

## **Chapter 2**

### **Literature review and hypothesis development**

This chapter describes an importance of capital structure theories which have been becoming the theoretical framework of the study and reviews previous research based on those theories to seek the critical factors impacting on a firm's financing decisions. The objective of this chapter is to develop research hypotheses. It includes two sections. Section 2.1 explains the capital structure theories, namely, the trade off and pecking order theories and defines the relationship between firm characteristics and financing decisions theories. Section 2.2 presents hypothesis development following theoretical framework and related previous research in Section 2.1.

#### **2.1 The important capital structure theories**

Two well - known capital structure theories which have been widely used to explain strategies of financing in previous studies are the trade - off theory and the pecking order theory (e.g., Akhtar, 2005; Bevan and Danbolt, 2002; Chen and Strange, 2005; Eldomiaty, 2007). Both theories state that firms can use internal and/or external funds to invest in their operating activities and positive net present value projects. Internal funds are retained earnings whereas external funds include debt financing and the stock issue. However, each theory differently suggests financing strategies (Delcours, 2007; Graham and Harvey, 2001). Previous researchers viewed them as competing theories (Frank and Goyal, 2003, 2004; Harris and Raviv, 1990, 1991; Mazur, 2007). The trade - off theory assumes debt financing being a crucial external source and specifies that firms which have the optimal level of leverage can maximize firm value ( $V$ ) and minimize the cost of capital ( $K_{WACC}$ ). On the pecking order theory, debt has been viewed as a second choice of financing and will be used when internal funds are insufficient. The theory gives the first priority to internal funds (retained earnings and profits). In this theory, firm's value will be maximized by managers because they know how much it should be and then, they can make financing decisions in the way that firm's value can be generated. Thus, it is interesting to investigate

which theory better explains financing decisions of Thai listed firms. The details of each theory are described in Sections 2.1.1 and 2.1.2 as follows.

### **2.1. 1 The trade - off theory**

Modigliani and Miller (1958, 1963) are the first pioneers who defined the trade - off theory. They argue that under the theory, optimal corporate financing should be a mixture of debt and equity which is known in terms of leverage or debt ratio. The theory supports debt financing in that, it can generate the maximum firm value. However, using debt financing, firms need to trade off between the benefits of debt (interest tax shield) and the costs of financing with debt (default and bankruptcy costs) because interest tax shield can increase firm value whereas default and bankruptcy costs decrease firm value. The theory explains that firms can finance funds from debt more and more as long as the present value of tax shield on debt can increase firm value. When it is found that costs of debt financing are making firm value decline, firm should stop debt financing. Look at Figure 2.1: The optimal debt ratio and the maximum firm value following the trade - off theory, the point that shows the maximum firm value is the point B and the point that shows the optimal debt ratio and the highest level of debt which can maximize firm value is the point A. In Figure 2.2: The optimal debt ratio and the lowest weighted average cost of capital, the point A which can produces the lowest weighted average cost of capital ( $K_{WACC}$ ) following the trade - off theory is the same point as the point A of Figure 2.1 which generates the highest firm value (V). Thus, according to the theory, firms can determine target debt ratio and calculate the firm value (V) and weighted average cost of capital ( $K_{WACC}$ ) with the following formulae.

