobin's Q. Government ownership is measured as percentage of total equity of government ownership.

2.5.2.3 Managerial Ownership

It is expected to find two opposing effects, the incentive and the entrenchment effect, when studying the effect of managerial ownership on investment decision (Shleifer and Vishny 1997, Morck, Wolfenzon & Yeung, 2005). Incentive effect shows that managerial ownership is one mechanism to align the interests of the owners and the managers (Morck *et al*., 1988). Increasing stake ownership of the firm would enable alignment between manager's and owner's interests. It is a mechanism of alignment that limits managerial discretion to minimize ex-post misappropriation of assets (e.g. Holmstrom, 1979). From this incentive effect a positive relationship between managerial ownership and investment decision is expected.

On the other hand, Entrenchment effect shows that the higher the number of shares the manager has the less power the remaining firm owners has upon his decisions. This facilitates management's undertaking of particular investments that complement his skills and reinforces his bargaining power, and in turn, leads to entrenchment (Shleifer & Vishny, 1989). In other words, higher level of security enables a manager to keep his position and reinforce it with his bargaining power in order to conduct selfish strategies that are detrimental to the company and the shareholders' wealth. Hence, managers are expected not to maximize firm value and the probability of a negative relationship between managerial ownership and investment decision arises.

The empirical research on the incentive and the entrenchment effect can be traced back to the pioneering study of Morck *et al*. (1988) who revealed a positive relationship between

management ownership and Tobin's Q in the ownership range of 0%-5%, a negative one from the ownership range of 5%-25%, and finally, a positive one from ownership range exceeding 25%. Several other studies reported a non-linear association in a u-shape form (e.g. McConnell & Servaes, 1990; Gugler, Mueller & Yurtogly, 2008).

A study by Cosh, Fu and Hughes (2007) find that insider ownership positively impacts the efficiency to undertake projects at low levels of ownership until it increases to approximately 65-68% of ownership and then the effect becomes negative. Similarly, Wright, Ferris, Sarin and Awasthi (1996) contend that the insider ownership and corporate investment decision to take risky projects relationship is positive at low percentage of insider ownership while at higher percentage, it turns to be negative.

Most studies reveal that management control or ownership positively impacts the firm's investment decision (e.g. Baysinger, Kosnik & Turk, 1991; Makri, Lane & Gomez-Mejia, 2006; Lhuillery (2009); Lerner *et al*., 2010). Meanwhile, some other studies reveal that managerial ownership negatively impacts the firm's investment decision (e.g. Munari, Oriani & Sobrero, 2005; Hall & Oriani, 2006; Wahla *et al*., 2012).

Table 2.10 summarizes the relationship between managerial ownership and investment.

Table 2.10
Summary of the Literature on the Relationship between Managerial Ownership and Investment

Author (s) (Period)	**Methodology**	**Key Findings**	**Measurement of Investment and Managerial Ownership**
Lhuillery (2009) (2000)	OLS regression.	A positive relationship between managerial ownership and investment.	Investment is measured as R&D budget over the number of employees. Managerial ownership is the total ownership by directors.
Munari *et al*. (2005) (1996)	OLS regression.	Investment is negatively related to managerial ownership.	Investment is measured as R&D expenditures. Managerial ownership is the total ownership by directors.
Hall and Oriani (2006) (1989 - 1998)	OLS regression.	A negative relationship between managerial ownership and investment.	Investment is measured as R&D expenditures. Managerial ownership is the total ownership by directors .
Baysinger *et al*. (1991) (1981 - 1983)	OLS regression.	A positive relationship between managerial ownership and investment.	Investment is measured as R&D spending. Managerial ownership is the total ownership by directors.
Makri *et al*. (2006) (1992 - 1995)	Fixed effects model	A positive relationship between managerial ownership and investment.	Investment is measured as R&D expenditures to sales. Managerial ownership is the total ownership by CEOs.
Wahla *et al*. (2012) (2008 - 2010)	Common effect model	Investment is negatively related to managerial ownership.	Investment is measured as Tobin's Q. Managerial ownership is the total ownership by directors.

2.5.2.4 Board Size

Even when the board's monitoring capacity increases with an increase of its size, the outcome costs will still exceed the benefits (Lipton & Lorsch, 1992). A large sized board is often more diversified, susceptible to arguments and displays less cohesiveness. On the other hand, smaller sized boards are more likely to react to the changing environment. Hence, an appropriate board size that encourages technological innovation mainly hinges on the balance of the impact of the expanding company size upon technology innovation.

A study by Kyereboah-Coleman (2008) reveals that board size positively influences the firm's growth opportunities. This means the larger the board, the higher will be the firm's growth which could be attributed to the effective management monitoring of large boards.

The benefits of large board are offset by poor communication and decision making (Kajola, 2008). This is the reason why the board size should be confined to a specific level in order to enhance the firm's performance. In an excessively large board, coordination, processing and tackling strategic organizational issues becomes difficult. Hence, large boards are less efficient (Lipton & Lorsch, 1992) and negatively affect the growth opportunities (Gill & Mathur, 2011).

A study by Renjun and Chen (2010) attempts to further explain the relationship between board size and investment opportunities. Their sample study comprised of Chinese listed companies and their results show that board size is negatively correlated with growth. In

other words, a large scale board is detrimental to the firm as it negatively impacts its growth opportunities. Similarly, Gill and Mathur‘s (2011) study involves a sample of 91 Canadian firms listed on the Toronto Stock Exchange for the years 2008-2010. They find based on the regression analysis results, that growth opportunities positively relates to its board size and return on assets but negatively relates to the size of its board.

Yang and Yu (2011) look at 500 listed companies in China from 2006 to 2009. They examine the impact of corporate governance on firm growth and reveal an insignificant relationship exists between board size and growth opportunities.

Table 2.11 summarizes the relationship between board size and investment.

Table 2.11

Summary of the Literature on the Relationship between Board Size and Investment

Author (s) (Period)	**Methodology**	**Key Findings**	**Measurement of Investment and Board Size**
Kyereboah-Coleman (2008) (1997 - 2001)	OLS regression.	Investment is positively related to board size.	Investment is Tobin's Q. Board size is measured as the number of directors serving on such boards.
Kajola (2008) (2000 - 2006)	OLS regression.	Investment is negatively related to board size.	Investment is measured as return on Equity. Board size is measured as a number of directors on the board.
Renjun and Chen (2010) (2004 -2008)	OLS regression.	A negative relationship between board size and investment.	Investment is measured as the increase in the amount of total assets over beginning total assets. Board size is measured as the number of all the board of directors.
Gill and Mathur (2011) (2008 - 2010)	OLS regression.	Investment is negatively related to board size.	Investment is measured as market value of equity plus the book value of debt scaled by the book value of total assets. Board size is measured as number of directors on the board.
Yang and Yu (2011) (2006 - 2009)	OLS regression.	An insignificant relationship exists between board size and growth opportunities.	Investment is measured as the increase in the amount of total assets over beginning total assets. Board size is measured as the number of all the board of directors.

2.5.2.5 Board Composition

Many studies have examined the advantages of corporate boards as a control mechanism Munter and Kren (1995) argue that board composition mitigates managerial opportunism and urges proper supervision of management. Accordingly, empirical studies show that a high percentage of external directors has a tendency to improve decision making leaning towards the interest of external shareholders and hence, improving firm growth (Brickley, Coles & Jarrell, 1997; Conyon & Peck, 1998; Tosi, Katz & Gomez, 1997; Weisbach, 1988).

However, this argument is challenged by the theory of managerial hegemony by stipulating that boards are basically passive tools because of their obedience to management who is responsible for their appointment. Such boards lack firm knowledge and arguably depend on managers for information (Coles, McWilliams & Sen, 2001). As such, it is believed that monitoring manager's actions in growth firms is quite difficult.

Studies that investigate the board composition and firm investment opportunities relationship have frequently results in conflicting and inconclusive outcomes. To begin with, Bathala and Rao (1995) along with Hutchinson (2002) find a negative relationship between outside directors' proportion and firm's investment opportunities. Contrastingly, Hossain, Cahan and Adams (2000) report a positive relationship between proportion of external directors on the board and growth opportunities. Meanwhile, Anderson, Francis and Stokes (1993) reveal that growth firms spend more costs on monitoring, specifically in forms of auditor and director fees. Also, in some cases, it is believed that where growth

firms have a greater percentage of executive directors on the board, management has higher discretion when it comes to investment options (Hutchinson & Gul, 2004). In these situations, the possibility that shareholders as well as creditors will demand for greater proportion of external directors on the board, arises and this serves as moderation on agency costs. This is because higher proportions of external directors on the board are believed to be good protection of both debt holders and shareholders' investment. Finally, empirical studies in Malaysia show no association between board composition and investment decisions (Najid *et al*., 2011; Ghazali, 2010).

Table 2.12 summarizes the relationship between board composition and investment.

Table 2.12

Summary of the Literature on the Relationship between Board Composition and Investment

Author (s) (Period)	**Methodology**	**Key Findings**	**Measurement of Investment and Board Composition**
Tosi *et al*. (1997) (1997)	OLS regression.	Investment is positively related to board composition.	Investment is measured as research and development expenditure. Board composition the percentage of outside directors.
Hossain *et al*. (2000) (1995)	OLS and 2SLS regression.	Investment is positively related to board composition.	Investment market value of the firm to book value of assets. Board composition the percentage of outside directors.
Hutchinson (2002) (1998)	2SLS regression.	Investment is negatively related to board composition.	Investment is measured using factor analysis, the three variables used as proxy measures of growth are: market value of assets to book value of assets ratio, market to book value of equity ratio and ratio of gross plant, property and equipment to market value of the firm. Board composition the percentage of outside directors.
Najid *et al*. (2011) (2001 - 2006)	OLS regression.	Investment is not related to board composition.	Investment is measured as Tobin's Q Board composition the percentage of outside directors.
Ghazali (2010) (2001)	OLS regression.	Investment is not related to board composition.	Investment is measured as Tobin's Q Board composition the percentage of outside directors.

2.6 Instrumental Variables

This study examines the simultaneous relationship between financing and investment decisions along with corporate governance factors. The endogenous relationship is caused by the presence of the simultaneity in the model leads to inconsistent and biased estimation if OLS is used. Therefore this research uses two stage least square (2SLS) technique in order to recognize the effects of simultaneity and to solve the endogeneity issue. The 2SLS requires at least one instrumental variable for each dependent variable on the equation to mitigate the biased and inconsistent estimators. This study uses two instrumental variables for financing decision and two instrumental variables for investment decision. Each of instrumental variables is discussed below.

2.6.1 Tangibility Ratio

Asset-in-place or commonly known as tangible assets can serve as collaterals which in turn reduce the default risk for lenders. When collateralized debts are provided, firms have less incentive to use the borrowed funds inappropriately. This situation makes asset substitution and debt overhang less likely to occur (Myers, 1977). Furthermore, Myers (1984) argues that cost of actual financial distress when financial trouble takes place depends on the tangibility of assets. Firms with more intangible assets face the lack of active secondary market where it can sell its intangible assets. In financial distress situation, firms with more tangible assets get liquidation as an additional strategic choice (Harris & Raviv, 1991) to avoid greater loss of value. Thus, if a firm with high amount of intangible portion in its asset composition issues more debt, its financial distress costs are higher than a firm with more tangible assets.

2.6.2 Non-Debt Tax Shields

Literature dedicated to corporate finance reveals the significance of tax consideration in the capital structure decisions. For instance, DeAngelo and Masulis (1980) bring forward an optimal capital structure model geared towards corporate and personal taxation and non-debt related corporate tax shield. According to them, at higher leverage levels expected marginal corporate tax benefit is negative because the potential tax shields is offset through the risk of bankruptcy. This contention is aligned with that of Ross (1985) who argues that the firm's interest tax savings expected value declines as available non debt tax shields increases. Therefore, increasing non debt tax shields diminishes the incentive to finance with debt.

In sum, the above discussed studies show that firms with large non-debt tax shield compared to their expected cash flow are inclined to utilize lower debt in their capital structure because the shield offers similar tax advantage as debt. As such, according to the trade-off theory, a negative correlation exists between non-debt tax shield and leverage. Rajan and Zingales (1995), Hirota (1999) and Wiwattanakantang (1999) claim a significant negative relationship.

However, a positive relationship argument by Scott (1977) and Moore (1986) states that companies with considerable non-debt tax shields consistently have substantial collateral assets which can be used to secure debt. Therefore, a positive correlation exists between non-debt tax shield and leverage. This relationship is supported by conclusive empirical results. Bradley, Jarrell and Han Kim (1984) and MacKie-Mason (1990) report the

existence of a significant and positive association between non-debt tax shield and leverage. Finally, Titman and Wessels (1988) and Allen and Mizuno (1989) report mixed results for various measurements of debt ratios.

2.6.3 Sales Growth

A significant sales' growth is believed to increase the cash flows of the firm and may also signal growth options. In Odit and Chittoo's (2008) study, they examine the influence of financing decision on the firm's investment opportunities to highlight the impact of financial leverage on investment decision. They consider sales growth among the determinants of investment decision.

Bojnec and Latruffe (2007) investigate the investment decisions of Slovenian firms during the transition and adjustment period to European Union (EU) membership and in particular whether these decisions were constrained by financing availability. They argue that the standard accelerator model suggests investment decisions are based on sales' growth. Their findings show that sales growth is a major determinant of investment decisions for Slovenian firms.

2.6.4 Cash Flow

The firm investment decisions were examined by Booth and Cleary (2006) during the presence of market imperfections that disrupts the cost of internal and external financing. They propose a theoretical model that includes cash flow volatility that considerably impacts investment decisions.

Cash flow is believed to impact investment as capital markets are not perfect and internal finance is relatively cheaper compared to external finance. Accordingly, cash flow is expected to play a key role on investment for firms that are faced with financial constraints.

In a related study, Fazzari, Hubbard, Peterson, Blinder and Poterba (1988) use a sample of 400 firms for the years 1970 to 1984 and find that levels of investment are associated to cash flow. Similarly, Odit and Chittoo (2008) report that cash flow determines investment decisions among companies in Mauritius.

2.7 Control Variables

This study uses the following variables to control for firm specific characteristics that have a potential influence on the financing and investment decisions. These control variables are profitability, firm size, interest rate and corporate tax.

2.7.1 Profitability

Myers and Majluf (1984) argue that companies prefer inside sources of financing to outside sources. The results suggest that in line with pecking order theory, companies prefer inside funds, followed by debt, and finally the external equity to finance new projects. Thus, a highly profitable company raises lower debt due to its higher internal funds.

On the basis of the agency theory, Jensen (1986) and Williamson (1988) propose debt as management's disciplining instrument. Some studies (Wiwattanakantang, 1999; Wald, 1999; Booth, Aivazian, Kunt-Demiguc & Maksimovic, 2001) reveal a significant and positive relationship between profitability and financial leverage while other studies (Long & Maltiz, 1985) find an insignificant relationship between leverage and profitability. Another group of studies (Kester, 1986; Titman & Wessels, 1988; Wald, 1999; Huang & Song, 2006) reveal a negative relationship between financing decision and profitability.

Investment is affected by profitability as spending on new projects may be restricted by the supply of money which, in turns, are related to profitability expected (Meyer & Kuh, 1957; Anderson, 1964; Meyer & Glauber, 1964). This is called liquidity theory of investment (Antonakis, 1987; Toit & Moolman, 2004). If firms expect a high level of profits, then the decision to undertake an investment will be positively influenced (Lianos & Mpenos, 1996). It is also obvious that if there is a decrease in profitability the effect on future investment could be negative (Sarantidis, 1995). In other words, firms with higher profits invest more (Romer, 1996).

2.7.2 Firm Size

Titman and Wessels (1988) argue that the liquidation values of larger firms are higher than their smaller counterparts since larger firms tend to be more diversified. Therefore, at bankruptcy, creditors will get a partial payment. Consequently, large firms may be more inclined to use higher level of leverage because the agency costs of debt is lower.

This is evidenced by studies (Friend & Lang, 1988; Marsh, 1982; Huang & Song, 2006) that find a positive relationship between firm size and financial leverage. However, Rajan and Zingales (1995) argue that large firms display lower asymmetry of information thus, they can easily issue more equity compared to their smaller counterparts. This may result in the negative relationship between firm size and financing decision (Kester, 1986; Kim & Sorensen, 1986; Titman & Wessels, 1988).

Information asymmetry is argued to be more severe in smaller firms (Atiase, 1985; Kang & Stulz, 1996). The firm size-investment relationship is likely to be positive as larger firms focus more on growth strategies, which will result in greater growth potential. In other words, the larger the firms, the higher will be the growth potential (Hirota, 1999; Colombo, 2001; Su, 2010). Their findings show that the conflict between managers and owners is lower in large firms which leads to undertake valuable projects. In contrast, Fama and French (1993) argue that agency conflicts in large firms is higher because of lower managers are privy in their decision, which affect investment opportunities negatively. Ibrahim and Samad (2008), Amran and Ahmad (2010) and Gunasekarage *et al*. (2007) report that the effect of firm size is positive on investment decision.

