A STUDY OF ALTERNATIVE CAPITAL STRUCTURE THEORIES IN THE MALAYSIAN CONTEXT

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SUMMARY TABLE OF CONTENTS

ABSTRACT

This thesis examines the relevance of the western capital structure theories – the static trade-off theory and the pecking order model – in providing plausible explanation of Malaysian corporate financing decisions from 1991 to 2000. To achieve this objective, the empirical analyses have been divided into three parts: (1) the first analysis examines the determinants of capital structure based on the Malaysian proposed factors and the theory-related attributes. (2) The second part tests the static trade-off theory (via target-adjustment model) and the pecking order model, separately and jointly, in seeking the applicability of the theory descriptions. (3) The final analysis evaluates the performance of the developed models when judged on explanatory power. The empirical analyses of the thesis adapt Shyam-Sunder and Myers' (1999) model specifications and the subsequent criticisms by Chirinko and Singha (2000), with several revisions and adjustments to fit our enquiry.

Descriptive exploration on the data finds six distinct financing patterns, which range from 'no-leverage' financing to 'all-leverage' financing. When these patterns are descriptively linked to the theoretical predictions, it seems that both the static trade-off and the pecking order models do have some relevance in providing overall description of Malaysian firms' financing behaviour.

These preliminary inferences are empirically tested using a panel data framework. The results suggest strong association between industry and firms' financing decisions, even if there are possibilities that some results may not show the significant relation. For other capital structure determinants, the findings support the general claim that most leverage-related factors identified in the developed economy also apply to other countries as well, despite institutional differences. The findings also indicate that the descriptions of both models are relevant in explaining firms' financing decisions. In addition, the findings embrace the semi-strong assumption of the pecking order model, and the negative relation between past profitability and changes in debt level. To test the power of the developed models, the model specifications are fitted to several hypothetical financing series. The fitted tests conclude that the stronger performance of the pecking order model than in the target-adjustment model, as claimed by Shyam-Sunder and Myers (1999), is a limited view. The results show that the pecking order model has generated a false fit (α) when it incorrectly fits the target-adjustment series just as well as its own pecking order series. On the other hand, the tests have demonstrated the power of the target-adjustment model. The procedure in generating the series, the underlying assumption of the pecking order model, the subjective proxies for leverage predictors and the different background of the sample may be the plausible contributing factors to these findings.

Based on descriptive exploration and panel data study, this thesis concludes that the descriptions of both the static trade-off theory and the pecking order model are consistent with Malaysian firms' financing decisions. However, the answer to which model can better describe firms' financing behaviour remains inconclusive.

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DETAILED TABLE OF CONTENTS

DETAILED TABLE OF CONTENTS (continued):

DETAILED TABLE OF CONTENTS (continued):

DETAILED TABLE OF CONTENTS (continued):

LIST OF EXHIBITS

Page

LIST OF FIGURES

LIST OF TABLES

Page

PART 1

INTRODUCTION

CHAPTER 1

AIMS OF THE THESIS

1.1 INTRODUCTION

The purpose of this thesis is to examine the relevance of different capital structure theories in explaining the financing behaviour of firms from Malaysia. Essentially, firms' financing decision plays an integral part in sustaining a firm's value-maximisation objective. The value of firm is determined by discounting the stream of expected cash flows generated by the firm's acquired assets. Suppliers of finance in the acquisition of these assets have various types of claims on the firm's cash flow. The mix of the diverse funds obtained by the firm defines its capital structure.

In identifying a firm's capital structure, Megginson (1997) describes it as applying strictly to permanent or long run capital that supports a firm's operation. Although any firm's capital structure can be measured by examining the balance sheet, the literature on firms' financing patterns has tended to focus on large corporations in developed economies. However, more recent capital structure literature has been shifting its direction to include evidence from other parts of the world. Megginson (1997) cites that there are two basic questions that arise when discussing the subject of capital structure. First, can changing the composition of the financing mix change the market value of firm? Second, if capital structure does matter, what are the determining factors? Quoting from Megginson on the importance of having answers to both questions:

> "*If capital structure does matter, and if we could determine precisely which factors were critical, the benefits to society would be immense. Corporate managers could always ensure that their companies were being financed at the lowest possible cost, investors could confidently entrust their savings to financial markets that guaranteed maximum return for minimum risk, and public policy-makers could design a regulatory and taxation regime that maximised aggregate output at minimum possible risk to the nation's economic stability*" (pg. 305).