#### **1. Firm value (V)**

$$\text{Firm value (V)} = \text{Value with equity} + \text{Value with debt}$$

$$\text{Value with debt} = \text{Present value (PV) of interest tax shield}$$

$$- \text{Present value (PV) of debt financing costs}$$

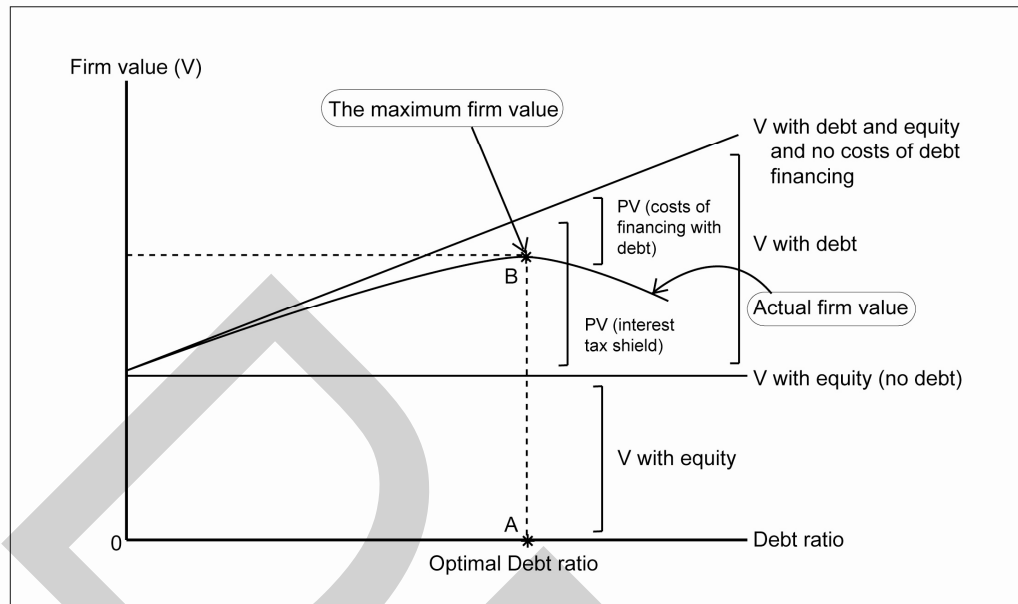
#### **2. Weighted average cost of capital ( $K_{WACC}$ )**

$$\text{Cost of capital (} K_{WACC} \text{)} = (X_e \times \text{Cost of equity}) + (X_d \times \text{Cost of debt})$$

Where as:  $X_e$  = Percentage of equity in total capital

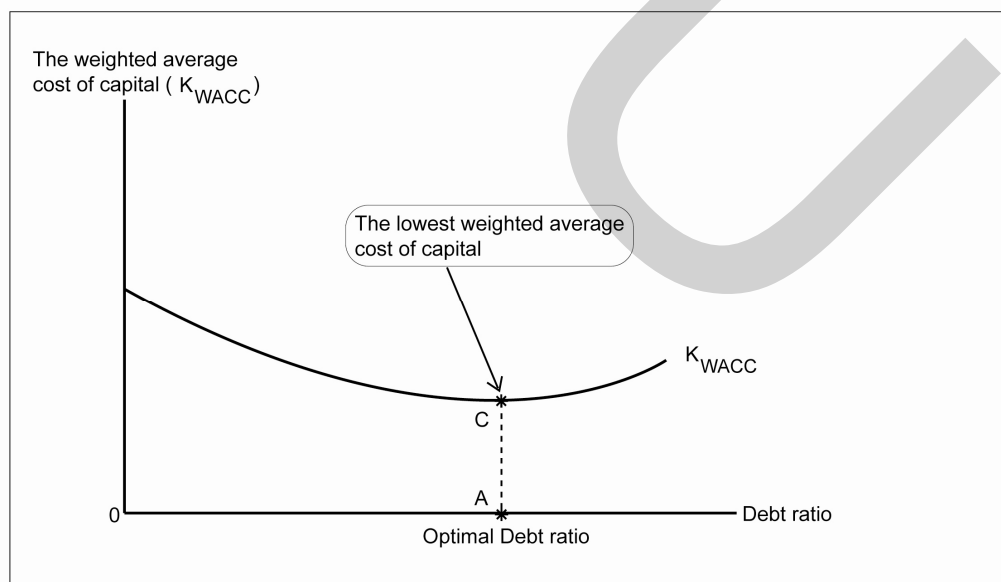
$X_d$  = Percentage of debt in total capital

Figure 2.1: The optimal debt ratio and the maximum firm value (V) following the trade - off theory



Source: Adapted from Chitnomrath (2003:295) and Ross, Westerfield and Jaffe (2005:443).