2.7.3 Interest Rate

This study estimates an equation for financing decision by including its cost or price, interest rate, as a determinant. Thies and Klock (1992) and Chowdhury, Green and Miles (1994) find the positive relationship between debt and interest rates.

The primary determinant of investment spending is real interest rate. In centralised security markets, these rates are set and not dependent on the financial structure of the firm (Jorgenson, 1963; Hall & Jorgenson, 1967). Milios, Economakis and Lapatsioras (2000) document that the interest rate should affect decisions to invest. The direction of this impact is well documented to be negative by Dornbusch and Fischer (1990) and Milios *et al*. (2000).

Empirical studies, based mainly on the US data, have shown that the effect that the interest rate has on investment is statistically significant (Petraki-Kotti, 1996; Bischoff, 1971a). Additional evidence about a negative relationship can be found in the studies of Bischoff, 1971a, 1971b; Evans, 1967; Griliches & Wallace, 1965; Anderson, 1964; Mayer, 1968; Mprissimis, Magginas, Simigiannis & Tavlas, 2002.

2.7.4 Corporate tax

Tax advantages motivate managers to use more debt. Therefore, the higher the tax rate, the larger the advantages of using debt. Chowdhury and Miles (1989) and Pfaffermayr, Stockl and Winner (2013) report a positive relationship between corporate tax and leverage. However researchers propose a trade-off between corporate tax advantage of debt and the cost of financial distress (Brennan & Schwartz, 1978). Mackie-Mason (1990), Homaifa, Zietz and Benkato (1994), Hussain (1995) and Abor, Bokpin & Fiawoyife (2011) find an indeterminate influence while Booth *et al*. (2001) use a sample from ten developing countries comprising of 727 firms for the years 1980 until 1990. They find a negative relationship between corporate tax rate and leverage.

According to DeAngelo and Masulis (1980), firms' expected cash flow correlates positively with optimal levels of leverage. Hence, a dip in leverage originating from equity offering signals negative information concerning the value of the firm. The model is employed by Masulis (1983) who argues that shifts in management's information concerning expected firm cash flow will impact the firm to modify financial leverage in an attempt to increase firm value. This will then indicate to investors that given the tax rates, relatively fixed expected bankruptcy cost and non-debt tax shields exist.

According to neoclassical theory of investment, the cost of capital is the main determinant and thus it furnishes principal policy recommendation in tax measures to decrease the cost of capital and promote investment. Along the same line, Samuel (1996) states that based on the Q theory of investment, tax policy has a main role of directing investment decisions through Q ratio modification and strengthening its positive correlation with investment.

Corporate taxation can distort investment plans by reducing the after tax returns to new investment. Jorgenson (1963) and Hall and Jorgenson (1967) has attempted to assess the empirical relevance of such distortions.

2.8 Summary

The theories and empirical evidence related to corporate governance, financing and investment decisions have been reviewed. This study focuses on the simultaneous determination and interactions between leverage and investment opportunities in the

presence of corporate governance factors in an emerging economy like Malaysia. This study fills the gap of extant literature by examining the endogenous determination of leverage and investment opportunities in Malaysia along with corporate governance factors. Given the importance of studying the relationship between financing and investment decisions in Malaysia, this chapter has reviewed the available literature on corporate policies context. To the researcher's knowledge, no study has been explored in testing the simultaneity between financing and investment decisions along with corporate governance factors in an emerging economy like Malaysia.

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

This chapter discusses the research methodologies used in this study. The research process is illustrated in section 3.1. Section 3.2 presents the theoretical framework. Section 3.3 presents the research hypotheses. Section 3.4 illustrates the measurement of all variables used in this study. Section 3.5 presents the model specification. Then, sample and data selection are discussed in section 3.6. This chapter ends with a summary in section 3.7.

3.1 The Research Process

To achieve the research objectives set in chapter 1, a quantitative research design has been selected to examine the simultaneous relationship between investment and financing decisions. In particular, this study uses the simultaneous equation model to figure out the relationship between the investment opportunity set (IOS) and financing decision.

A total of sixteen variables are employed in this study. They are the tangibility ratio and non-debt tax shields act as proxies for financing decision, while sales growth ratio and cash flow ratio represent the investment decision. To test for corporate governance effect, six variables, which include family ownership, government ownership, state ownership, managerial ownership, board size and board composition are used. In addition to that, there are four control variables employed in order to assess the relative impact of the

independent variables. The four variables are profitability, firm size, interest rate and corporate tax. Finally, the two dependent variables which are the financing decision and the investment decision are measured by debt ratio and Tobin's Q respectively. For robustness, financing and investment decisions are also measured by the long term debt ratio and capital expenditure respectively.

The study population covers the entire firms included in the Bursa Malaysia list for the period of 2007 to 2011, after removing the financial and ACE market companies. The data is extracted from the Datastream database. This study uses random number generator to choose three hundred companies randomly as a sample for this study.

3.2 Theoretical Framework

Figure 3.1 presents the theoretical framework model of investigating the simultaneous relationships between investment and financing decisions in the presence of corporate governance factors. This model shows instrumental variables for financing decision (tangibility ratio and non-debt tax shields) and investment decision (sales growth ratio and cash flow ratio). In addition, there are also control variables which include profitability, firm size, interest rate and corporate tax. Finally, the variables for corporate governance factors are shown in the model. They are family ownership, government ownership, state ownership, managerial ownership, board size and board composition.

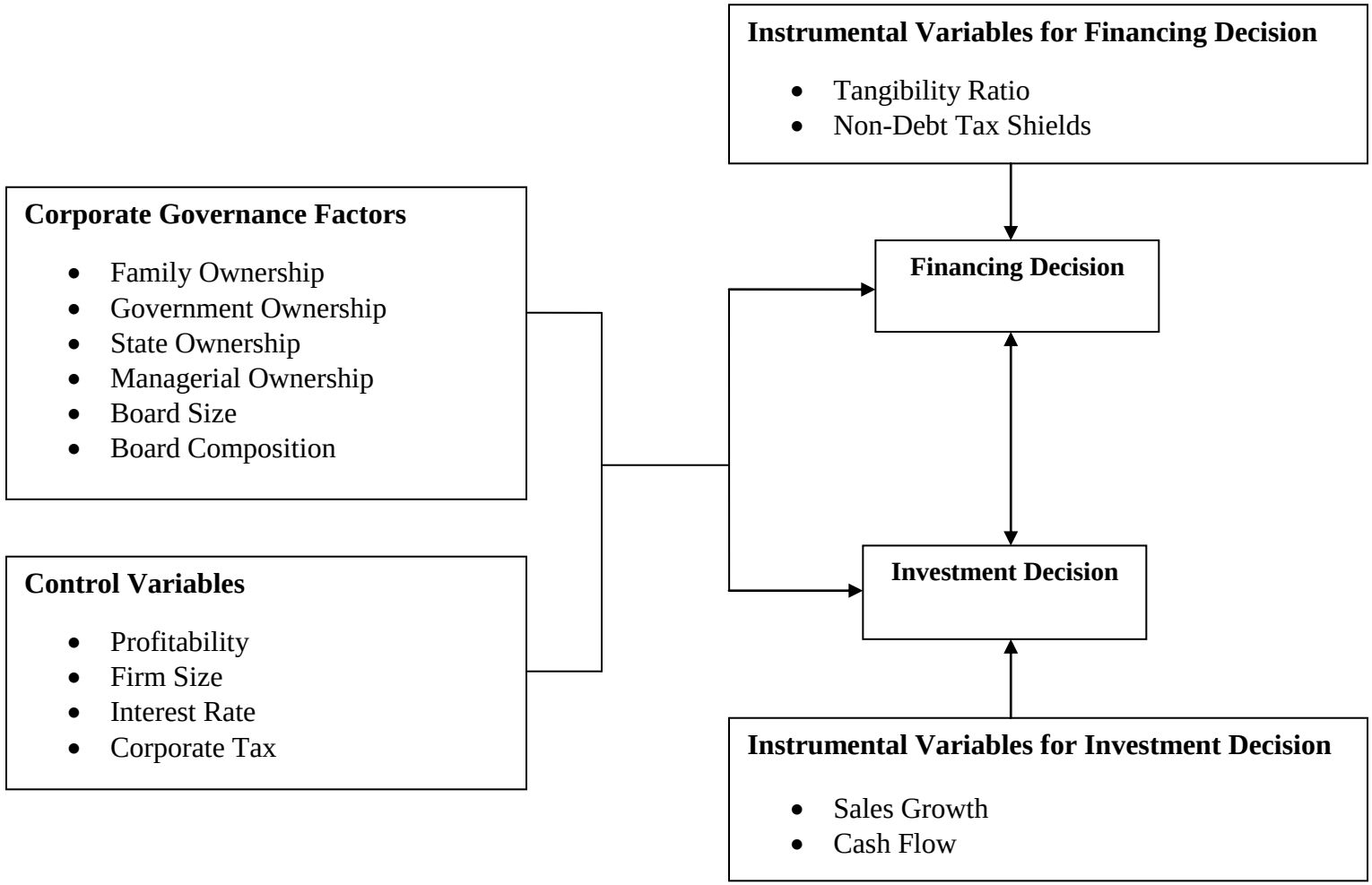

Figure 3.1
Theoretical Framework of the Determinants of Financing and Investment Decisions

3.3 Hypotheses Development

The objective of this study is to investigate the simultaneous relationship between investment and financing decisions along with corporate governance factors in Malaysian context. This section provides arguments and supports for the hypotheses. There are fifteen hypotheses developed for the study.

3.3.1 Financing and Investment Decisions

Extant literature shows that debt is an effective monitoring mechanism to monitor managerial actions. For that reason, it is hypothesized that debt, specifically the creditors, provide better monitoring services. In general, debt financing increases firm's value because it reduces agency costs. Managers will only invest in projects that maximize the firm's value. Thus, financing policy is associated with better investment decisions. Furthermore, higher leverage produces tax shields that lead to higher firm valuation.

Overall, the main empirical research that has examined the influence of firm financing decision on investment shows inconclusive results. There are studies which find a positive relation between investment and leverage among the low-growth firms, while some studies reveal a negative relation between investment and leverage among the high-growth firms (McConnell & Servaes, 1995; Ahn *et al*., 2006). Others find a negative relation between leverage and investment only for low-growth firms, but not for high-growth firms (Lang *et al*., 1996; Aivazian *et al*., 2005). Jensen and Meckling (1976) and Jensen (1986) argue that debt can function as a disciplining mechanism to reduce free

cash flow or reduce agency conflict between managers and shareholders through imposing fixed obligations on the firm. Therefore, the following hypothesis is developed:

H1a: Financing decision affects investment decision.

Ross (1977) argues that the issuance of debt signals the firms' high quality to the market. Therefore, high-growth firms with greater information asymmetry are expected to use higher level of debt to minimize the disparities in information between management and shareholders. This is in line with Smith and Watt's (1992) signaling hypothesis that predict a positive association between IOS and debt. However, Myers and Majluf (1984) argue that firms prefer to use internal financing over external financing. Therefore, this highlights a negative relationship between debt ratio and investments.

It is expected that higher growth leads to higher debt ratio because high growth firms imply a high demand for fund and this could lead to a positive impact of growth on debt ratio (Sinha, 1992; Michaelas, Chittenden & Poutziouris, 1999). Moreover, Myers (1977) state that growth firms face high agency problems. Therefore, when growth firms issue more debt it could be used as a monitoring tool to reduce the agency problem between majority and minority shareholders. A positive relationship between growth and leverage is reported by Hall, Hutchinson & Michaelas (2000), Thies and Klock (1992) and Mutenheri and Green (2003). On the other hand, there are studies which find a negative relation between firm's growth and leverage (see for example, Smith & Watts, 1992; Jones & Sharma, 2001; Dang, 2007; Ridha & Bajka, 2010). Their findings support the

under-investment hypothesis that firms reduce debt ratio actively to alleviate potential under-investment incentives (Myers, 1977). Reducing the level of debt helps to mitigate the cost of the risky debt that incentivizes the under-investment problem. Therefore, the following hypothesis is developed:

H1b: Investment decision affects financing decision.

3.3.2 Corporate Governance Factors

The main corporate governance characteristics that have been identified to affect the financing and investment decisions of firms include family ownership, government ownership, state ownership, managerial ownership, board size and board composition. Ownership structure will affect financing and investment decisions. Since Malaysian listed firms are largely controlled by large shareholders such as families, government and other institutional ownership (Claessens & Fan, 2002), it is important to investigate how different types of ownership are influencing financing and investment decisions. Therefore, the following hypotheses are developed to examine the effects of corporate governance characteristics on financing and investment decisions.

3.3.2.1 Family Ownership

The empirical evidence on the effect of family ownership on the financing policy is not conclusive. It is not clear whether family control and leverage are positively or negatively related, and there are theoretical arguments to support each point of view.

It is argued that in closely held firms, debt is used by the controlling insiders to benefit themselves at the expense of minority shareholders. According to Faccio *et al*. (2001), debt could facilitate the expropriation of minority shareholders by providing the controlling shareholders with the opportunity to make use of considerable resources without lessening their rights to vote. Wiwattanakantang (1999) and Brailsford, Oliver and Pua (2002) conjecture that family firms have a tendency to employ debt over other alternatives. Due to their long-term commitments to the firms, they prefer to alleviate the agency problem between majority and minority shareholders by using debt. This is why family firms utilize more debt in their capital structure. This argument is supported by the findings of King and Santor (2008) and Ellul (2008).

Nonetheless, there is less need for issuing bonds to act as disciplining instrument for managers in family firms because the owners themselves act as managers and family wealth concentration occurs in business and family heritage also support the argument of negative relationship between family ownership and financing policy (Zou & Xiao, 2006; Wu *et al*., 2007). Therefore, it is hypothesized that:

H2: There is a relationship between family ownership and financing decision.

Family firms reach superior decisions regarding investment as they possess higher firm specific knowledge (Stein, 1989). In addition, family owned firms decrease the principal-agent issue and promote effective management and shareholders' incentive consistency (Fama & Jensen, 1983). Empirical research that supports the positive effects of family

ownership on investment include Anderson and Reeb (2003), Villalonga and Amit (2006) and Maury (2006).

On the other hand, family firms might display excessive risk-aversion and the oversight of mergers or other opportunities for expansion owing to their concern for the family bequest (Morck *et al*., 2000). Moreover, it is argued that instead of looking at the qualifications they tend to hire people based on family status and strategy-making process will only be on the hands of the family members (Eddleston & Kellermanns, 2007; Kellermanns & Eddleston, 2004). The negative effect results are supported by Faccio *et al*. (2001), Claessens and Fan (2002), Cronqvist and Nilsson (2003) and Yeh and Woidtke (2005). Therefore, it is hypothesized that:

H3: There is a relationship between family ownership and investment decision.

3.3.2.2 Government and State Ownership

Efficient monitoring hypothesis posits that institutional ownership possess both contracting and monitoring implications and it has a tendency to distinctly influence managerial incentives (Pound, 1988; Bushee, 1998). It is believed that increased institutional ownership reduces the likelihood of the managers to misuse the firm's resources to pursue their own interest. Thus, institutional ownership could be used to serve as an effective monitoring tool for managerial actions. Government and state ownerships are somehow similar to institutional ownership. Therefore, the monitoring hypothesis may also be applied to government and state ownerships. Since government

and state ownerships are able to increase monitoring and reduce the incentive of debt, it is predicted that there will be a negative relationship between government and state ownership and debt. However, Li *et al*. (2009) find that government and state ownerships are positively associated with the firms' leverage level. Firth *et al*. (2009) find that private firms have the advantage of obtaining external bank loans if they have the government and state as one of their minority owners. This is especially true for large firms and firms located in the regions where the banking sector is not fully developed. Therefore, it is hypothesized that:

H4a: There is a relationship between GLICs and financing decision.

H4b: There is a relationship between state ownership and financing decision.

The presence of government and state ownerships in a company will serve as a monitoring mechanism that would lead to superior performance after controlling for certain firm characteristics (Ab Razak *et al*., 2008). Studies by Caves and Christensen (1980), Kay and Thomson (1986), Kole and Mulherinm (1997), Ramirez and Tan (2004) and Ang and Ding (2006) reveal that companies with government intervention are better governed and lead to better investment decisions. More specifically, these companies are not only owned by the public but also by the government. As a consequence, with the following government intervention, such companies management are more focused on increasing shareholders' wealth as opposed to achieving their self-interests by taking on good investments. Therefore, it is hypothesized that:

H5a: There is a relationship between GLICs and investment decision.