Achieving a balance between maximum return and minimum risk in sustaining growth of a nation is a challenging task, especially in developing countries such as Malaysia with resource constraints and limited infrastructure. As an emerging market, Malaysia has undergone several phases of economic transformation in the last decade. Considerable capital inflows during the early and mid-1990s have led to an overheating of the economy. Malaysia began to realise the importance of sustaining future growth and development through resourceful financing. In the recent Asian financial crisis of 1997-98, the Malaysian government has resorted to its own comprehensive yet controversial currency and capital control regime. They claimed that the measures undertaken have been able to halt the crisis from worsening. Given the dissimilar institutional variables and economic experiences, would the financing practices of firms in Malaysia differ from those in the developed economies? In other words, would Malaysian firms be subjected to similar motives, as in firms from western economy, in determining their capital structure if the country's economic orientations differ from the west?

1.2 OBJECTIVES OF THE RESEARCH

The literature on capital structure has focused around two main theories, the static trade-off and the pecking order theories. Prior to providing empirical evidence on their relevance, the descriptive analysis of this thesis attempts to document the

broad financing patterns of firms in Malaysia. This process involves exploring the data for possible distinct financing trends, and relating the observed patterns to the movement in the economy for a period spanning 10 years from 1991 to 2000.

Following the lead of many prior empirical studies (Myers, 1984; Friend & Hasbrouk, 1988; Titman & Wessels, 1988; Rajan & Zingales, 1995; Wiwattanakantang, 1999), this thesis reinvestigates the determinants of capital structure based on firm-specific factors, especially those variables found in Malaysian-based studies. For example, Annuar and Shamsher (1993), and Mohamad (1995) have documented evidence on the significant industry-effect on Malaysian corporate financing decision. The usual way of testing capital structure determinants has been mostly through cross-sectional analyses. However, this thesis uses panel data approach to test the significance of the attributes. As panel data takes into account both firm and time varying elements, we expect the pooling of time series and cross-sectional observation to be more informative.

Further, this thesis seeks empirical evidence on whether the static trade-off and the pecking order models are able to explain firms' financing behaviour. The models developed for the analysis are adapted from the time-series capital structure models of Shyam-Sunder and Myers (1999). However, Chirinko and Singha (2000) have questioned the practicality of the strict pecking order model introduced in Shyam-Sunder and Myers' paper. They claim that the simple test of Shyam-Sunder and Myers generates misleading inferences when evaluating plausible external financing patterns. Taking this criticism into consideration, we develop our version of the time-series target-adjustment and pecking order models

after making some changes to the assumptions in the original models. Finally, presenting the validity of the capital structure theories in the Malaysian context also calls for checking to see which of the two developed models provide a better description of the financing behaviour. This objective is achieved by performing statistical explanatory power tests on several simulated financing series.

1.3 RESEARCH QUESTIONS

This thesis deals with three issues. The first issue looks into the determinants of capital structure at firm level. In essence, the analysis on this issue re-examines the possible importance of firm-specific factors such as industry, asset composition, operating risk, and profitability in explaining the variation in Malaysian firms' observed debt levels. Further, the analysis on this issue seeks consistency on the claims made by several Malaysian–based studies (Muhammad, 1998; Mohamad, 1995; Annuar & Shamsher, 1993) about the effect of some factors on Malaysian corporate financing decisions. The second issue examines the possibility to discriminate among competing capital structure theories at aggregate level. It examines the extent to which the traditional capital structure theories - the static trade-off theory and pecking order model - work in Malaysia. Finally, the third issue seeks to find a better empirical-based model of corporate leverage that could provide plausible explanation of Malaysian firms' financing behaviour. With those initial ideas put forward, the study focuses on answering the following specific questions:

1. Does economic cycle have any influence in describing firms' broad financing patterns?

2. Is the observed financing pattern of Malaysian firms industry specific?

3. Are the proposed firm-specific factors in Malaysian capital structure similar to those cited in the literature?

4. Can the static trade-off and the pecking order models explain Malaysian firms' financing behaviour?

5. Which capital structure model provides better explanation of firms' financing behaviour?

1.4 SIGNIFICANCE OF THE RESEARCH

The past two decades have marked a major growth in the Malaysian equity market. The Kuala Lumpur Stock Exchange (KLSE) has become the largest exchange in ASEAN, ranking third in the Asia Pacific region after Japan and Hong Kong in early 1997 (Thilainathan, 1998). However, for years, debt markets in Malaysia seemed to lack depth and breadth, especially with regard to price efficiency. The economic turmoil that hit the Asian region in late 1997 has reinforced awareness of the need for a sizeable debt market, as an alternative way for Malaysian firms to raise funds. Firms can no longer rely on banks for funds as financial institutions became more preoccupied with NPLs in the latter part of 1997 and into 1998 as the economy contracted. To accomplish the task, the government has made efforts to further develop the corporate bond market. In stimulating the supply of corporate bonds in the market, the government has addressed issues relating in governing corporate bonds and the issuance process. In additions, steps are taken to diversify sources of financing as a way to reduce the firms' over dependency on the banking system.

The Malaysian economy has also seen the emergence of Islamic debt securities, which quickly, have become increasingly recognised by market participants. This market functions in parallel with the conventional market. Its presence adds

variety to the financing alternatives that firms could explore, in addition to conventional debt instruments, with the introduction of Islamic debt securities, Islamic unit trusts, warrants and several others. With various financing instruments available, this thesis seeks to examine whether Malaysian firms' financing behaviour would differ from those described in the capital structure literature.

1.5 CONTRIBUTIONS TO THE BODY OF KNOWLEDGE

This thesis claims two contributions to the body of knowledge, descriptively and empirically.

The thesis claims the contribution to the body of knowledge on the descriptive approach adopted to document firms' financing patterns. In identifying plausible external financing patterns, instead of employing any sophisticated statistical tests, a firm's Balance Sheet, and Profit and Loss Statement are utilised to construct a simplified fund flow statement. In the fund flow statement, deficits in the net fund flow are met by acquiring external funds, either through issuance of shares or loans. Whenever there are surpluses, firms will either repay loans or repurchase equity. In essence, this approach is able to link firms' financing strategies to economic cycle (a cycle from the pre-economic crisis period through the crisis and until post-crisis) and theoretical predictions. In carrying out a study of this kind, this approach may possibly serve as a preliminary step in describing firms' financing behaviour. In fact, this type of descriptive approach can provide some cursory insights about firms' financing background in developing hypotheses for an exploratory study of similar type.

Empirically, the thesis contributes to the body of knowledge by providing evidence of financing descriptions in Malaysia, a country that has different macroeconomic, political and social background from those in the developed economy. Thus far, most of the capital structure work has been focusing on financing practices in developed economies. Indeed, theoretical contributions that led to the discussion of corporate leverage theories were initially developed on western economic orientations. Of late, the discussion on corporate leverage has extended to include data from other economic backgrounds, particularly from developing countries. Nonetheless, the evidence from developing economies is still limited, especially on the applicability of the capital structure theory in firms' financing decisions. Specifically in Malaysia, the evidence on competing capital structure hypotheses is confined to a survey conducted by Kester and Mansor (1994) on CEOs' capital structure preferences. This thesis adds to the ongoing literature by offering evidence from an emerging market economy. The thesis examines the relevance of the capital structure theories in providing plausible explanations of firms' financing behaviour. In essence, this thesis attempts to reconcile the description of western capital structure theory with actual financing practices of firms from other economic backgrounds, i.e. bridging the gap between theory and practices.

1.6 STRUCTURE OF THE THESIS

The remaining chapters of the thesis are organised as follows: Chapter 2 is an overview of Malaysian capital market, specifically of the development of the equity and debt markets. The chapter begins with the early establishment and

development of the stock exchange. The discussion traces Malaysian economic events throughout the last decade, focusing on the Asian economic crisis of 1997-98. This part of the discussion briefly explains the measures taken by the government in supporting the economic progress through active development of the private debt market. The chapter also looks into the Islamic capital market, and then at the differential tax treatment of dividends and interest in the Malaysian corporation taxation system.

Chapter 3 reviews the available literature on capital structure. The discussion begins with the early development of the various theories. The survey then becomes more specific, discussing the two main capital structure theories – the static trade-off and the pecking order model – along with the evidence for and against the respective theories. In addition to citing evidence from the developed economies, the literary work also includes evidence from other parts of the world. Subsequently, the discussion concentrates on the Malaysian evidence.