Figure 2.2: The optimal debt ratio and the lowest weighted average cost of capital ( $K_{WACC}$ ) following the trade - off theory



Source: Adapted from Chitnomrath (2003:295) and Ross, Westerfield and Jaffe (2005:443).

Many researchers support the existence of the trade - off theory (e.g., Booth, Aivazian, Demircug-Kunt and Maksimovic, 2001; Gaud, Jani, Hoesli and Bender, 2003; Hsiao, Hsu and Hsu, 2009; Singh and Kumar, 2008). Booth et al. (2001) studied capital structure of firms in developing countries to assess whether the capital structure theories work in developing countries as well as in developed countries. In their findings, the trade - off theory explains that capital structure choices of firms in developing countries were affected by the same factors as in developed countries. Gaud et al. (2003) also suggested trade - off hypothesis in explaining the determinants of Swiss firms' capital structure. Their analysis showed that Swiss firms adjusted toward a target capital structure determined by the benefits and cost of using debt financing. Hsiao et al. (2009) studied financing decisions of corporation in Asian emerging markets (Hong Kong, Korea, Singapore and Taiwan) and found firms from these countries being in line with the trade - off theory. This means all firms in the study of Hsiao et al. having a target debt ratio to maximize firm value as well. In addition, the results of the research by Singh and Kumar (2008) were consistent with the results found by Booth et al. (2001). They found Indian firms using the advantages of debt to create firm value as well. With these previous studies, it can be said that the conceptual framework of this theory is important in explaining firms' financing decisions.

### **2.1.2 The pecking order theory**

The first person who discovered the pecking order theory is Donaldson (1961). It was developed later by Myers and Majluf in 1984. They found that corporate financing by this theory has an order of priorities in choosing funds between internal and external sources including external sources selection between debt and equity. This can be expressed in Table 2.1. If firms are profitable enough, they will use internal funds from their retained earnings rather than external funds from debt and equity. When the internal sources run out and the additional funds are needed, they will move to external financing from debt first and choose equity financing as a last resort if they have no more debt capacity (Myers, 1984; Myers and Majluf, 1984). According to the theory (Brealey, Myers and Marcus, 2005; Ross, Westerfield and Jaffe, 2005) , there is no optimal debt of financing decisions, firms prefer debt to equity financing to avoid asymmetric information problems between insiders (mangers) and outside investors.

Investors are aware that managers know more about firm performance, risk and value than them and will avoid issuing equity when a share price is undervalued. Thus, when a new equity issue is announced, investors will interpret this as a negative signal. Then, they will wait until the equity price declines. Consequently, the cost of equity increases. Technically, costs of issuing equity are higher than costs of financing debt. In addition, there are no asymmetric information problems with investors when firms use debt financing. This is the reason why managers are unwilling to finance equity and tend to use equity financing as a last choice following the pecking order theory.

Table 2.1: Financing decisions following the pecking order theory

<b>An order of choosing funds</b>	<b>Sources of funds</b>
First-order choice	Internal funds from retained earnings
Second-order choice	External funds from debt when internal funds run out
Last-order choice	External funds from equity when firm has no more debt capacity

Additionally, the theory combines a firm's growth opportunities with its capital structure. The notion of information asymmetry suggests that firms with growth opportunities should use debt capacity to invest in positive net present value projects if external funds are required as this financing choice can increase value of the firm (Eriotis, 2007; Myers, 1984). Although growth opportunities help firm get high value, growth may cause high variation in firm value. As a result, increasing debt may increase firm risk. Thus, firms with growth opportunities need to consider their capital structure and use less debt if they are risky firms (Singh and Kumar, 2008).

Chaplinsky and Niehaus (1990), Fama and French (2002), Mazur (2007) and Shyam-Sunder and Myers (1999) provided strong support for the pecking order theory.