H5h: There is a relationship between state ownership and investment decision.

3.3.2.3 Managerial Ownership

Friend and Hasbrouck (1988) argue that increased ownership of insiders leads to reducing leverage level as managers try to reduce the bankruptcy risk. This leads to negative relationship between managerial ownership and leverage (Hasan & Butt, 2009). However, increased managerial ownership could lead to increase the manager's influence and voting power. Consequently, they might change the debt level to maximize their personal benefits by obtaining more cash (Ruan *et al*., 2009). This could lead to positive relationship between managerial ownership and financing decision (Short, Zhang & Keasey, 2002). Therefore, it is hypothesized that:

H6: There is a relationship between managerial ownership and financing decision.

There are arguably two schools of thought on the relationship between managerial ownership and investment decision. In line with the incentive, the majority of studies indicate that management control or managerial ownership has a positive effect on a firm's investment decision (see for example, Aghion & Howitt, 2009; Lerner *et al*., 2010). On the other hand, in line with the entrenchment effect, managerial ownership is perceived to have a negative effect on a firm's investment decision (Hasan & Butt, 2009; Wahla *et al*., 2012). Therefore, it is hypothesized that:

H7: There is a relationship between managerial ownership and investment decision.

3.3.2.4 Board Size

Firms that have large boards have a tendency to maintain low debt ratio and prefer to issue equity (Berger *et al*., 1997). The underlying notion is that a large board eventually translates to the board's coercion of management to depend less on debt to improve the performance of the firm. However, empirical results from China point to a positive relationship between board size and debt ratio (Wen *et al*., 2002; Abor, 2007). These findings indicate that large boards are more entrenched owing to their monitoring by regulatory bodies and they focus on high debt level to improve the value of the corporation. Therefore, it is hypothesized that:

H8: There is a relationship between the board size and financing decision.

Lipton and Lorsch (1992) point out that, even when the board's monitoring capacity increases with an increase of its size, the outcome costs will still exceed the benefits. Due to the nature of a large board of directors, which is usually more diversified, there will be a wide range of opinions and ideas in solving a problem or making a decision. For that reason, it seems like a small board of directors respond to the rapidly changing competitive environment more effectively. Nevertheless, Kyereboah-Coleman (2008) argues that a larger board provides effective monitoring, which means investment decisions are made in the best interest of owners. His finding shows that the board size positively influences the firm's growth opportunities, which indicates that the larger the board size, the better the chances of the firm to grow. Therefore, it is hypothesized that:

H9: There is a relationship between board size and investment decision.

3.3.2.5 Board Composition

Non-executive directors' presence in the board indicates that the company is being efficiently monitored and as such, lenders deem such company as worthy of their credit and in turn, the company is able to raise long-term funds via debt financing with ease.

Pfeffer (1973) and Pfeffer and Salancick (1978) argue that external directors enhance the ability of the firm to protect itself from both internal and external threats due to their ability to reduce the conflict between managers and shareholders. Consequently, increases the firm's ability to raise funds. In brief, the higher the number of non-executive directors in a firm, the higher the possibility that firm has high debt level.

Berger *et al*. (1997) and Abor (2007) show that firms with more external directors tend to have high debt level, while Wen *et al*. (2002) find a negative relationship between the board composition and leverage. This finding shows that firms use bondholders to monitor managerial decisions. Therefore, it is hypothesized that:

H10: There is a relationship between the board composition and financing decision.

Managerial hegemony theory stipulates that external directors are obedient to management who is responsible for their appointment and arguably depend on directors for information (Coles *et al.,* 2001). Bathala and Rao (1995) and Hutchinson (2002) find

a negative relationship between the proportion of outside directors and growth firms. However, Munter and Kren (1995) argue that board composition mitigates managerial opportunism and urges proper supervision of management. Brickley *et al*. (1997), Conyon and Peck (1998) and Hossain *et al*. (2000) report that the proportion of outside directors on a board is positively related to a firm's investment opportunities. Therefore, it is hypothesized that:

H11: There is a relationship between board composition and investment decision.

3.3.3 Instrumental Variables

This study uses two instrumental variables for financing decision and two instrumental variables for investment decision. Each instrumental variable is discussed below.

3.3.3.1 Tangibility

Assets tangibility reflects the impact of the assets collateral value on the firm's degree of gearing (Rajan & Zingales, 1995) although the direction of impact is ambiguous. Theories that posit a positive association are proposed by Galai and Masulis (1976), Jensen and Meckling (1976) and Myers (1977). According to these authors, stockholders of leveraged firms are incentivized to make sub-optimal investments. As a result of such action, the firm's bondholder's wealth will be transferred to the shareholders. In cases where they are able to secure debt against assets, the creditors are able to get an improved guarantee of repayment because the borrower's usage of funds is limited to the agreed upon activities although it still largely depends on the collateral (asset value). If an

unsecured debt is used instead, no such guarantee is present. According to Myers and Majluf (1984), securing debt is a process that assists in decreasing information costs incurred from issuing debt. This contention is supported by a pioneering study by Scott (1977) who contends that when secured debt is issued, only then the transfer of wealth from unsecured to secured creditors will occur.

On another contention concerning leverage-tangible assets relationship, Grossman and Hart (1982) argue for the possibility of a negative association between them. Specifically, they argue that the managers' agency costs that consume over the perquisites optimal level, increases in firms having low assets level used as collateral. This is due to the fact that the shareholder monitoring cost of capital outlays for firms having fewer assets to be used as collateral, are significantly greater than firms having greater assets to be used for the same purpose. In other words, shareholders are more inclined to firms with low collateralized assets in order to have greater gearing levels, *ceteris paribus*.

Overall, past studies show an indeterminate influence of the collateral value of the firms' assets on its leverage. In brief, empirical results reveal a positive relationship between tangibility and debt ratio (see for example, Colombo, 2001; Mutenheri & Green, 2003; Serrasqueiro & Rogao, 2009; Cespedes, Gonzalez & Molina, 2010). Nevertheless, there are also studies that reveal a negative relationship between tangibility and leverage (see for example, Cornelli, Portes & Schaffer, 1996; Wiwattanakantang, 1999; Abor, 2008; Ahmed Sheikh & Wang, 2011). Therefore, it is hypothesized that:

H12: There is a relationship between tangibility and financing decision.

3.3.3.2 Non-Debt Tax Shields

In general, firms always try to take advantage of the debt interest payments tax deductibility in order to pay less tax. However, less need to get use of the debt tax shield occurs if they have other tax shields such as depreciation and amortization. As a matter of fact, firms may be unable to use the non-interest tax shields if they issue excessive debt.

According to Ross (1985), as outstanding non debt tax shields increase, the expected values of a firm interest tax savings decrease. In brief, the incentive to finance with debt diminishes as non-debt tax shields increase. Similarly, DeAngelo and Masulis (1980) state that firms with higher non-debt tax shield are more likely to have lower leverage.

Based on the evidence presented, it seems like there is a negative relationship between leverage and non-debt tax shields. Nevertheless, Scott (1977) and Moore (1986) show that firms having considerable non-debt tax shields inevitably possess significant collateral assets that are useful in securing debts. Thus, based on this argument higher non-debt tax shields lead to higher leverage.

In conclusion, the empirical evidence suggests that there is a negative relationship between non-debt tax shields and leverage (Wiwattanakantang, 1999; Hirota, 1999; Ozkan, 2001). However, there are also studies that find a positive relationship between these two (Boyle & Eckhold, 1997; Wald, 1999). Therefore, it is hypothesized that:

H13: There is a relationship between non-debt tax shields and financing decision.

3.3.3.3 Sales Growth

Sales growth illustrates sales movement over time. It is used to measure how fast a firm is expanding. A high ratio shows a greater efficiency level in utilization of asset whereas a low ratio indicates the opposite condition. The higher sales growth the higher the need for investment (Aivazian *et al*., 2005; Odit & Chittoo, 2008). Therefore, it is hypothesized that:

H14: There is a positive relationship between sales growth and investment decision.

3.3.3.4 Cash Flow

Cash flow is considered to be a significant growth opportunity determinant. Sufficient cash inflows can be used for investment purposes. In addition, investment is significantly associated with internal funds availability and the main purpose behind allocating resources to projects is to produce long-term cash inflow that is considerably higher compared to the invested amount. Stated differently, the main reason behind investing is to generate shareholders' wealth (Lehn & Poulson, 1989; Lang *et al*., 1996; Odit & Chittoo, 2008). Therefore, it is hypothesized that:

H15: There is a relationship between cash flow and investment decision.

3.3.4 Control Variables

This study uses the following variables to control for firm specific characteristics that might influence financing and investment decisions. The control variables are profitability, firm size, interest rate and corporate tax.

3.3.4.1 Profitability

Under agency theory, Jensen (1986) and Williamson (1988) define debt as a disciplining instrument for managers. Wald (1999) and Booth *et al*. (2001) find a positive and significant relationship between profitability and leverage. While Titman and Wessels (1988), Wald (1999) and Huang and Song (2006) find a negative relationship between leverage and profitability.

Investment is affected by the profitability as an investment may be constrained by the supply of funds which, in turns, are related to profitability expected (Meyer & Glauber, 1964). If firms expect a high level of profits, then the decision to undertake an investment will be positively influenced (Lianos & Mpenos, 1996). It is also obvious that if there is a decrease in profitability the effect on future investment could be negative (Sarantidis, 1995). In other words, firms with higher profits invest more (Romer, 1996).

3.3.4.2 Firm Size

Titman and Wessels (1988) argue that the liquidation values of larger firms are higher than their smaller counterparts since larger firms tend to be more diversified. Therefore, at bankruptcy, creditors will get a partial payment. Consequently, large firms may be

more inclined to use of higher level of leverage because the agency costs of debt is lower. Accordingly a positive relationship is expected between leverage and firm size. Marsh (1982) and Huang and Song (2006) find a positive relationship between firms size and leverage. According to Rajan and Zingales (1995), larger firms tend to have lower information asymmetry, thus are able to issue more equity compared to smaller companies. As a result, it is expected that the relationship between firm size and leverage to be negative. Kim and Sorensen (1986) and Titman and Wessels (1988) find a negative relationship between firm size and financial leverage.

Atiase (1985) and Kang and Stulz (1996) argue that the problem of information asymmetry is more severe in smaller firms compared to larger firms. In addition, smaller firms have more investment opportunities compared to larger firms. Hence, it is expected that the market valuation of capital expenditures is negatively related to firm size. The relationship between firm size and investment is likely to be positive because larger firms will focus more on growth strategies, which will also lead to higher potential for growth. Consequently, larger firms will have higher growth potential as compared to smaller firms (Su, 2010).

3.3.4.3 Interest Rate

Interest rate is considered to be a major determinant of investment spending and as the former is set in centralized security markets, it is not dependent on the financial structure of the firm (Hall & Jorgenson, 1967; Milios *et al*., 2000). Empirical evidence about a negative relationship between interest rate and investment can be found in the studies of

Dornbusch and Fischer (1990), Milios *et al*. (2000) and Mprissimis *et al*. (2002). In general, as the interest rate becomes lower, the present value of the cash flows becomes higher.

3.3.4.4 Corporate Tax

Researchers have put forward that there is a trade off between the corporate tax advantage of debt and financial distress cost (Brennan & Schwartz, 1978). DeAngelo and Masulis (1980) suggest that firms' expected cash flow induce a positively correlated change in optimal leverage levels. Therefore, a decline in leverage conveys a negative signal about firms' value. The model is applied by Masulis (1983) who points that changes in management's information about the expected cash flow of the firm will influence them to adjust financial leverage to maximize firm's value.

The Q theory of investment indicates the significant role of tax policy in influencing investment decisions through the modification of Q ratio and reinforcing its positive correlation with investment. Moreover, Summers (1981) reveals the significance of the of tax change announcement and timing effects upon the use of the Q-theoretic framework. In addition, Jorgenson (1963) and Hall and Jorgenson (1967) show that corporate taxation can distort investment plans by reducing the after tax returns to new investment.

3.4 Measurement of Variables

This section provides the operational definitions of each variable examined in this thesis. The dependent variables are financing and investment decisions. The independent

variables are corporate governance factors, control and instrumental variables. Table 3.1 provides a summary of the measurements used in this thesis.

Table 3.1
Summary of the Measurements of the Variables

Variables	**Corresponding Abbreviations**	**Proxy for Measurement***	**Study/References**
Financing	FINANCING	Total debt (WC03255) to total assets (WC02999). Long term debt (WC03251) to total assets (WC02999).	Denis and Denis (1993), Baldwin *et al*. (2002) and Aivazian *et al*. (2005).
Investment	INVESTMENT	Market-to-book ratio (MTBV). Net investment divided by last period's gross fixed assets (WC08411).	Skinner (1993). Smith and Watts (1992) and Aivazian *et al*. (2005).
Corporate Governance Factors			
Family Ownership	FAMILY OWN	Family firm if a person or a group related by family ties holds the largest voting block of at least 10% of the total votes.	Anderson and Reeb (2003) and King and Santor (2008).
GLICs	GLICs	Percentage of total shares held by the seven GLICs.	Chu and Cheah (2004), Ab Razak *et al*. (2008) and Najid *et al*. (2011).
State Ownership	STATE OWN	Percentage of total shares held by the state government.	

*Item in bracket is the DataStream Codes.

Table 3.1 (Continued)

Variables	**Corresponding Abbreviations**	**Proxy for Measurement***	**Study/References**
Managerial Ownership	MANAGERIAL OWN	Total shares held by executive directors over total common shares.	Bajaj *et al*. (1998) and Hasan and Butt (2009).
Board Size	BOARD SIZE	The number of directors on the board.	Wen *et al*. (2002) and Abor (2007).
Board Composition	BOARD COMPOSITION	The number of non-executive directors to total number of directors.	Berger *et al*. (1997), Wen *et al*. (2002) and Abor (2007).
Control Variables			
Profitability	PROFITABILITY	EBIT (WC18191) to total assets (WC02999).	Booth *et al*. (2001) and Huang and Song (2006).
Firm Size	FIRM SIZE	Natural logarithm of total assets (WC02999).	Kang and Stulz (1996) and Huang and Song (2006).
Interest Rate	INTEREST RATE	Interest rate (S06884).	Milios *et al*. (2000) and Mprissimis *et al*. (2002).

*Item in bracket is the DataStream Codes.

Table 3.1 **(**Continued)

Variables	**Corresponding Abbreviations**	**Proxy for Measurement***	**Study/References**
Corporate Tax Rate	CORPORATE TAX	Corporate tax rate is equal to income tax (WC01451) over total assets (WC02999) as a proxy for an effective tax rate.	DeAngelo and Masulis (1980) and Masulis (1983).
Tangibility Ratio	TANGIBILITY	Fixed assets (WC08266*WC03501) to total assets (WC02999).	Rajan and Zingales (1995), Serrasqueiro and Rogao (2009) and Cespedes *et al*. (2010).
Non-Debt Tax Shield	NDTS	Depreciation and amortization expenses (WC01151) to total assets (WC02999).	Titman and Wessels (1988), MacKie-Mason (1990) and Rajan and Zingales (1995).
Sales Growth	SALES GROWTH	Percentage growth in sales from previous year to current year (WC01001).	Aivazian *et al*. (2005) and Odit and Chittoo (2008).
Cash Flow	CASH FLOW	The cash flow is measured as net profit plus depreciation (DWNP+WC01151) to total assets (WC02999).	Lehn and Poulson (1989), Lang *et al*. (1996) and Odit and Chittoo (2008).

*Item in bracket is the DataStream Codes.

3.5 Model Specification

In general, instrumental variables (IV) are employed to address the problems related to endogeneity. According to Brooks (2008), endogeneity happens when an explanatory variable in the multiple regression models is correlated with the error term, either because of simultaneity, omitted variable or measurement error. Simultaneity exists when one or more of the independent variables are jointly determined with the dependent variable. This study will examine whether investment decision cause changes in financing decision or whether leverage leads to changes in the investment decision. The use of ordinary least square (OLS) seems inappropriate because it may result in inconsistent and biased results due to the problem of the endogeneity in this research.

Kennedy (1998) shows that in the presence of endogeneity, 2SLS is an appropriate analysis method. Therefore, this study uses two stage least square (2SLS) method in order to reduce the potential endogeneity problem. The 2SLS model requires one or more proper instrumental variables for each endogenous variable in the equation to yield consistent and unbiased estimators (Kirby & Bollen, 2009). The 2SLS procedure replaces the endogenous variable with predicted values of this endogenous variable when regressed on instruments. Specifically, the first stage equation is estimated with only exogenous regressors. Then, the predicted values are calculated and placed in the structural equation model (Wooldridge, 2006).