Chaplinsky and Niehaus (1990) and Shyam-Sunder and Myers (1999) tested static trade - off against pecking order models of capital structure and found that the basic pecking order model has much greater explanatory power than a static trade - off model. Fama and French (2002) studied trade - off and pecking order predictions about dividends and debt and confirmed the pecking order model that more profitable firms were less levered. This discovery is contrary to the principle of the trade - off model. Mazur (2007) also found evidence that the financing choices of Polish firms are better explained by the pecking order hypothesis than the traditional static trade - off model. Besides, the studies in many countries such as Australia, Switzerland, India and Central and Eastern European countries (e.g., Russian Federation, Czech Republic and Slovakia) also discovered the existence of a hierarchy of financing decisions (Delcours, 2007; Cassar and Homes, 2003; Gaud et al., 2003; Singh and Kumar, 2008). Hence, it can be concluded that the pecking order theory is another theory which is important in explaining firms' financing decisions.

### **2.1.3 Firm characteristics and financing decisions**

In the literature review, much empirical research which has been conducted on firm characteristics and financing decisions following the trade - off and pecking order theories found a variety of firm characteristics affecting financing decisions (e.g., Akhtar, 2005; Bevan and Danbolt, 2002; Chen and Strange 2005; Eldomiaty 2007; Frank and Goyal, 2003, 2004; Harris and Raviv, 1990, 1991; Mazur, 2007). They are firm size, liquidity, fixed assets, profitability, financial risk, dividend yield and firm growth. The results from these studies show that some of them have positive relations with measures of financing decisions (debt ratios) but others have negative relations with those. In addition, the results confirm that firm characteristics having positive/negative relationships with debt ratios by the trade - off theory may contradict by the pecking order theory. The firm characteristics and their expected signs on financing decisions following expectations from the trade - off and pecking order theories are summarized in Table 2.2.

Table 2.2: The firm characteristics and their expected signs on financing decisions following the trade - off and pecking order theories

Firm characteristics	<u>Expected signs on financing decisions following</u>	
	<u>The trade off theory</u>	<u>The pecking order theory</u>
Firm size	Positive	Positive/Negative
Liquidity	Positive	Negative
Fixed assets	Positive	Negative
Profitability	Positive	Negative
Financial risk	Negative	Negative
Dividend policy	-	Positive
Firm growth	Negative	Positive

Source: Prior research in this area

## 2.2 Hypothesis development

Previous studies that investigated firm characteristics and financial leverage suggest a number of research hypotheses concerning firm size, liquidity, fixed assets, profitability, financial risk, dividend policy and firm growth, as follows.

### 2.2.1 Firm size

Eriotis (2007) has suggested that larger firms are usually more diversified and thus bear less risk. Other studies also suggest that firm size is an important factor to financial leverage because large size companies have better access to credit markets and can borrow at better conditions (e.g., Akhtar, 2005; Fan, Titman and Twite, 2003; Frank and Goyal, 2003; Rajan and Zingales, 1995; Scott and Martin, 1975). However, some studies found a negative relationship between firm size and debt ratio (Friend and Lang, 1988; Wald, 1999; Cassar and Holmes, 2003). Nevertheless, most empirical research

reported a positive sign for the relationship between firm size and leverage. Titman and Wessels (1988), Rajan and Zingales (1995), and Gaud, Jani, Hoesli and Bender (2003) explained that size was an inverse proxy for the probability of bankruptcy. It was found to be positively correlated with leverage (e.g., studies by Akhtar (2005), Chen and Strange (2005) and Rao and Lukose (2002). This leads to the following hypothesis.

*H1: Firm size is positively related to a firm's financing decisions as measured by total debt ratio.*

### **2.2.2 Liquidity**

Harris and Raviv (1991) followed the pecking order theory and stated that firms with high liquidity maintain a relatively high amount of current assets, which means they can generate high cash inflows. As a consequence, they can use these internal inflows to finance their operating and investment activities rather than use of debt financing. Jensen (1986) argued that, according to the trade - off theory, cash-rich firms should acquire new debt to prevent managers from wasting free cash flows, which implied a positive sign for liquidity. However, the majority of empirical evidence found that firms with high liquidity tend to use less debt and supports the view of the pecking order assumption, in that, liquidity of the firm has a negative sign with its financial leverage (e.g., Rajan & Zingales 1995; Bevan and Danbolt 2002; Eriotis 2007; Mazur 2007). This leads to the following hypothesis.