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Friend and Hasbrouk (1988) examine the agency implications of debt structure and managerial ownership simultaneously. In addition, a study by Baldwin *et al*. (2002)

employs a simultaneous equations approach with financing and investment decisions. They find that financing and investment decisions are simultaneously determined. However, they do not examine the impact of corporate governance mechanisms on financing and investment decisions. This study uses the approach that is used by Baldwin *et al*. (2002), Aivazian *et al*. (2005) and Smith (2011) which is two stage least square (2SLS).

3.5.1 Operational Models

This study uses 2SLS regression models to test the simultaneous effect of financing and investment decisions after controlling for corporate governance factors. Specifically, model 1 and model 2 below are employed to identify variables that influence financing and investment decisions.

$$\text{FINANCING}_{it} = \beta_1\ \text{FAMILY OWN}_{it} + \beta_2\ \text{GLICs}_{it} + \beta_3\ \text{STATE OWN}_{it} + \beta_4\ \text{MANAGERIAL OWN}_{it} + \beta_5\ \text{BOARD SIZE}_{it} + \beta_6\ \text{BOARD COMPOSITION}_{it} + \beta_7\ \text{TANGIBILITY}_{it} + \beta_8\ \text{NDTS}_{it} + \beta_9\ \text{PROFITABILITY}_{it} + \beta_{10}\ \text{FIRM SIZE}_{it} + \beta_{11}\ \text{INTEREST RATE}_{it} + \beta_{12}\ \text{CORPORATE TAX}_{it} + \beta_{13}\ \text{INVESTMENT}_{it} + \varepsilon_{it} \quad \textbf{(1)}$$

$$\text{INVESTMENT}_{it} = \alpha_1\ \text{FAMILY OWN}_{it} + \alpha_2\ \text{GLICs}_{it} + \alpha_3\ \text{STATE OWN}_{it} + \alpha_4\ \text{MANAGERIAL OWN}_{it} + \alpha_5\ \text{BOARD SIZE}_{it} + \alpha_6\ \text{BOARD COMPOSITION}_{it} + \alpha_7\ \text{SALES GROWTH}_{it} + \alpha_8\ \text{CASH FLOW}_{it} + \alpha_9\ \text{PROFITABILITY}_{it} + \alpha_{10}\ \text{FIRM SIZE}_{it} + \alpha_{11}\ \text{INTEREST RATE}_{it} + \alpha_{12}\ \text{CORPORATE TAX}_{it} + \alpha_{13}\ \text{FINANCING}_{it} + \varepsilon_{it} \quad \textbf{(2)}$$

The definitions of the variables are explained in table 3.2. The models are applied for each firm *(i)* and each year *(t).*

Table 3.2
Definitions of the Variables

Variable	**Definition**
FINANCING	Total debt to total assets.
FAMILY OWN	Family firm if a person or a group related by family ties holds the largest voting block of at least 10% of total votes.
GLICs	Percentage of total shares held by the seven GLICs.
STATE OWN	Percentage of total shares held by the state government.
MANAGERIAL OWN	Total shares held by executive directors over the total common shares.
BOARD SIZE	Number of directors in the board.
BOARD COMPOSITION	Number of independent directors to total number of directors.
TANGIBILITY	Fixed assets to total assets.
NDTS	Depreciation and amortization expenses to total assets.
PROFITABILITY	EBIT to total assets.
FIRM SIZE	Natural logarithm of total assets.
INTEREST RATE	Interest rate.
CORPORATE TAX	Effective tax rate.
INVESTMENT	Tobin's Q.
SALES GROWTH	Percentage growth in sales from previous year to current year.
CASH FLOW	Net profit (income) plus depreciation to total assets.

3.6 An Overview of Panel Data Estimation

In panel data econometric analysis, there are three main models: pooled OLS model, FE model, and RE model. A key difference among them lies in the treatment of α_i, which goes by different names such as individual effects, individual heterogeneity, unobserved effects, etc. In the pooled OLS model, α_i is assumed to be absent. If α_i is present, then either the FE model or the RE model is appropriate. The choice between them hinges on whether α_i is correlated with other regressors in the model. If there is such a correlation, then the FE model is appropriate. If there is no such correlation, then the RE model is appropriate (Wooldridge, 2006).

In order to identify which methodology is appropriate, three statistical tests are used namely restricted F-test, Breusch-Pagan Lagrangian Multiplier (LM) test and Hausman specification test. First, the restricted F-test is performed to compare the pooled OLS and FE model, the key difference between them lies in the assumption of the individual effects; pooled OLS assumes that there is no individual heterogeneity while FE model assumes there is an individual heterogeneity. The null hypothesis is no individual effects. If the restricted F-test produces a low p-value (<0.05), then fixed effects estimates is chosen over pooled OLS because there is enough evidence that the individual effects are present.

Second, the Breusch-Pagan LM test is performed to compare between pooled OLS and RE models. The key difference between them lies in the assumption of the individual effects. In the RE model, $\alpha_i \neq \alpha$; specifically, the RE assumes that the individual specific

effects α_i are distributed independently of the regressor and included in the error term. Therefore, a statistical test can be developed based on the idea of whether the random component of individual effect or just random effect is present or absent. In this case, a statistical test called the LM test can be used. Basically, if LM test produces a high chi-square value, indicative of a low p-value (<0.05), then the null hypothesis that the individual effect is zero or the pooled estimate is appropriate is rejected. Therefore, random effects technique is chosen over pooled OLS.

Finally, the Hausman specification test is performed to compare between FE model and RE model. The key difference between them is the assumption of whether there is a correlation between the individual effects and the explanatory variables. A statistical test can be developed based on the presence or absence of this correlation. Hence, the Hausman test can be used. Rejection of the null hypothesis means correlation exists between the individual effects and the other regressors in the model, thus suggesting that the RE model is rejected in favor of the FE model.

In order to deal with endogeneity, Durbin-Wu-Hausman test for endogeneity and Hansen and Sargan overidentifying restrictions tests are carried out. First, the Hausman test compares OLS and 2SLS estimates to check for any significant difference. In other words, this test checks if a regressor (investment decision) is exogenous or endogenous. If there is any statistically significant difference between the two estimation techniques, then the regressor (investment decision) is endogenous and 2SLS should be used. Second, Hansen and Sargan tests for overidentifying restrictions are performed to check the

validity of the instruments (sales growth and cash flow) that will replace the endogenous variable in the first stage equation. Rejection of null hypothesis indicates that the instrumental variables are not valid.

3.7 Sample and Data Selection

The sample consists of three hundred companies chosen randomly using random number generator. The three hundred companies are extracted from the population of all companies listed on the Main Market of Bursa Malaysia. Finance related companies are excluded because they possess unique characteristics and operate in a different regulatory environment (Chu & Cheah, 2006; Yatim, Kent & Clarkson, 2006). ACE market companies also are excluded because they are small speculative companies with a limited track record.

Data are collected from DataStream database and annual reports. Annual reports are retrieved from the Bursa Malaysia's website. Data on ownership structure and board structure are manually collected from annual reports. The data on ownership is obtained under the analysis of shareholders section in the annual report. The information related to the boards of directors of the firm is collected by reviewing the profile of the board of directors. All relevant data are collected from 2007 to 2011. The sample period of this research starts from 2007 because the Malaysian Code on Corporate Governance was revised in that year. In addition, this period comes during and after global financial crises which might affect financial decisions and corporate governance mechanisms for

Malaysian companies. Table 3.3 shows the initial sample that is used in this research over the period from 2007 to 2011.

Table 3.3
Derivation of Annual Sample

Total number of listed companies extracted from DataStream	929
Less:	
Financial related companies	(52)
Companies on ACE Market	(113)
Initial Population	764
Sample	300

Comparison between sample and population is shown in table 3.4 based on two tests, which are proportion test and Chi-square distribution test (Peck & Devere, 2012). Both tests are used to test if there is a similarity between industry sampled firms' percentage and population firms' percentage or not. Proportion test shows that none of the differences is significant at 5% as all z-values are located in the accepted region. Furthermore, Chi-square test shows that the difference is not significant at 5% and the value of Chi-square located in the acceptance area which is lower than +18.31. Consequently, the sample of this study represents its population.

Table 3.4
Comparison between Industrial Population and Sample

Sector	Population		Sample	
	Companies	%	Companies	%
Industrial product	161	21.073	67	22.333
Construction	126	16.492	45	15.000
Consumer product	133	17.408	49	16.333
Plantation	100	13.089	44	14.667
Properties	96	12.565	35	11.667
Electronic	61	7.984	26	8.667
Trading services	37	4.843	16	5.333
Chemicals	20	2.618	8	2.667
Media	8	1.047	2	0.667
Telecommunication	8	1.047	3	1.000
Technology	14	1.832	5	1.667
Total companies	764	100.00	300	100.00

* The critical region of proportion test is defined as any z-score value greater than +1.96 and less than -1.96 (Significant at 0.05 level).
** The critical region of Chi-square distribution test is defined as the value greater than +18.31 (Significant at 0.05 level).

3.7 Summary

This chapter covers the theoretical framework, hypotheses development, model specification and measurements of variables and finally presentation of the model. The time frame of this study is from 2007 to 2011 covering all non-financial firms that are listed on the main market of Bursa Malaysia.

CHAPTER FOUR

DATA ANALYSIS AND RESEARCH FINDINGS

4.0 Introduction

This chapter presents the data analysis and findings of the study on the simultaneous relationship between financing and investment decisions of public listed companies in Malaysia. The presentation in this chapter is divided into six main sections. Section 4.1 provides the descriptive analyses of variables for the study. Section 4.2 discusses the correlation analysis that shows the strength of the relationship between the variables. Section 4.3 shows an overview of panel data estimation. Section 4.4 analyzes the relationship between financing and investment decisions without and with accounting for endogeneity after controlling for corporate governance and other factors using OLS and panel data analyses that shape the main findings of this study. Section 4.5 shows the robustness analyses. The chapter ends with a summary in section 4.6.

4.1 Descriptive Analysis

Table 4.1 provides the descriptive statistics of the variables used in this study. In order to understand the general characteristics of the sample, this table reports the minimum, maximum, mean and standard deviations based on unbalanced panel data from 2007 to 2011. There are two measures of financing decision which are total liabilities and long term debt. Table 4.1 shows that the mean value for financing total liabilities is 0.39. It is lower than the mean values of 0.451 reported for a sample of Malaysian companies by Mustapha, Ismail and Minai (2011). The difference of values is due to the data type

employed. Mustapha *et al*. (2011) use cross sectional data whereas this study uses panel data. The range of total liabilities is between 0.02 and 0.91 with an overall standard deviation of 0.203.

Table 4.1
Descriptive Statistics of the Variables

Variable	**Observations**	**Mean**	**Std. Dev.**	**Min**	**Max**
Total Liabilities	1498	0.390	0.203	0.02	0.91
Long Term Debt	1498	0.088	0.114	0	0.61
Tobin's Q	1499	1.081	1.298	0.08	12.5
Capital Expenditures	1398	0.091	0.138	0	1.06
Government Linked Investment Companies	1498	0.046	0.096	0	0.81
State Ownership	1498	0.005	0.032	0	0.52
Board Size	1498	7.611	1.963	3	18
Board Composition	1498	0.621	0.171	0	1
Managerial Ownership	1498	0.348	0.232	0	0.99
Family Ownership	1498	0.302	0.216	0	0.83
Profitability	1493	0.062	0.089	-0.22	0.41
Firm Size (RM' 000)	1498	1691475	6202411	19655	74600000
Firm Size (Ln)	1498	19.73	1.42	16.79	25.04
Interest Rate	1500	0.066	0.005	0.06	0.07
Corporate Tax	1495	0.013	0.020	-0.03	0.11
Tangibility Ratio	1498	0.359	0.201	0	0.89
Non Debt Tax Shield	1497	0.029	0.024	0	0.15
Sales Growth	1496	0.126	0.492	-0.69	3.83
Cash Flow	1493	0.247	0.752	-0.7	6.33

Total liabilities is generated by dividing total debt to total asset. Long term debt is long term debt divided by total assets. Tobin's Q is market to book ratio which is total liabilities plus market value of the common stocks plus estimated market value of the preferred stocks, divided by total asset. Capital expenditures is net investment divided by last period's gross fixed assets. Government linked investment companies is the percentage of shares held by the seven GLICs. State ownership is the percentage of shares held by the state government. Board size is the number of directors on the board. Board composition is the number of non-executive directors to total number of directors. Managerial ownership is total shares held by executive directors over the total number of common shares. Family ownership is identified by a person or a group related by family who own at least 10% of the shares with no other major shareholders. Profitability is EBIT to total assets. Firm size is natural logarithm of total assets. Interest rate is the Malaysian base lending rate. Corporate tax is income taxes divided by total assets. Tangibility ratio is fixed assets to total assets. Non debt tax shield is depreciation and amortization expenses to total assets. Sales growth is percentage growth in sales from previous year to current year. Cash flow is net profit plus depreciation divided by total assets.

The mean value of long term debt is 0.088 which is lower than the mean values of 0.14 documented for a sample of Malaysian firms by Mustapha *et al*. (2011) and also lower than the mean values of 0.18 documented by Aivazian *et al*. (2005). The minimum and maximum values are 0 and 0.61 respectively and the overall standard deviation is 0.114.

There are two measures of investment decision which are Tobin's Q and capital expenditures. Table 4.1 shows that the mean value for investment which is measured by Tobin's Q is 1.081. It is higher than the mean values of 0.948 and 0.201 reported for a sample of Malaysian companies by Ab Razak *et al*. (2008) and Ibrahim and Samad (2008) respectively. However, this mean value of Tobin's Q is lower than the mean value of 1.531 reported for a sample of Malaysian firms by Sahudin, Mahmood, Ismail, Pardi, Aziz and Sahudin (2011). The range of Tobin's Q is between 0.08 and 12.5 with a standard deviation of 1.298. The mean value of capital expenditure is 0.091. This means that the growth rate of investment in fixed assets is 9.1%. This mean value of capital expenditure is lower than the mean values of 0.17 documented by Aivazian *et al*. (2005). The range of capital expenditure is between 0 and 1.06 with an overall standard deviation of 0.138.

GLICs mean ownership is 4.6%. This ownership varies from 0 to 81% with a standard deviation of 9.6%. However, state ownership mean value is far lower than GLICs ownership which is 0.5% with a standard deviation of 3.2%. The highest mean ownership value belongs to managerial ownership with a value of 34.8%. The range of managerial ownership is between 0 and 99%. The 99% ownership is owned by two directors (80%

and 18%) in the Pulai Springs Berhad for the year 2011. The second highest ownership mean value is family ownership at 30.2%. The high percentage of managerial and family ownership suggests that both have motivation to guarantee that their companies are managed well. The standard deviations for both managerial and family ownership are 23.2% and 21.6% respectively.

Board size records a mean value of 7.611, which is lower than the mean value of 8 reported by Sulong and Mat Nor (2010) for a sample of Malaysian companies. The smallest board size is 3 while the largest is 18 and the standard deviation is 1.963. In addition, the mean value for board composition is 0.621 which is lower than the mean value of 0.71 recorded by Abdullah (2004) but higher than the mean value of 0.39 documented by Amran and Ahmad (2010), where the minimum and maximum values are 0 and 1 respectively and the standard deviation is 0.171.

The profitability records a mean value of 0.062, where the range is between -0.22 and 0.41 with a standard deviation of 0.089. Sorting the data of this variable shows that out of 1493 observations, only 252 have negative values while 1241 observations have positive values. The mean value of firm size is RM1,691,475,000 which range from RM19,655,000 to RM74,600,000,000 and the standard deviation is 6,202,411,000. For interest rate, the mean value is 0.066 which varies between 0.06 and 0.07 from 2007 until 2011. Furthermore, the mean (standard deviation) for corporate tax is 0.013 (0.02). Based on the data of corporate tax out of 1495 observations, 228 have negative effective tax rate, 43 have zero corporate tax and 1224 observations have positive corporate tax.

As for the instrumental variables used for financing decision, the mean value of the tangibility ratio is 0.359. In addition, the average value of non-debt tax shield is 0.029 and standard deviation of 0.024. On the other hand, the instrumental variables used for investment decision shows that the mean value of sales growth is 0.126 and standard deviation of 0.492. Finally, cash flow presents a mean value of 0.247 with a standard deviation of 0.752.

4.2 Correlation Analysis

The bivariate correlations are examined between the explanatory variables to find out highly correlated independent variables which cause multicollinearity problem. Table 4.2 presents the matrix of Pearson correlation in order to measure the degree of relationship between the variables in this study. For all of the variable-pairs, none of the correlation coefficients have a value higher than 0.8. According to Judge, Hill, Griffiths, Lutkepohl and Lee (1988), a value of more than 0.8 could lead to a multicollinearity problem. The highest correlation coefficient of 0.68 is observed for the relationship between managerial ownership and family ownership. Nevertheless, this high relationship is expected as family owned firms usually appoint their own family members as managers. Some variable-pairs have absolute values of bivariate correlation between 0.30 and 0.50 (see for example, GLICs-managerial ownership, GLICs-firm size, board size-firm size, board composition-managerial ownership and tangibility-non-debt tax shield).