*H2: Liquidity is negatively related to a firm's financing decisions as measured by total debt ratio.*

### **2.2.3 Fixed assets**

According to the trade - off theory, fixed assets are served as debt collateral to protect lenders from the moral hazard problem which is caused by the conflict between shareholders and lenders (Akhtar, 2005). Chen and Strange (2005) and Delcoure (2007) also reported a significant positive relation between fixed assets and a firm's financing decisions. However, from the viewpoint of the pecking order theory, firms with high values of fixed assets are less sensitive to the problem of information asymmetric



between managers and outside investors and then tend to use less debt (e.g., Eldomiaty, 2007; Gaud, Jani, Hoesli and Bender, 2003; Mazur, 2007; Rajan and Zingales, 1995; Titman and Wessels, 1988). As can be seen, most previous studies confirmed a negative influence of fixed assets on debt ratios. This leads to the following hypothesis.

*H3: Fixed assets are negatively related to a firm's financing decisions as measured by total debt ratio.*

#### **2.2.4 Profitability**

The trade - off theory suggests that firms with high profits should finance external funds from debt because debt financing is a disciplining tool that can reduce the problem of information asymmetry between managers and outside investors and furthermore, an increase in debt ratio signals the quality of a firm's financial management (Delcoure, 2007; Rao and Lukose, 2002). This means that high profit firms tend to have a high debt ratio. Alternatively, according to the pecking order theory, profitable firms prefer to use first internal funds and then move to external funds (Harris and Raviv, 1991). This means high profit firms would choose to have a small number of debt ratio. Several researchers who tested the relationship between profitability and financial leverage found that profitability had a negative relation with a debt ratio (e.g., Wiwattanakantang, 1999; Gaud, Jani, Hoesli & Bender, 2003; Chen and Strange, 2005; Akhtar, 2005; Delcoure, 2007). This leads to the following hypothesis.

*H4: Profitability is negatively related to a firm's financing decisions as measured by total debt ratio.*

#### **2.2.5 Financial risk**

The trade - off and pecking order theories view financial risk as a negative effect on capital structure (Rao & Lukose, 2002; Mazur, 2007). The reason is that firms with higher financial risk tend to have higher probability of bankruptcy costs, thus, firms with high financial risk have incentive to reduce their level of debt within capital structure (Eriotis, 2007). The majority of prior studies found the evidence following the theory assumption and suggested a negative relationship between financial risk and debt

ratios (e.g., Harris & Raviv, 1990; Cassar and Holmes, 2003; Eriotis, 2007). This leads to the following hypothesis.

*H5: Financial risk is negatively related to a firm's financing decisions as measured by total debt ratio.*

#### **2.2.6 Dividend policy**

The pecking order theory suggests that dividend policy is one of important firm factors that decrease the amount of internal funds from retained earnings, but increase the need for external financing (Harris and Raviv, 1991; Mazur, 2007). As a result, it is expected that payout ratio of the policy will be likely to be a positive relationship with a firm's financing decision. However, the present study found limited empirical studies examining the relationship between the dividend policy and financial leverage. Martin and Scott (1974) and Frank and Goyal (2004) only found that it was a useful discriminator in their analysis. Eldomiaty (2007) and Mazur (2007) also included it in the model but their results did not show its significant relationship with debt ratios. Nevertheless, dividend policy of Thai listed companies should be investigated to see the results. Therefore, following the theory suggestion and prior research, it is hypothesized that:

*H6: Dividend policy is positively related to a firm's financing decisions as measured by total debt ratio.*