Table 4.2

Correlation Matrix between the Variables

	Government Linked Investment Companies	State Ownership	Board Size	Board Composition	Managerial Ownership	Family Ownership	Profitability
Government Linked Investment Companies	1						
State Ownership	0.067	1					
Board Size	0.218	0.111	1				
Board Composition	0.161	0.134	-0.099	1			
Managerial Ownership	-0.298	-0.117	0.038	-0.397	1		
Family Ownership	-0.240	-0.096	-0.064	-0.223	0.687	1	
Profitability	0.097	0.061	0.128	0.021	-0.040	-0.055	1
Firm Size	0.387	0.111	0.311	0.208	-0.244	-0.012	0.142
Interest Rate	0.010	0.004	-0.011	-0.029	0.001	-0.007	0.044
Corporate Tax	0.078	0.068	0.072	0.044	-0.089	-0.111	0.544
Tangibility Ratio	0.059	0.077	0.055	-0.022	0.030	0.023	-0.138
Non-Debt Tax Shield	0.102	-0.018	-0.018	-0.077	0.042	0.031	-0.062
Sales Growth	-0.007	0.008	0.063	-0.044	0.036	0.028	0.219
Cash Flow	-0.054	-0.029	-0.057	-0.045	0.058	-0.023	0.001

Table 4.2 (Continued)

	Firm Size	Interest Rate	Corporate Tax	Tangibility Ratio	Non-Debt Tax Shield	Sales Growth	Cash Flow
Firm Size	1						
Interest Rate	-0.011	1					
Corporate Tax	0.033	-0.015	1				
Tangibility Ratio	0.098	-0.010	-0.162	1			
Non-Debt Tax Shield	-0.134	-0.010	-0.085	0.394	1		
Sales Growth	0.079	0.084	0.082	-0.038	-0.095	1	
Cash Flow	-0.144	0.030	0.045	0.029	0.110	-0.006	1

In order to conclude that the results are clear from the problem of multicollinearity, the variance inflation factor (VIF) values are examined. VIF values of more than 10 are considered to suffer from multicollinearity problem (Tu, Kellet, Clerehugh & Gilithorpe, 2005). Table 4.3 shows the VIF values in the financing and investment regression models. The results show that there is no multicollinearity problem in both models since the highest value of VIF is found to be 2.46.

Table 4.3
Multicollinearity Test by Using VIF in the Financing and Investment Regression Models

Variables	**Financing VIF**	**Investment VIF**
Tobin's Q	1.45	-
Total Liabilities	-	1.22
Government Linked Investment Companies	1.34	1.29
State Ownership	1.05	1.05
Board Size	1.24	1.24
Board Composition	1.25	1.26
Managerial Ownership	2.46	2.45
Family Ownership	2.17	2.14
Profitability	1.70	1.59
Firm Size	1.59	1.62
Interest Rate	1.01	1.01
Corporate Tax	1.49	1.46
Tangibility Ratio	1.27	-
Non Debt Tax Shield	1.30	-
Sales Growth	-	1.07
Cash Flow	-	1.04

4.3 Regression Analysis

This section discusses the relationships between investment decision, financing decision and corporate governance variables. Financing decision is based on total liabilities while investment decision is based on Tobin's Q. Total liabilities is a more suitable definition of leverage as it is a proxy for the remaining assets to be returned back to shareholders in case of liquidation (Rajan & Zingales, 1995). Additionally, short term debt in the context of developing nations reflects a significant proportion of the total debts of the company (Ahmed Sheikh & Wang, 2011). To this end, short term financing covers bank overdrafts, which can sometimes be an effective long-term financing source despite the risks faced by the company owing to its repayable on demand nature (Omran & Pointon, 2009).

Tobin's Q is deemed to be among the price-based proxies of investment opportunity set (Skinner, 1993). Such proxies depend on the notion that if the firm's growth prospects are partially impounded in stock prices, then they will have greater market values in relation to assets. As such, this type of proxy is generated as a ratio that incorporates a measure of assets along with growth opportunities.

The analysis is divided into four subsections. In section 4.3.1, pooled OLS estimates, random effects estimates and fixed effects estimates are compared without accounting for endogeneity to examine the effect of investment decision and corporate governance factors on financing decision. In section 4.3.2, pooled OLS estimates, random effects estimates and fixed effects estimates are compared without accounting for endogeneity to examine the effect of financing decision and corporate governance factors on investment decision. In section 4.3.3, random effects estimates and fixed

effects estimates are compared after accounting for endogeneity to examine the effect of investment and corporate governance factors on financing decision. In section 4.3.4, random effects estimates and fixed effects estimates are compared after accounting for endogeneity to examine the effect of leverage and corporate governance factors on investment decision.

4.3.1 The Exogenous Financing Model

Pooled OLS is subject to certain assumptions. For instance, pooled OLS must not suffer from heteroscedasticity and autocorrelation problems. The tests of these problems are necessary to ensure the suitability of using pooled OLS estimation method, and then it can be compared with fixed and random effects estimates.

Financing decision pooled OLS estimation suffers from heteroscedasticity problem based on Cook-Weisberg (CW) or Breusch-Pagan (BP) test, which shows a chi-square value of 34.56 with a p-value of 0.000. Financing decision pooled OLS estimation also suffers from autocorrelation problem based on Wooldridge test for autocorrelation in panel data that shows an F-value of 293.823 with a p-value of 0.000. The existence of both heteroscedasticity and autocorrelation warrants the use of robust standard errors for pooled OLS.

Table 4.4 shows the outcomes of pooled OLS, random effects and fixed effects for the financing model. In order to choose the most appropriate model, three statistical tests are used. First, the restricted F-test is performed to compare the pooled OLS with FE model. F-test shows an F-value of 31.5 with a p-value of 0.000. Therefore, fixed effects estimates is chosen over pooled OLS. Second, LM test is performed to

compare the pooled OLS with RE model. LM test shows a chi-square value of 1944.08 with a p-value of 0.000. Therefore, random effects technique is chosen over pooled OLS. Finally, the Hausman test is performed to compare FE model with RE model. The Hausman test shows that the fixed effect model is the appropriate model since the Hausman test produces a chi-square of 664.25 with a p-value of 0.000.

Based on FE model, there are six significant variables which are Tobin's Q, GLICs ownership, profitability, firm size, interest rate and tangibility ratio. However, the discussion of variables will be postponed until endogeneity test is performed. Investment decision (Tobin's Q) is statistically significant at 1% level and is positively related to financing decision. This shows that as investment opportunities increases, firms tend to increase their debt financing. GLICs ownership is statistically significant at 5% level and is positively related to financing decision under fixed effects estimates.

Profitability is statistically significant at 1% level and negatively related to total liabilities under fixed effects estimates. This indicates that as the profitability increases, firms tend to decrease its total liabilities. However, firm size is statistically significant at 1% level and is positively related to financing decision. This suggests that as firm size increases, firms depend more on debt financing to finance their projects. In addition, interest rate is statistically significant at 1% level and is positively related to financing decision under fixed effects estimates. Similarly, tangibility ratio is statistically significant at 5% level and is positively related to financing decision.

Table 4.4
Exogenous Financing Regression Model

Variables	Pooled	Random	Fixed
	Coefficient (p-value)	**Coefficient (p-value)**	**Coefficient (p-value)**
Constant	-0.475 (0.009)***	-1.030 (0.000)***	-2.305 (0.000)***
Tobin's Q	0.035 (0.000)***	0.019 (0.000)***	0.022 (0.000)***
Government Linked Investment Companies	-0.163 (0.121)	-0.013 (0.829)	0.172 (0.022)**
State Ownership	-0.299 (0.174)	-0.040 (0.767)	0.054 (0.706)
Board Size	0.003 (0.415)	-0.003 (0.178)	-0.002 (0.280)
Board Composition	-0.108 (0.065)*	-0.027 (0.294)	-0.014 (0.598)
Managerial Ownership	-0.004 (0.942)	0.003 (0.921)	-0.029 (0.383)
Family Ownership	-0.061 (0.328)	-0.016 (0.626)	-0.003 (0.933)
Profitability	-0.713 (0.000)***	-0.335 (0.000)***	-0.306 (0.000)***
Firm Size	0.045 (0.000)***	0.070 (0.000)***	0.132 (0.000)***
Interest Rate	0.958 (0.023)**	0.963 (0.010)**	1.133 (0.002)***
Corporate Tax	-1.275 (0.001)***	-0.179 (0.344)	-0.075 (0.692)
Tangibility Ratio	-0.026 (0.646)	0.056 (0.018)**	0.064 (0.011)**
Non Debt Tax Shield	0.107 (0.778)	-0.060 (0.797)	0.042 (0.868)
R^2	0.205	0.124	0.091

* Significant at the 10% level.
** Significant at the 5% level.
*** Significant at the 1% level

4.3.2 The Exogenous Investment Model

Investment decision (Tobin's Q) pooled OLS estimation suffers from heteroscedasticity problem based on Cook-Weisberg (CW) or Breusch-pagan (BP) test that shows a chi-square value of 2398.78 with a p-value of 0.000. Investment decision pooled OLS estimation also suffers from autocorrelation problem based on

Wooldridge test for autocorrelation in panel data that shows an F-value of 4.869 with a p-value of 0.028. This implies that robust standard errors must be used to correct the problems.

Table 4.5 shows the results of pooled OLS, random effects model and fixed effects model for the investment regression model. Three statistical tests are used to choose the appropriate model. First, F-test shows an F-value of 17.851 with a p-value of 0.000. Therefore, fixed effects estimates is chosen over pooled OLS. Second, LM test has a chi-square value of 1451.77 with a p-value of 0.000. Therefore, random effects technique is chosen over pooled OLS. Finally, the Hausman test produces a chi-square of 504.48 with a p-value of 0.000, this shows that the fixed effect model is the appropriate model.

Based on FE model, there are five significant variables which are total liabilities, GLICs ownership, profitability, firm size and interest rate. Four of them are the same variables which are significant in the financing model. However, the discussion of these variables will be postponed until endogeneity test is performed. Financing decision (total liabilities) is statistically significant at 1% level and is positively related to investment opportunities (Tobin's Q). This implies that as leverage increases, firms tend to increase investment. GLICs ownership is statistically significant at 5% level and is negatively related to investment opportunities (Tobin's Q). On the other hand, state ownership shows insignificant relationship with investment decision.

Table 4.5
Exogenous Investment Regression Model

Variables	Pooled	Random	Fixed
	Coefficient (p-value)	**Coefficient (p-value)**	**Coefficient (p-value)**
Constant	0.528 (0.424)	1.090 (0.163)	8.434 (0.000)***
Total Liabilities / Total Assets	1.262 (0.014)**	0.944 (0.000)***	1.245 (0.000)***
Government Linked Investment Companies	1.050 (0.089)*	0.334 (0.445)	-1.306 (0.020)**
State Ownership	-0.054 (0.961)	0.454 (0.640)	0.152 (0.890)
Board Size	-0.001 (0.952)	0.001 (0.950)	-0.009 (0.590)
Board Composition	-0.070 (0.797)	-0.126 (0.505)	-0.158 (0.450)
Managerial Ownership	-0.377 (0.146)	-0.134 (0.538)	0.321 (0.210)
Family Ownership	-0.645 (0.002)***	-0.466 (0.044)**	-0.063 (0.820)
Profitability	6.430 (0.000)***	3.192 (0.000)***	2.605 (0.000)***
Firm Size	0.011 (0.729)	-0.004 (0.904)	-0.382 (0.000)***
Interest Rate	-5.340 (0.071)*	-4.262 (0.135)	-5.005 (0.070)*
Corporate Tax	9.160 (0.141)	1.917 (0.180)	-0.757 (0.610)
Sales Growth	-0.085 (0.337)	0.001 (0.979)	0.022 (0.480)
Cash Flow	0.055 (0.295)	0.044 (0.291)	0.028 (0.530)
R^2	0.330	0.3075	0.000

* Significant at the 10% level.
** Significant at the 5% level.
*** Significant at the 1% level

Profitability is statistically significant at 1% level and positively related with investment opportunities. Firm size is statistically significant at 1% level and is negatively related to investment opportunities. Finally, interest rate is statistically significant at 10% level and is negatively related to investment decision.

4.3.3 The Endogenous Financing Model

The previous section discusses the relationship between financing and investment decisions without accounting for endogeneity between them. However, if these two choices are made simultaneously, then empirical analyses in the previous section are flawed as endogeneity biases the results. Therefore methodological problem calls for reexamining results on investment and financing decisions in the presence of endogeneity. This study adopts an instrumental variable approach, by using two stage least square (2SLS), to deal with the endogeneity problem between financing and investment decisions.

Durbin-Wu-Hausman test of endogeneity shows a p-value of 0.001 which means Tobin's Q is an endogenous variable. In addition, test of overidentifying restriction based on Hansen and Sargan tests reveals that the instruments are valid with p-values of = 0.474 and 0.557 respectively.

Table 4.6 shows the results of fixed effects estimates and random effects estimates regressions for the financing regression model. The fixed effect estimation partially alleviates this endogeneity problem by eliminating the unobservable and time-invariant firm characteristics (Firth, Lin & Wong, 2008). Therefore, the fixed effects model is chosen.

By using 2SLS based on FE model, there are five significant variables compared to six previously without accounting for endogeneity. All variables are similar except tangibility ratio. Investment decision is statistically significant at 10% level and

positively related to financing decision under fixed effects estimates. This implies that as investment opportunities increases, firms tend to obtain more debt financing.

Table 4.6
Endogenous Financing Regression Model

Variables	**Random**	**Fixed**
	Coefficient (p-value)	**Coefficient (p-value)**
Constant	-1.370 (0.455)	-4.395 (0.000)***
Tobin's Q	-1.453 (0.612)	0.374 (0.060)*
Government Linked Investment Companies	0.708 (0.681)	0.567 (0.070)*
State Ownership	-0.206 (0.883)	-0.013 (0.970)
Board Size	0.005 (0.842)	0.001 (0.850)
Board Composition	-0.312 (0.562)	0.053 (0.540)
Managerial Ownership	-0.431 (0.631)	-0.129 (0.250)
Family Ownership	-1.172 (0.594)	0.021 (0.840)
Profitability	5.504 (0.636)	-1.143 (0.020)**
Firm Size	0.180 (0.487)	0.216 (0.000)***
Interest Rate	-4.06 (0.717)	2.317 (0.060)*
Corporate Tax	7.935 (0.642)	0.224 (0.700)
Tangibility Ratio	-0.014 (0.955)	-0.072 (0.500)
Non Debt Tax Shield	7.726 (0.607)	0.485 (0.530)
R^2	0.016	0.058

* Significant at the 10% level.
** Significant at the 5% level.
*** Significant at the 1% level.

Firms that make investments are expected to have better growth opportunities. Myers and Majluf (1984) argue that if they issue equities, then investors will interpret the

issuance as a signal that the firms' equities are overvalued. In this case, firms would prefer debt to equities. Moreover, the signaling theory supports this finding since it is based on the impact of information disparities on debt policy where the model posits the use of debt to reduce information asymmetry that exists between management and shareholders. It is argued that investors relate high debt with higher quality and higher future cash flow. Thus, high growth firms face greater information asymmetry and are expected to have higher debt levels to signal higher quality.

Furthermore, as firms in Malaysia are significantly owned by managers and families, issuing equity could lead to dilution of their control (Himmelberg *et al*. 2004). If managers or families do not want to dilute their control, they could use right issues. However, this would make their wealth to be less diversified. Therefore, they would prefer to issue debts as their choice of financing. A positive relationship between growth and leverage is reported by Hall *et al*. (2000) in a study of 3000 small and medium sized UK companies. Furthermore, this result is consistent with findings by Titman and Wessels (1988), Thies and Klock (1992) and Mutenheri and Green (2003).

GLICs ownership is statistically significant at 10% level and is positively related to financing decision under fixed effect estimates when Tobin's Q is treated as endogenous. This shows that as government ownership increases, firms tend to use more debt financing. This result is consistent with the findings of Dewenter and Malatesta (2001) and Li *et al*. (2009) who find that leverage is positively related to government ownership. This is because the firms may partake of loan guarantees (implicit or explicit) that the government provides, and such guarantees allow them to

borrow at more reasonable rates.In addition, they may borrow from the government itself at favourable rates. On top of that, the government could monitor the managers by ensuring they do not pursue their own goals, therefore, the conflict between managers and shareholders can be reduced.

State ownership is statistically not significantly related to financing decision. This finding is in line with Huang and Song (2006), Zou and Xiao (2006) and Hovey (2007) who find that the relationship between state ownership and leverage is not significant. One possible justification for obtaining this result in this research is that the percentage of state ownership is very small compared to GLICs ownership.

Board size is statistically not significantly related to financing decision. This finding is in line with Wiwattanakantang (1999), Wen *et al*. (2002) and Al-Najjar and Hussainey (2009) who show that the relationship between board size and leverage is not significant. One possible explanation is that for 92% of the observations, or 1379 firms-years, board size is located between five to ten persons after sorting the data, which means there is no variation in board size to influence debt financing.

Board composition is statistically not significantly related to financing decision. This result is consistent with findings by Al-Najjar and Hussainey (2009) who finds no association between board composition and financing decision. It seems that the non-executive directors do not have an influence on the financing decision making. It may be due to the fact that non-executive directors are generally nominated by the controlling shareholders which means that they are not truly independent.

Managerial and family ownerships are statistically not significantly related to financing decision. The conflicting empirical evidence on the relationship between managerial ownership and financing decision is not surprising. Berger *et al*. (1997) and Chen and Steiner (1999) find that managerial ownership and leverage are positively related. On the other hand, Jensen *et al*. (1992) and Hasan and Butt (2009) find negative relationship between managerial ownership and leverage. These results show that the effect of managerial ownership on financing decision is not clear. Similarly, the finding of the relationship between family ownership and financing decision is in line with Anderson and Reeb (2003) who find that family firms use similar amounts of debt as compared to non-family corporations in the United States. Margaritis and Psillaki (2010) confirm Anderson and Reeb's results and provide empirical evidence that ownership type does not significantly influence a firm's debt usage. A plausible justification is that mangers and family firms do not like to use high amount of debt because they will be exposed to higher bankruptcy risk. However, if they use low amount of debt then there is a higher conflict of interest between managers/families and minority shareholders which will increase the agency problem between them. Therefore, the offsetting effect of these two explanations could clarify the insignificant results. Moreover, firms characterized as having inefficient ownership structures will eventually face failure in the long-run. Therefore, there should be no relationship between ownership and leverage (King & Santor, 2008).

Profitability is statistically significant at 5% level and negatively related to financing decision. The result is in line with Kester (1986), Titman and Wessels (1988), Wald (1999) and Huang and Song (2006) who reveal a significant and negative relationship

between profitability and leverage. This finding is supported by the pecking order theory that predicts a negative relationship between debt and profitability which states that projects are financed first by internal funds in form of retained earnings, then by debt.

Firm size is statistically significant at 1% level and is positively related to financing decision. This suggests that as firm size increases, the firms will depend more on debt to finance their projects. A possible reason is that for large firms, more assets could be used as collateral. This is evidenced by studies (Friend & Lang, 1988; Marsh, 1982; Huang & Song, 2006) that find a positive relationship between size of firms and leverage. Similarly, interest rate is statistically significant at 10% level and positively related to financing decision. The finding matches with Thies and Klock (1992) and Chowdhury *et al*. (1994) who find the positive relationship between debt and interest rates. Interest rate is higher during good times and lower in bad times. A possible justification for the positive relationship between interest rate and financing decision is that GDP growth rate was positive during 2007 and 2008 and during that time interest rate was higher. Therefore, investors would expect companies to invest more during good GDP period and are willing to pay a higher interest rate.

Corporate tax is statistically not significantly related to financing decision. The finding is in line with Homaifa *et al*. (1994), Hussain (1995), Kim and Sorensen (1986), Lowe, Naughton and Taylor (1994) and De Jong, Kabir and Nguyen (2008) who find an indeterminate influence of corporate tax on financing decision. This might be due to the existence of other sources of corporate tax shields, such as

depreciation. Therefore, managers will not care much about the amount of debt as they could use other forms of tax-shields.

Tangibility ratio is not significantly related to financing decision. The finding is in line with Titman and Wessels (1988) and Lowe *et al.* (1994) who find insignificant influence of tangibility ratio on financing decision. A possible justification is that tangibility ratio includes fixed assets and some of these assets are not good collateral. In that case, tangibility ratio is not a good measure of collateralability of assets. Moreover, non-debt tax shield is statistically not significantly related to financing decision. The result goes with the findings by Titman and Wessels (1988), Allen and Mizuno (1989) and Van Der Wijst and Thurik (1993) who report insignificant influence of non-debt tax shield on financing decision. A Possible reason for insignificant NDTS might be due to measuring NDTS ratio incorrectly (Downs, 1993; Kolay, Schallheim & Wells, 2011). The denominator of NDTS ratio in this study is total assets instead of EBIT. However, the problem of using EBIT is that many observations have to be dropped as there are many companies with negative EBIT.

4.3.4 The Endogenous Investment Model

Durbin-Wu-Hausman test of endogeneity shows a p-value of 0.000 which means that financing decision as proxied using total liabilities is an endogenous variable. In addition, test of overidentifying restriction based on Hansen and Sargan tests reveals that the instruments are valid with p-values of 0.279 and 0.219 respectively.

Table 4.7 shows the results of fixed effects estimates and random effects estimates regressions for the investment regression model. The fixed effects model is chosen for

reporting. The results in table 4.7 are consistent with the results of exogenous FE in table 4.5 where the same five variables are significant under both estimation methods.

Table 4.7
Endogenous Investment Regression Model

Variables	**Random**	**Fixed**
	Coefficient (p-value)	**Coefficient (p-value)**
Constant	5.965 (0.059)*	16.243 (0.006)***
Total Liabilities / Total Assets	4.710 (0.108)	4.940 (0.064)*
Government Linked Investment Companies	-0.094 (0.857)	-1.876 (0.012)**
State Ownership	0.447 (0.684)	-0.122 (0.920)
Board Size	0.012 (0.559)	0.003 (0.857)
Board Composition	-0.057 (0.795)	-0.124 (0.593)
Managerial Ownership	-0.016 (0.946)	0.409 (0.160)
Family Ownership	-0.253 (0.361)	-0.049 (0.873)
Profitability	4.176 (0.000)***	3.784 (0.000)***
Firm Size	-0.330 (0.131)	-0.850 (0.014)**
Interest Rate	-7.072 (0.057)*	-8.141 (0.033)**
Corporate Tax	1.301 (0.432)	-0.340 (0.839)
Sales Growth	-0.079 (0.317)	-0.063 (0.371)
Cash Flow	0.056 (0.244)	0.019 (0.706)
R^2	0.047	0.000

* Significant at the 10% level.
** Significant at the 5% level.
*** Significant at the 1% level.

Financing decision is statistically significant at 10% level and is positively related to investment decision under fixed effects estimates. This result confirms the extant

investment opportunities literature which claims leverage and investment are strongly related. Berger and Ofek (1995) and Comment and Jarrell (1995) report that diversified firms have higher leverage ratios than non-diversified firms. This is due to the advantages gained from operating different business segments within one firm such as better operating efficiency, undertaking positive NPV projects, higher debt capacity, and lower taxes. Peyer and Shivdasani (2001) report that firms invest in more projects that produce greater cash flow following leveraged recapitalizations. This result is consistent with the finding of McConnell and Servaes (1995) who report a positive relation between growth opportunities and leverage among low growth firms. A reasonable explanation for the positive relation is that issuing debt avoids managers from undertaking negative net present value projects. In addition, using debt as a controlling mechanism encourages creditors to monitor managerial actions. Thus, better investment opportunities is associated with financing decision. Furthermore, tax shields offered by a higher leverage ratio lead to higher firm valuation.

GLICs ownership is statistically significant at 5% level and negatively related to investment opportunities indicating that higher ownership by the government does lead to reduction in investment opportunities. This result is consistent with the findings by Gunasekarage *et al*. (2007), Sun and Tong (2003) and Wei and Varela (2003). A possible reason for a negative relationship between government ownership and investment decision is that GLICs are monitored by both the Malaysian government and unit holders. In this case, GLICs controlled firm's managers might be more risk averse as compared to, for example, non- GLICs controlled firm's managers

who are monitored by only investors because the government can fire their managers if they do not perform well.

State ownership does not influence investment opportunities. This finding is in line with Wiwattanakantang (2001) and Lu and Yao (2006) who find that the relationship between state ownership and Tobin's Q as a proxy for investment decision is not significant. One possible justification for obtaining this result is that the percentage of state ownership is very small. In this case, state does not have any influence over major managerial decision.

Board size is statistically not significantly related to investment decision. This finding is in line with Oxelheim and Randoy (2003), Dwivedi and Jain (2005), Aljifri and Moustafa (2007) and Yammeesri and Herath (2010) who show that the relationship between board size and investment opportunities is not significant. A possible explanation is that it is argued smaller boards are better because of faster decision making and less agency problems. On the other hand, it is argued larger boards are better because the company would have good connections. Therefore, the offsetting effect of these two explanations could justify the insignificant result.

Board composition is statistically not significant related to investment decision. This result is consistent with the findings by Anderson and Reeb (2003), Chen, Cheung, Stouraitis & Wong (2005) and Lefort and Urzua (2008) who find no association between board composition and investment decision. It could be explained by the fact that non-executive directors are generally nominated by the controlling shareholders,

who also serve as directors. In this case, independent directors might be controlled by executive directors or non-independent non-executive directors.

Managerial and family ownerships are statistically not significantly related to investment decision. This result is in line with findings by Cho (1998) who finds no evidence that insider ownership has a significant effect on investment opportunities. Himmelberg, Hubbard & Palia (1999) confirms the previous result after controlling for both observable and unobservable characteristics of a firm's contracting environment. Similarly, the finding of the relationship between family ownership and investment opportunities is in line with Chang (2003), King and Santor (2008) and Randoy, Dibrell & Craig (2009) who find no association between family ownership and investment decision. King and Santor (2008) argue that the best ownership structure exists in efficient markets. Therefore, firms characterized as having inefficient ownership structures will eventually face failure in the long-run. As a result, there should be no statistical relationship between ownership and Tobin's Q, as the observed ownership structure will balance the marginal advantages and disadvantages to the firm's shareholders.

Profitability is statistically significant at 1% level and is positively related to investment opportunities. This means if firms expect a high level of profits, then the decision to undertake an investment will be positively influenced (Lianos & Mpenos, 1996). It is also obvious that if there is a decrease in profitability the effect on future investment could be negative (Sarantidis, 1995). In other words, firms with higher profits invest more (Romer, 1996).

Firm size is statistically significant at 5% level and is negatively related to investment opportunities. This indicates that the larger is the firm size, the less is the spending on new projects. As firms grow larger, relative investment spending would be lower. Interest rate is statistically significant at 5% level and is negatively related to investment opportunities. The direction of this impact is well documented to be negative by Dornbusch and Fischer (1990) and Milios *et al*. (2000) where lower interest rate leads to lower cost of capital that means more positive net present value projects. Additional evidence about a negative relationship can be found in the studies of Mayer (1968), Bischoff (1971a, 1971b) and Mprissimis *et al*. (2002)

Corporate tax is not significantly related to investment opportunities. The finding is in line with Titman and Wessels (1988) who find no relationship between debt-to-value ratios and tax rates. Finally, sales growth and cash flow are statistically not significant related to investment opportunities.

4.4 Robustness Analyses

In this section financing and investment models are compared in low and high growth firms. In general, investment decision has an influence on a firm financing decision and vice versa. There are two schools of thought in this subject area. The first one shows that a negative relationship between financing and investment only exists in low growth firms (Lang *et al*., 1996; Aivazian *et al*., 2005; Fukuda *et al*., 2005; Yuan & Motohashi, 2008) while the second group shows that the negative relationship between financing and investment decisions exists in high growth firms (McConnell & Servaes, 1995; Ahn *et al*., 2006).

To test the relationship between financing and investment for different levels of growth, the firms in this study are then divided into two groups. Specifically, to demarcate the high-growth firms and the low-growth firms, this study uses Tobin's Q ratio. This ratio is obtained by dividing the firm's market value of total assets by the book value of assets. The next step is to rank the firms for each year according to Tobin's Q. Firms with high Tobin's Q ratio (i.e. above 1) are classified under high growth opportunities firms. Specifically, higher than 1.0 Tobin's Q indicates that the market value is higher than the value of the recorded firm assets and this shows that the market value represents some unrecorded firm assets. Moreover, high values of Tobin's Q motivates companies to invest more in capital as they are worth more than the price they paid for them. Contrastingly, firms with low Tobin's Q ratio (i.e. less than 1) are classified under low growth opportunities firms, which means that the market value is lower compared to the recorded value of the company assets.

This analysis is divided into four subsections. In section 4.4.1, the financing model is examined for low growth firms while in section 4.4.2, the investment model is examined for low growth firms. In sections 4.4.3 and 4.4.4, the financing and investment models are investigated for high growth firms respectively.

Additionally, this study uses different proxies for financing and investment decisions. Long term debt represent financing decision and capital expenditures represents investment decision. Long-term debt emphasizes the dominant role as a determinant of investment once capital expenditures is used as a proxy for investment decision (Aivazian *et al*., 2005). Capital expenditures is deemed to be the investment opportunity set's investment-based proxy – such a proxy is dependent on the notion

that a greater level of investment activity is positively linked to firm's investment opportunity set (IOS). As such, high IOS firms should also have greater investment levels because IOS is transformed into assets in place over time. The formation of investment-based proxies is based on ratio comparing a measure of investment to a measure of assets in place or to operating outcomes generated by assets in-place assets (Smith & Watts, 1992). Therefore, in section 4.4.5, the financing model is examined using long term debt. Finally, in section 4.4.6, the investment model is examined using capital expenditures.

4.4.1 The Financing Model (Low Growth Firms)

Testing the endogeneity between financing and investment decision based on Durbin-Wu-Hausman test shows a p-value of 0.153 which means Tobin's Q is an exogenous variable. Table 4.8 shows the outcomes of pooled OLS, random effects estimates and fixed effects estimates regressions for the financing regression model. F-test shows an F-value of 31.097 with a p-value of 0.000. Therefore, fixed effects estimates is chosen over pooled OLS. Second, LM test shows a chi-square value of 1297.76 with a p-value of 0.000. Therefore, random effects technique is chosen over pooled OLS. Finally, the Hausman test shows that the fixed effects model is the appropriate model since it produces a chi-square of 47.60 with a p-value of 0.000. Therefore, the results of exogenous financing model under fixed effects estimates are reported.

Based on the fixed effects estimates, there are five significant variables. They are state ownership, profitability, firm size, interest rate and tangibility ratio. One variable which is not significant in Table 4.4 but is significant now is state ownership. In

addition, two variables which are significant in Table 4.4 but are not significant now are Tobin's Q and GLICs.

Table 4.8
Financing Regression Model for Low Growth Firms

Variables	**Pooled**	**Random**	**Fixed**
	Coefficient (p-value)	**Coefficient (p-value)**	**Coefficient (p-value)**
Constant	-0.641 (0.005)***	-1.217 (0.000)***	-2.69 (0.000)***
Tobin's Q	0.019 (0.531)	-0.007 (0.470)	-0.011 (0.290)
Government Linked Investment Companies	-0.567 (0.000)***	-0.166 (0.080)*	0.135 (0.220)
State Ownership	1.067 (0.022)**	1.148 (0.060)*	1.298 (0.070)*
Board Size	0.009 (0.072)*	0.001 (0.730)	0.000 (0.930)
Board Composition	-0.053 (0.447)	-0.050 (0.100)	-0.036 (0.260)
Managerial Ownership	0.038 (0.596)	0.010 (0.800)	-0.001 (0.970)
Family Ownership	-0.153 (0.032)**	-0.032 (0.380)	0.009 (0.810)
Profitability	-0.423 (0.001)***	-0.186 (0.000)***	-0.187 (0.000)***
Firm Size	0.050 (0.000)***	0.080 (0.000)***	0.154 (0.000)***
Interest Rate	1.204 (0.015)**	1.114 (0.010)**	1.104 (0.010)**
Corporate Tax	-1.822 (0.000)***	-0.427 (0.070)*	-0.370 (0.120)
Tangibility Ratio	-0.046 (0.493)	0.070 (0.020)**	0.087 (0.010)**
Non Debt Tax Shield	0.433 (0.307)	-0.279 (0.310)	-0.346 (0.240)
R^2	0.1812	0.094	0.061

* Significant at the 10% level.
** Significant at the 5% level.
*** Significant at the 1% level.

This model only focuses on low growth firms which have less investment opportunities. This is why Tobin's Q is not significant. An insignificant relationship between GLICs ownership and financing decision is reported by Huang and Song

(2006), Zou and Xiao (2006) and Hovey (2007). Finally, state ownership is statistically significant at 10% level and positively related to the financing decision. This finding is in line with Dewenter and Malatesta (2001) and Li *et al*. (2009) who find that leverage is positively related to state ownership because of the guarantee provided by the state.