#### **2.2.7 Firm growth**

Based on the pecking order theory assumption, firms with high growth need more funds, especially external funds, to invest in their operating activities, thus it can be expected that these firms will have more financial leverage (Delcours, 2007; Cassar and Holmes, 2003; Stulz, 1990). Myers (1984), Shyam-Sunder and Myers (1999) and Jensen (1986) argued that, following the trade - off approach, financial leverage was inversely related to growth opportunities because growing firms may invest more in risky projects and, then, may have higher risk in bankruptcy. However, Empirical evidence in support of a positive relationship between growth and debt ratios, which is

consistent with the pecking order theory, can be found in many studies (e.g., Bevan and Danbolt, 2002; Cassar and Holmes, 2003; Michaelas, Chittenden and Poutziouris, 1999; Mazur, 2007; Rao and Lukose, 2002; Stulz 1990). This leads to the following hypothesis.

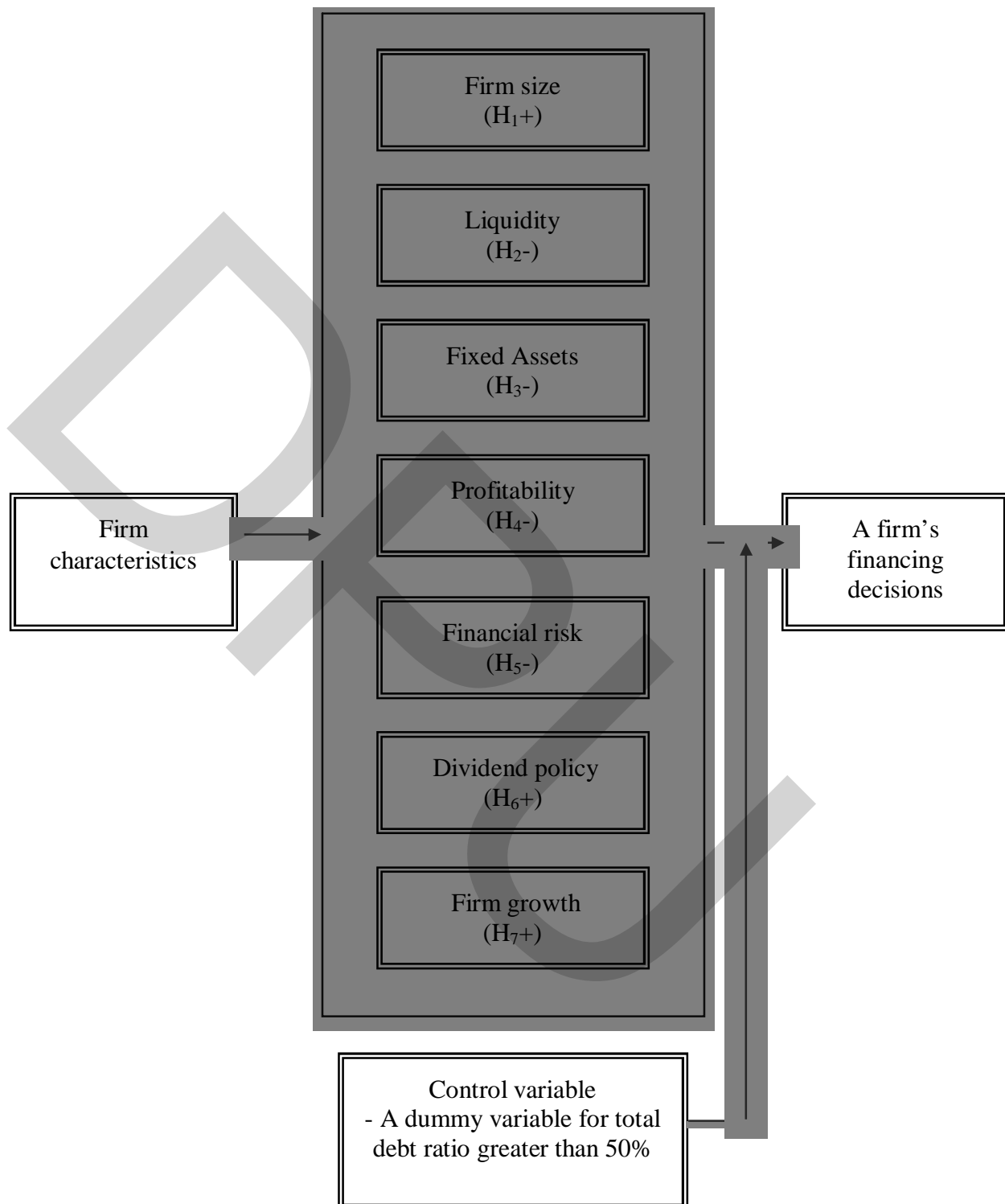
*H7: Firm growth is positively related to a firm's financing decisions as measured by total debt ratio.*