4.4.2 The Investment Model (Low Growth Firms)

The endogeneity test shows a p-value of 0.150 which means total liabilities is an exogenous variable. Table 4.9 shows the outcomes of pooled OLS, random effects estimates and fixed effects estimates regressions for the investment regression model. F-test shows an F-value of 3.238 with a p-value of 0.000. Therefore, fixed effects estimates is chosen over pooled OLS. Second, LM test shows a chi-square value of 166.21 with p-value of 0.000. Therefore, random effects technique is chosen over pooled OLS. Finally, the Hausman test shows that the fixed effects model is the appropriate model since it produces a chi-square of 29.04 with p-value of 0.000. Therefore, the results of investment model under fixed effects estimates are reported.

The fixed effects estimates show seven significant variables which are GLICs, state ownership, board composition, managerial ownership, family ownership, profitability and corporate tax. Five variables which are not significant in the investment model of Table 4.5 but are significant now are state ownership, board composition, managerial ownership, family ownership and corporate tax. In addition, three variables which are significant in Table 4.5 but are not significant now are total liabilities, firm size and interest rate.

Financing decision does not affect investment opportunities for low growth firms could be because managers are exposed to larger bankruptcy risk if they use high amount of debt. However, if they use low amount of debt then they will increase the agency problem between managers and minority shareholders. Therefore, the offsetting effect of these two explanations could explain the insignificant result. Another justification is that low growth firms have less investment projects. Therefore, it is risky for managers to decide to use debt, in this case they will use less amount of debt. At the same time they will not issue equity as well because they do not have a lot of investment opportunities. Therefore, the effects cancelled off between offering equities or debt.

Firm size is not significant in explaining investment opportunities for low growth firms could be because as firms get larger then will generate more profit to finance new projects. In addition, low growth firms do not have a lot of projects, less investment opportunities, which means the size of the firm does not affect the investment decision. Similarly, interest rate does not affect investment opportunities could be because of low growth firms do not make a lot of investments which means less investment opportunities and lower information asymmetry. Therefore, it is indifference to them to use debt or equity.

State ownership is statistically significant at 1% level and positively related to the investment decision. This finding is in line with Ramirez and Tan (2004) and Ab Razak *et al*. (2008) who find that investment decision is positively related to state ownership. A possible justification would be that with the state intervention, the firm's management is highly conscious of the significance of increasing shareholder's

value and not of self-serving interests (Lau & Tong, 2008). Furthermore, state might be more interested in meeting social goals, such as increasing employment. Thus, even though a firm has low growth opportunities, state might be interested in investing in more projects.

Board composition is statistically significant at 1% level and negatively related to the investment opportunities. Low growth firms have a few available investment opportunities. The independent directors will ensure that firms are taking truly valuable projects. The finding is consistent with Bathala and Rao (1995) and Hutchinson (2002) who find that investment decision is negatively related to board composition.

Managerial ownership is statistically significant at 5% level and negatively related to the investment opportunities. The finding is consistent with Munari *et al*. (2005) and Hall and Oriani (2006) who find that investment decision is negatively related to managerial ownership. The higher managerial ownership leads to lower investment opportunities for low growth firms could be explained by that managers are risk averse and they do not engage in opportunistic behavior to benefit themselves. On the other hand, family ownership is statistically significant at 10% level and positively related to the investment opportunities. The finding is consistent with Anderson and Reeb (2003), Villalonga and Amit (2006) and Maury (2006) who find that investment decision is positively related to family ownership. Families are more likely to be inclined to monitor managers as the family's wealth is closely related to the net present value projects. Similarly, corporate tax is statistically significant at 10% level and positively related to the investment opportunities. This finding shows that as the

effective tax rate increases, the investments will increase as well because the required return is therefore reduced proportionally.

Table 4.9
Investment Regression Model for Low Growth Firms

Variables	**Pooled**	**Random**	**Fixed**
	Coefficient (p-value)	**Coefficient (p-value)**	**Coefficient (p-value)**
Constant	0.682 (0.008)***	0.694 (0.010)**	-0.068 (0.940)
Total Liabilities / Total Assets	0.065 (0.391)	0.036 (0.580)	-0.129 (0.290)
Government Linked Investment Companies	-0.011 (0.948)	-0.142 (0.410)	-0.637 (0.090)*
State Ownership	0.842 (0.395)	2.111 (0.050)*	9.340 (0.000)***
Board Size	0.011 (0.088)*	0.011 (0.080)*	0.011 (0.250)
Board Composition	-0.133 (0.091)*	-0.190 (0.010)**	-0.330 (0.000)***
Managerial Ownership	-0.149 (0.091)*	-0.199 (0.010)**	-0.335 (0.030)**
Family Ownership	0.051 (0.556)	0.098 (0.200)	0.224 (0.100)*
Profitability	0.619 (0.007)***	0.771 (0.000)***	0.918 (0.000)***
Firm Size	-0.002 (0.865)	-0.001 (0.940)	0.043 (0.380)
Interest Rate	-1.160 (0.415)	-1.009 (0.490)	-0.292 (0.840)
Corporate Tax	1.745 (0.012)**	1.697 (0.010)**	1.425 (0.080)*
Sales Growth	0.049 (0.031)**	0.033 (0.060)*	0.021 (0.240)
Cash Flow	0.017 (0.050)*	0.014 (0.330)	0.006 (0.820)
R^2	0.082	0.077	0.040

* Significant at the 10% level.
** Significant at the 5% level.
*** Significant at the 1% level.

4.4.3 The Financing Model (High Growth Firms)

Durbin Wu-Hausman test shows a p-value of 0.366 which means Tobin's Q is an exogenous variable. Table 4.10 shows the outcomes of pooled OLS, random effects estimates and fixed effects estimates regressions for the financing regression model without accounting for endogeneity. F-test shows an F-value of 29.177 with a p-value of 0.000. Thus, fixed effects estimates is chosen over pooled OLS. Second, LM test shows a chi-square value of 581.75 with a p-value of 0.000. Therefore, random effects technique is chosen over pooled OLS. Finally, the Hausman test shows that the fixed effects model is the appropriate model since it produces a chi-square of 115.59 with a p-value of 0.000. Therefore, the results of financing model under fixed effects estimates are reported.

Fixed effects estimates shows that there is one additional significant variable that affects financing decision which is non-debt tax shield compare to the results obtain from the financing model without accounting for endogeneity. In addition, tangibility ratio is significant in the financing model without accounting for endogeneity (refer to Table 4.4) but is not significant now.

Non-debt tax shield is statistically significant at 5% level and positively related to the financing decision. The finding is consistent with Bradley *et al.* (1984) and MacKie-Mason (1990) who report the existence of a significant and positive association between non-debt tax shield and leverage**.** High growth firms are still going to make more profit in the future. Therefore, they are going to use more debt to get advantage of the tax shield.

Table 4.10
Financing Regression Model for High Growth Firms

Variables	**Pooled**	**Random**	**Fixed**
	Coefficient (p-value)	**Coefficient (p-value)**	**Coefficient (p-value)**
Constant	-0.056 (0.849)	-0.863 (0.000)***	-1.946 (0.000)***
Tobin's Q	0.045 (0.000)***	0.026 (0.000)***	0.028 (0.000)***
Government Linked Investment Companies	0.204 (0.082)*	0.088 (0.350)	0.191 (0.080)*
State Ownership	-0.280 (0.097)*	-0.105 (0.480)	-0.019 (0.900)
Board Size	-0.002 (0.759)	-0.006 (0.090)*	-0.005 (0.160)
Board Composition	-0.181 (0.098)*	0.012 (0.800)	0.017 (0.740)
Managerial Ownership	-0.108 (0.301)	0.007 (0.890)	-0.003 (0.960)
Family Ownership	0.108 (0.337)	-0.018 (0.820)	-0.105 (0.270)
Profitability	-0.990 (0.000)***	-0.519 (0.000)***	-0.444 (0.000)***
Firm Size	0.030 (0.020)**	0.060 (0.000)***	0.111 (0.000)***
Interest Rate	0.473 (0.565)	0.778 (0.260)	1.260 (0.060)*
Corporate Tax	-1.013 (0.101)	0.116 (0.710)	0.260 (0.420)
Tangibility Ratio	-0.043 (0.674)	0.016 (0.660)	0.020 (0.610)
Non Debt Tax Shield	-0.411 (0.566)	0.569 (0.180)	1.052 (0.040)**
R^2	0.354	0.226	0.150

* Significant at the 10% level.
** Significant at the 5% level.
*** Significant at the 1% level.

Tangibility is not significant in explaining the financing decision for high growth firms. One possible explanation could be that high growth firms have low amount of assets in place to be used as collateral. Therefore, managers will provide less collateralized debts. On the other hand, in financial distress situation, firms with more tangible assets get liquidation as an additional strategic choice (Harris & Raviv, 1991) to avoid greater loss of value. Thus, if a firm with high amount of intangible portion

in its asset composition issues more debt, its financial distress costs are higher than a firm with more tangible assets. Therefore, the offsetting effect of these two explanations could clarify the insignificant result.

4.4.4 The Investment Model (High Growth Firms)

Financing decision is an exogenous variable based on Durbin Wu-Hausman test for endogeneity which shows a p-value of 0.350. Table 4.11 shows the outcomes of pooled OLS, random effects and fixed effects for the investment regression model. F-test shows an F-value of 12.919 with a p-value of 0.000. Therefore, fixed effects estimates is chosen over pooled OLS. Second, LM test shows a chi-square value of 400.29 with a p-value of 0.000. Therefore, random effects technique is chosen over pooled OLS. Finally, the Hausman test shows that the fixed effects model is the appropriate model since it produces a chi-square of 61.920 with a p-value of 0.000. Therefore, the results of investment model under fixed effects estimates are reported.

The fixed effects estimates shows six significant variables which are total liabilities, managerial ownership, profitability, firm size, interest rate and corporate tax. Two variables which are not significant in the investment model without accounting for endogeneity as reported in Table 4.5 but are significant now are managerial ownership and corporate tax. In addition, one variable which is significant in Table 4.5 but is not significant now is GLICs.

Managerial ownership is statistically significant at 5% level and positively related to the investment decision. This finding is in line with Lhuillery (2009) and Lerner *et al*. (2010) who find that investment decision is positively related to managerial

ownership. The higher managerial ownership leads to higher investment opportunities for high growth firms could be explained by the fact that managers have more information about the projects. Therefore, they may attempt to invest more in order to realize growth.

Table 4.11
Investment Regression Model for High Growth Firms

Variables	**Pooled**	**Random**	**Fixed**
	Coefficient (p-value)	**Coefficient (p-value)**	**Coefficient (p-value)**
Constant	2.204 (0.144)	4.903 (0.010)**	17.957 (0.000)***
Total Liabilities / Total Assets	2.854 (0.006)***	2.849 (0.000)***	3.599 (0.000)***
Government Linked Investment Companies	-0.392 (0.705)	0.316 (0.720)	-1.023 (0.410)
State Ownership	-0.681 (0.470)	-0.162 (0.920)	-0.663 (0.710)
Board Size	-0.041 (0.325)	-0.041 (0.280)	-0.055 (0.200)
Board Composition	-0.266 (0.685)	-0.162 (0.750)	0.184 (0.750)
Managerial Ownership	-0.355 (0.505)	0.355 (0.520)	1.250 (0.050)**
Family Ownership	-1.337 (0.034)**	-1.862 (0.010)**	-1.624 (0.130)
Profitability	9.445 (0.000)***	7.023 (0.000)***	5.999 (0.000)***
Firm Size	-0.041 (0.491)	-0.165 (0.050)*	-0.817 (0.000)***
Interest Rate	-9.087 (0.232)	-8.556 (0.260)	-12.813 (0.090)*
Corporate Tax	11.215 (0.218)	-0.502 (0.890)	-7.520 (0.060)*
Sales Growth	-0.266 (0.071)*	-0.111 (0.150)	-0.075 (0.320)
Cash Flow	0.097 (0.434)	0.022 (0.820)	-0.027 (0.780)
R^2	0.433	0.372	0.028

* Significant at the 10% level.
** Significant at the 5% level.
*** Significant at the 1% level.

Corporate tax is statistically significant at 10% level and negatively related to the investment decision. Plausible explanation for the negative result is that corporate taxation can distort the investment plans by reducing the after tax returns to new investment (Jorgenson, 1963; Hall & Jorgenson, 1967). As a result, when the corporate tax rate is high, companies tend to have low investment level.

GLICs ownership does not affect investment opportunities could be because high growth firms have more profitable projects. Therefore, the government, state and family will let the management to decide on their own about the best cause of actions, in this case high growth firms need less monitoring by the government or the state.

4.4.5 The Financing (LTD) Model

Testing the endogeneity between financing and investment decision based on Durbin Wu- Hausman test shows a p-value of 0.047 which means capital expenditures is an endogenous variable at 5% level. In addition, Hansen and Sargan tests reveal that the instruments are valid with p-values of 0.241 and 0.373 respectively. Table 4.12 shows the results of fixed effects estimates and random effects estimates regressions for the financing regression model. The fixed effect estimation partially alleviates this endogeneity problem by eliminating the unobservable and time-invariant firm characteristics (Firth *et al*., 2008). Therefore, the fixed effects model is chosen.

By using 2SLS based on FE model, there are four significant variables. They are GLICs, firm size, corporate tax and tangibility ratio. Two variables which are not significant in the financing model after accounting for endogeneity, as reported in Table 4.6, but are significant now are corporate tax and tangibility ratio. In addition,

three variables which are significant in Table 4.6 but are not significant now are capital expenditures, profitability and interest rate.

Corporate tax is statistically significant at 1% level and negatively related to the financing decision. This finding is in line with Matheson (2006) who finds a negative relationship between corporate debt levels and corporate tax. This result could be justified using pecking order theory which suggests that firms prefer to use internal financing instead of debt financing to undertake new projects. Logically, profitable firms pay higher tax and based on pecking order theory they choose internal financing over external financing. Therefore, a negative relationship is expected between corporate tax and leverage.

Tangibility is statistically significant at 1% level and positively related to the financing decision. This finding is in line with Colombo (2001) and Mutenheri and Green (2003) who find a positive relationship between corporate debt levels and tangibility. The higher the tangibility leads to higher leverage could be explained by the fact that leveraged firms stockholders are incentivized to invest sub-optimally and hence transfer wealth away from bondholders of the firm. In cases where debt can be secured against assets, the borrower is confined to making use of loaned funds for particular projects, and enabling the creditors to have an enhanced repayment guarantee that depends on the collateralized assets value.

Table 4.12
Financing Regression Model

Variables	Random	Fixed
	Coefficient (p-value)	**Coefficient (p-value)**
Constant	-0.654 (0.000)***	-1.070 (0.000)***
Capital Expenditures	0.061 (0.586)	-0.053 (0.645)
Government Linked Investment Companies	0.019 (0.667)	0.173 (0.010)**
State Ownership	-0.079 (0.434)	-0.069 (0.575)
Board Size	0.000 (0.881)	0.001 (0.506)
Board Composition	-0.006 (0.730)	0.001 (0.951)
Managerial Ownership	0.027 (0.242)	0.038 (0.224)
Family Ownership	-0.023 (0.339)	-0.022 (0.496)
Profitability	-0.009 (0.837)	0.056 (0.244)
Firm Size	0.035 (0.000)***	0.053 (0.000)***
Interest Rate	0.101 (0.795)	0.373 (0.359)
Corporate Tax	-0.606 (0.000)***	-0.604 (0.001)***
Tangibility Ratio	0.132 (0.000)***	0.169 (0.000)***
Non Debt Tax Shield	-0.108 (0.574)	-0.073 (0.785)
R2	0.247	0.207

* Significant at the 10% level.
** Significant at the 5% level.
*** Significant at the 1% level.

Investment opportunities is insignificantly related to the financing decision because a different proxy is used which is capital expenditures. More investment opportunities do not necessarily mean the companies will use high leverage, they could finance investments using equity rather than debt because equity increases managerial discretion, and because growth firms face more information asymmetries which

makes banks charge them higher interest rate. Therefore, growth firms would prefer to issue equity to finance new projects (Jung *et al*., 1996).

Profitability is insignificantly related to the financing decision because this study uses current profitability measurement that does not affect long term financing. Therefore, future profitability proxy should be used instead. Similarly, interest rate is insignificantly related to the financing decision because the rate observed in this study is short term rate, base lending rate, which does not affect the long term financing. Therefore, interest rate over long term period should be used instead of base lending rate.

4.4.6 The Investment (CAPEX) Model

Durbin Wu-Hausman test for endogeneity shows a p-value of 0.140 which means long term debt is an exogenous variable. Table 4.13 shows the outcomes of pooled OLS, random effects and fixed effects for the investment regression model. F-test shows an F-value of 2.600 with a p-value of 0.000. Fixed effects method is chosen over pooled OLS as the p-value of F-test is 0.000. Second, LM test shows a chi-square value of 154.17 with a p-value of 0.000. Therefore, the null hypothesis that the preferred model is pooled OLS is rejected. As a result, random effects technique is chosen over pooled OLS. Finally, the Hausman test shows that the random effects model is the appropriate model since it produces a chi-square of 16.25 with a p-value of 0.235. Therefore, the results of investment model using random effects are reported.

Based on the random effects estimates, there are five significant variables. They are long term debt, profitability, interest rate, corporate tax and sales growth. Three variables which are not significant in the investment model of Table 4.5 but are significant now are interest rate, corporate tax and sales growth. In addition, one variable which is significant in Table 4.5 but is not significant now is family ownership.

Interest rate is statistically significant at 1% level and positively related to the investment decision. This result could be explained by noting that the interest rate is higher during good economic time, thus providing better investment opportunities. Having good potential investment opportunities means the companies need fund to finance the projects. Therefore, it is observed that there is a positive relationship between interest rate and investment decision.

Corporate tax is marginally significant at 10% level and negatively related to the investment decision. A plausible explanation for the negative result is that corporate taxation can damage the investment plans by reducing the after tax returns to new investment (Jorgenson, 1963; Hall & Jorgenson, 1967). Therefore, based on the result, it seems like the firms tend to invest less when the corporate tax rate is high. On the other hand, sales growth is statistically significant at 1% level and positively related to investment opportunities. The result is in line with Odit and Chittoo (2008) who find a positive relationship between sales growth and investment decision. If a firm wants more growth opportunities it has to invest more. Therefore, the higher the sales growth, the higher the investment opportunities.

Table 4.13
Investment Regression Model

Variables	Pooled	Random	Fixed
	Coefficient (p-value)	**Coefficient (p-value)**	**Coefficient (p-value)**
Constant	-0.001 (0.986)	-0.025 (0.788)	-0.383 (0.277)
Long Term Debt / Total Assets	0.119 (0.044)**	0.114 (0.005)***	0.120 (0.041)**
Government Linked Investment Companies	0.022 (0.692)	0.015 (0.773)	0.027 (0.831)
State Ownership	-0.141 (0.005)***	-0.115 (0.402)	0.016 (0.946)
Board Size	0.001 (0.696)	0.002 (0.400)	0.004 (0.241)
Board Composition	0.021 (0.434)	0.021 (0.458)	0.008 (0.854)
Managerial Ownership	0.028 (0.288)	0.027 (0.366)	0.046 (0.446)
Family Ownership	-0.031 (0.223)	-0.022 (0.464)	0.047 (0.464)
Profitability	0.351 (0.000)***	0.293 (0.000)***	0.204 (0.003)***
Firm Size	-0.003 (0.507)	-0.002 (0.504)	0.012 (0.476)
Interest Rate	1.598 (0.003)***	1.749 (0.005)***	2.033 (0.001)***
Corporate Tax	-0.582 (0.079)*	-0.429 (0.082)*	-0.247 (0.475)
Sales Growth	0.034 (0.004)***	0.031 (0.000)***	0.029 (0.000)***
Cash Flow	-0.001 (0.839)	-0.005 (0.319)	-0.023 (0.022)**
R^2	0.078	0.077	0.033

* Significant at the 10% level.
** Significant at the 5% level.
*** Significant at the 1% level.

Family ownership is insignificantly related to investment opportunities. It could be justified that family firms are choosy regarding investment opportunities and they are looking at the performance of the firm, not all investments are profitable. Therefore, family firms will choose only positive net present value projects.

4.5 Summary

This chapter presents the descriptive statistics for all variables used in the study. It also presents the diagnostics results of panel data by checking for the effects of multicollinearity, heteroscedasticity, and autocorrelation. The models that are presented in chapter three are tested in this chapter. The first two models are tested based on the assumption of exogeneity while the rest are tested in the presence of endogeneity between financing and investment decisions.

The results of model (1) and model (3), when financing decision is treated as the dependent variable with and without endogeneity show the same results except that tangibility reports positive and significant relationship with financing decision before accounting for endogeneity in model (1), but it has no effect on financing decision after controlling for endogeneity. Both models reveal that investment decision, government linked investment companies, firm size and interest rate report positive and significant relationships with financing decision, while profitability has a negative and significant relationship with financing decision. Although both models reveal similar result, model (3) is more appropriate because it takes into account endogeneity that exists between financing and investment decision.

The results of model (2) and model (4), when investment decision is treated as the dependent variable with and without endogeneity show exactly the same results. Both models show that financing decision and profitability report positive and significant relationships with investment decision, while government linked investment companies, firm size and interest rate have negative and significant relationships with

financing decision. In addition, Durbin Wu Hausman shows that there is endogeneity between investment and financing decisions. Therefore, model (4) is chosen.

This chapter also highlights the results of the robust analyses by demarcating the sample into low growth and high growth firms. In all models, exogeneity of financing or investment decisions cannot be rejected and fixed effects models are chosen. Financing model in low growth firms shows an extra significant variable compared to the whole sample which is the state ownership that has a positive and significant relationship with financing decision. On the other hand, investment model in low growth firms shows five additional significant variables compared to the whole sample. State ownership, family ownership and corporate tax report positive and significant relationships with investment decision, while board composition and managerial ownership report negative and significant relationships with investment opportunities.

Financing model in high growth firms shows one additional significant variable in the model compared to the whole sample of this study which is non debt tax shield that has positive and significant relationship with financing decision. On the other hand, investment model in high growth firms shows two additional significant variables in the model compared to the whole sample of this study which are managerial ownership and corporate tax. Managerial ownership reports positive and significant relationship with investment opportunities, while corporate tax report negative and significant relationship with the investment decision.

Finally, this chapter also highlights the results of the robust analyses by using different proxies for financing and investment decisions. The financing model using long term debt shows two additional significant variables in the model compared to the whole sample of this study which are corporate tax and tangibility ratio. Corporate tax has a negative and significant relationship with long term debt, while tangibility ratio report positive and significant relationship with long term debt. On the other hand, the investment model using capital expenditures shows three additional significant variables in the model compared to the whole sample of this study which are interest rate, corporate tax and sales growth. Interest rate and sales growth report positive and significant relationship with capital expenditures, while corporate tax reports negative and significant relationship with the investment decision.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATION

5.0 Introduction

This chapter provides the conclusion of this study and it is divided into five sections. The first section shows an overview of the research process, the second section summarizes the findings, the third section discusses the contributions and implications, the forth section provides the limitations and recommendations for future research, and the last section presents the conclusion of the study.

5.1 Overview of the Research Process

The objective of this study is to examine the simultaneous effect of financing and investment decisions and the effects of corporate governance factors on both decisions for a sample of three hundred Malaysian public listed companies. Related literatures are reviewed to identify relevant variables of corporate governance that may influence the financing and investment decisions of the Malaysian listed companies. This study examines the effects of six corporate governance factors, which are family ownership, government and state ownership, managerial ownership, board size and board composition after controlling for profitability, firm size, interest rate and corporate tax. Financing decision is measured as total liabilities divided by total assets and investment decision is measured as market to book value (Tobin's Q). To understand the role of financing, investment and corporate governance characteristics, several theories are used, namely, agency theory, free cash flow theory, Modigliani and Miller theorem, the static trade off theory, the pecking order theory, the timing theory, neoclassical theory, and Q theory. Based on different

theoretical perspectives and a review of the extent literature, the study develops a conceptual framework and a set of hypotheses.

The sample of this study is identified randomly by using random number generator. Final sample consists of 300 companies that are listed on the Main Market of Bursa Malaysia during a period of 2007 to 2011 are used as the final sample. The analyses of this study begin by providing descriptive statistics on the dependent and independent variables. The study then proceeds to test for the existence of multicollinearity by using Pearson's correlation coefficients and the variance inflation factor (VIF). Pooled OLS estimates, random estimates and fixed effect estimates are compared without accounting for endogeneity to examine the effect of investment decision and corporate governance factors on financing decision, similarly the above estimates are compared without accounting for endogeneity to examine the effect of financing decision and corporate governance factors on investment decision. The study then proceeds to examine the effect of investment and corporate governance factors on financing decision after accounting for endogeneity under fixed effects estimates. Similarly, fixed effects estimates after accounting for endogeneity are performed to examine the effect of leverage and corporate governance factors on investment decision.

Additional analyses are then performed to investigate the robustness of the results. Robust analyses are carried out by demarcating the sample to low growth and high growth firms. Robust analyses are carried out also by using different proxies for financing and investment decisions, where long term debt represents financing decision and capital expenditures represents investment decision.

5.2 Summary of Findings

Out of 1500 observations in the main models, only 1482 observations are used for analyses because 18 observations have missing values. Descriptive statistics show that when ownership of all major groups of shareholders are compared ,it is observed that on average, companies in Malaysia are substantially held by managers where managerial ownership has a mean of 34.8%. The second highest ownership mean value is family ownership at 30.2%. The high percentage of managerial and family ownership suggests that both have the incentive to manage their companies effectively. The results of descriptive statistics show that the mean value for board composition is 62.1%. This reveals that boards are not dominated by insiders.

In terms of correlations between the independent variables, Pearson correlations show that the highest correlation is 68% between managerial ownership and family ownership. It is expected that the correlation would be high between them because family controlled firms would appoint family members as managers. The lowest value is 0.001 which is observed between interest rate and managerial ownership.

The results of the endogenous financing model show that investment decision, government linked investment companies, firm size and interest rate report positive relationships with financing decision, while profitability has a negative relationship with financing decision. In addition, the results of the endogenous investment model show that financing decision and profitability report positive relationships with investment decision, while government linked investment companies, firm size, and interest rate have negative relationships with financing decision.

The results of the robust analyses when separating the sample into low growth and high growth firms show that, in all models, exogeneity of financing or investment decisions cannot be rejected. Exogenous financing model in low growth firms shows an additional significant variable as compared to the whole sample which is state ownership that has positive relationship with financing decision. On the other hand, exogenous investment model in low growth firms shows five additional significant variables compared to the whole sample. State ownership, family ownership and corporate tax have positive relationships with investment decision, while board composition and managerial ownership have negative relationships with investment opportunities.

The results of robust analyses for exogenous financing model in high growth firms show an extra significant variable in the model as compared to the whole sample of this study where non debt tax shield has positive relationship with financing decision. On the other hand, exogenous investment model in high growth firms shows two additional significant variables in the model where managerial ownership reports positive relationship while corporate tax report negative relationship.

Finally, the results of robust analyses once the proxies of financing and investment decisions are replaced with long term debt and capital expenditures respectively show that, endogeneity of financing decision cannot be rejected while exogeneity of investment decision cannot be rejected. The endogenous financing model reveals that two additional significant variables in the model as compared to the whole sample of this study which are corporate tax and tangibility ratio. Corporate tax has a negative relationship with long term debt, while tangibility ratio report positive relationship

with long term debt. On the other hand, the exogenous investment model shows that three additional significant variables in the model as compared to the whole sample of this study which are interest rate, corporate tax and sales growth. Interest rate and sales growth have positive relationships with capital expenditures, while corporate tax reports negative relationship with the investment decision.

5.3 Contributions and implications of the Study

In general, the findings from this study have helped to provide more information and empirical evidence by adding to the existing literature on the relationship between leverage and investment decisions. This research considers two dependent variables, i.e. leverage and growth opportunities, and extends prior studies in this area by examining financing and investment decisions simultaneously of the companies listed on Bursa Malaysia. Hence, the first major contribution of the study is to examine the relationship between financing and investment decisions in such a simultaneous manner. Based on the results of this study, it is found that leverage and investment decision are positively significant and are simultaneously determined. This indicates that the relationship between leverage and investment decision are interdependent of each other, which means that researchers should consider the leverage and investment decision together in determining the firm's capital structure. Consequently, estimating the two policies independently by using ordinary least square (OLS) would give biased results. The positive signs observed for both leverage and investment indicate that they influence each other simultaneously, thus, high market to book value may imply high borrowings and vice versa.

Previous studies show that corporate governance plays an important role in explaining the financing and investment decisions. Although this study also examines the role of corporate governance factors on the two major decisions, it is carried out in a situation where both decisions are examined simultaneously. Therefore, the second contribution of this study is providing empirical evidence on the role of corporate governance factors in influencing financing and investment decisions where both of them are determined simultaneously. Looking at the whole sample models is like snapshotting a big picture. In view of that, for better and clearer explanation, the discussions are divided into low-growth firms and high-growth firms.

Specifically, the results show that GLICs ownership affects leverage positively. This means GLICs use its position to let their controlled firms to use higher debt level especially for high growth firms. Since high-growth firms are more profitable, they can utilize debt tax-shields. In contrast to financing, GLICs ownership has negative relationship with investment opportunities. This is especially true for low-growth firms. Indeed, the negative relationship for the whole sample is driven by low-growth firms. This finding could assist the Malaysian government and regulators to monitor current GLICs investment policy as GLICs ownership lead to lower investment opportunities.

This is the first study, to the best of knowledge of the author, to examine the impact of state ownership on financing and investment decisions in Malaysia. The findings show that there is no effect of state ownership on financing and investment decisions for the whole sample. However, the effect of state ownership is positive and significant on both the financing and investment decisions in low-growth firms. This

finding shows that state agencies monitor low-growth firms and this leads to higher investment opportunities for low-growth firms. This contribution of this study can be used by GLICs to imitate investment policies made by state because state ownership lead to higher investment opportunities.

Efficient and competitive markets lead to optimal corporate forms (Demsetz & Lehn, 1985, Demsetz & Villalonga, 2001). Consequently, managerial and family ownerships are not expected to have an influence on financing decision. Therefore, the findings of this study that ownerships by managers and families do not influence leverage indicate the maturity of Malaysian market. However, investment decision has a different scenario. Specifically, the findings show that the greater is managerial ownership; the higher is the investment opportunity. This is especially true for high-growth firms. However, for low-growth firms, the greater is the managerial ownership; the lower is their willingness to accept projects. Therefore, managers are doing their job more effectively in high-growth firms compared to those in low growth-firms. On the other hand, family firms tend to invest more in low growth firms as family's wealth is related to positive net present value projects. As family ownership plays a significant role regarding investment decision in low growth firms, this action mitigates the conflict of interest between managers and minority shareholders.

Board composition in Malaysia might be influenced by major shareholders such as GLICs and families. Large ownership by GLICs and families would influence their choice of independent directors. In that case, independent directors might not become truly independent. Overall, there is no evidence of any effect of board composition on

investment and financing decisions. However, when the data is divided into low/high growth firms, the finding of this study shows that for low growth firms the higher is the number of independent directors, the lower is the growth opportunities which seems that independent directors do not play a significant role regarding investment policy because their presence lead to lower investment opportunities. Therefore, for low growth-firms managers should put truly independent directors in their boards to monitor managerial actions.

This study also contributes in terms of methodology by using not only 2SLS but also different proxies since researchers always use these proxies in their studies. This study finds that once capital expenditures and long-term debt are used, they are not as significant as Tobin's Q and total liabilities. In that case, in Malaysia Tobin's Q and total liabilities are more appropriate measures of investment and financing decisions.

This study finally shows that profitability is significant for all financing models. This may be due to the managers avoiding high risk by choosing to use internal source of financing. Accordingly, this finding supports pecking order theory.

In conclusion, this study extends the existing literature and provides evidence on both the interrelation between financing and investment decisions and the effect of corporate governance factors on financing and investment decisions in Malaysia.

5.4 Limitations and Recommendations for Future Research

This study has some limitations. First, the main limitation is that the data is obtained through annual reports and DataStream. If there is any problem related to disclosure of data, then that would limit the results validity. Second, this study focuses on family ownership, government and state ownership, managerial ownership, board size and board composition for their effects on financing and investment decisions, while there are other corporate governance factors that should be considered such as board meeting and blockholders ownership.

Future research that tries to investigate the relationship between corporate governance factors and both financing and investment decisions can include other variables such as firm risk and industry effects to ensure the robustness of the results. Other investment decision measures can also be used as a proxy for this decision such as depreciation to firm value, R&D intensity, earnings to price ratios and asset betas (Smith & Watts, 1992; Gaver & Gaver, 1993). In addition, in order to reduce the measurement error inherent in choosing single variable as a proxy for investment opportunity set, composite measures using factor analysis can be constructed. Then, the results can be compared with this study.

Finally, research on the Islamic corporate governance concept is scarce. Therefore, it could be interesting to explore the practices of Islamic corporate governance in Malaysian listed companies with financing and investment policies.

5.5 Conclusion of the Study

This study aims to investigate and examine the effect of corporate governance factors on financing and investment decisions of listed companies in Malaysia for a period of 2007 to 2011. This study contributes to the understanding on the relationship between financing and investment decisions in Malaysia. The results of this study provide evidence that the relationship between financing and investment decisions is simultaneously determined.

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