A list of the research hypotheses formulated is summarized in Table 2.2 and the research model of the study is shown in Figure 2.3.

Table 2.3: A list of research hypotheses of the study

Hypotheses	Items
Hypothesis 1	Firm size is positively related to a firm's financing decisions as measured by total debt ratio.
Hypothesis 2	Liquidity is negatively related to a firm's financing decisions as measured by total debt ratio.
Hypothesis 3	Fixed assets are negatively related to a firm's financing decisions as measured by total debt ratio.
Hypothesis 4	Profitability is negatively related to a firm's financing decisions as measured by total debt ratio.
Hypothesis 5	Financial risk is negatively related to a firm's financing decisions as measured by total debt ratio.
Hypothesis 6	Dividend policy is positively related to a firm's financing decisions as measured by total debt ratio.
Hypothesis 7	Firm growth is positively related to a firm's financing decisions as measured by total debt ratio.

Figure 2.3: Research model of the study



In Figure 2.3, the research model of the study focuses on an investigation of the relationship between specific firm characteristics and a firm's financing decisions. The firm characteristics which include firm size (SIZE), liquidity (LIQD), fixed assets (FASST), profitability (PROF), financial risk (FRSK), dividend policy (DIVD), and firm growth (GROW) will be independent variables and a firm's financing decisions will be a dependent variable. In addition, the model will use a dummy variable to control firms that have total debt ratios greater than 50% because these firms may have more different capital structure than the market as a whole and then they may influence the results of the study (Eriotis 2007). The dummy variable (1,0) is one for firms which debt ratio is more than 50%, and zero otherwise.

### **2.3 Summary**

The objective of this chapter is to develop research hypotheses of the study. The chapter begins with reviewing two well - known and important capital structure theories – the trade - off theory and the pecking order theory, formulating research hypotheses based on theoretical framework and prior studies, and ends with research model of the study.

The trade - off theory supports using debt financing to maximize firm value by trading off between benefits from interest tax shield and costs of financing with debt, whereas the pecking order theory supports using internal funds from retained earnings as the first - order choice, chooses debt financing as the second - order choice if the internal funds runs out and external funds are needed, and issues stock as the last alternative to avoid the information asymmetry between insiders (managers) and outsiders (investors). Previous studies tested these theories and found that both of trade - off and pecking order models can explain a firm's financing decisions in many countries both Asian and Western around the world. They found specific firm characteristics which are firm size, liquidity, profitability, financial risk, dividend policy and firm growth are positive/negative determinants of a firm's capital structure. This discovery is summarized and shown in Table 2.1. The study develops research hypotheses from findings of empirical research (e.g., research by Akhtar (2005), Cassar & Holmes (2003), Chen and Strange (2005), Delcours (2007), Eriotis (2007), Frank and Goyal (2003), Harris and Raviv (1991), Mazur (2007) and Rao and Lukose (2002). A

summary of research hypotheses is expressed in Table 2.2 and the research model of the study is introduced in Figure 2.3.

The next chapter presents research methodology for the study. It contains the sample selection and data collection, data source, definitions and measurement of all variables including a formal model specification.