Chapter 4 explains the data collection procedures beginning from the gathering of the raw data to the transformation of the data into a workable data set. In addition, the chapter lists the testable hypotheses for the proposed analyses.

Chapter 5 presents a preliminary examination on the firms' financing profiles. The discussion of the chapter begins with narrative descriptions of the identified financing patterns, and then links these patterns to industry membership and economic events. Further, the discussion in the chapter reports the performance of the key financial indicators during the period of the study. The final part of the

chapter provides descriptive statistics of the main variables for the research and offers preliminary empirical findings on several proposed relationships based on the sample.

Chapter 6 ventures into the determinants of capital structure based on (1) the Malaysian-based proposed factors, and (2) the theory-supported factors. The chapter also submits the rationale for using panel data. Chapter 7 tests both the static trade-off (via target-adjustment model) and the pecking order models separately and jointly to examine whether both, either, or neither models are able to provide explanations of firms' financing behaviour. Chapter 8 evaluates the performance of the statistical explanatory power of both the target-adjustment and the pecking order models developed for this thesis. The experiment begins by generating two types of hypothetical financing time-series, one to reflect the target adjustment financing and the other to reflect the pecking order financing rules. In assessing the statistical explanatory power of the models, the chapter reports the findings from fitting both models' specifications into each hypothetical series, independently and jointly.

Finally, Chapter 9 presents a synthesis of the research findings and conclusions. In addition, the chapter discusses the limitations of the research, the practical implications of this research, and ends with suggested recommendations for future research.

CHAPTER 2

MALAYSIAN CAPITAL MARKET: AN OVERVIEW

2.1 INTRODUCTION

This chapter traces the background of Malaysian economy and the development of the country's capital market. Since independence in 1957, Malaysia has undergone four major economic crises: the first two crises were the oil crises of 1973-74 and 1980-81, the third crisis was the commodity crisis of 1985-86, and the most recent was the financial and currency crisis of 1997-98. The discussion in this chapter covers the development of the Malaysian capital market, specifically the equity and bond markets. A major part of the discussion concentrates on Malaysian economic cycle throughout the 90s, especially during the wake of the Asian economic crisis of 1997-98. The dates identified in the discussion are only to describe the economic events in chronological order and will not be utilised in the analyses of this thesis.

The chapter begins with the development of the stock market and the exchange during the economic transformation. Subsequent discussion covers the measures taken by the government to further enhance the competitiveness of the market as a precaution against further economic turmoil. This part describes the government's effort to accelerate the development of private debt market as an alternative source of financing. In line with the effort, the country's bond market has gradually gained significant market share and offered a wide range of financial products.

An alternative to the aforementioned market is the Islamic capital market. A look on the recent emergence of the Islamic capital market is essential as this market works in parallel with the conventional market. Finally, the chapter ends with the discussion on the corporate tax treatment of dividend and interest as they allegedly play some part in influencing firms' financing preferences.

2.2 DEVELOPMENT OF MALAYSIAN CAPITAL MARKET

Malaysia, a middle-income country, transformed itself from 1971 through late 1990s from a producer of raw materials into an emerging multi-sector economy. Growth is almost exclusively driven by exports, particularly electronic goods. In ensuring social stability and growth, Malaysia has adopted the Japanese economic model, especially in maintaining strong links between government and businesses, export-led growth and productivity through technological innovation. Social and political factors also have a powerful influence on the country's economic matters, particularly through policies to preserve economic prosperity in this multi-racial setting.

Malaysia's capital markets comprise both the conventional as well as Islamic markets for medium and long-term financial assets. In implementing the function as financial intermediaries, the roles of these markets have become increasingly important especially in recent years. Among the various markets, the equity market is the most mature. Briefly, the equity market in Malaysia can be traced back to the early establishment of Malayan Stock Exchange in March 1960. However, the trading of securities only began in May 1960 in the clearinghouse of the central bank, namely the Bank Negara Malaysia (or BNM hereafter). The

BNM subsequently established the Capital Issues Committee (CIC) in 1968 to supervise the issue of shares and other securities by companies applying for listing in the stock exchange. Subsequently, the government split The Malayan Stock Exchange into Kuala Lumpur Stock Exchange (KLSE) and the Stock Exchange of Singapore (SES) in 1973 following the termination of the interchangeability of currency with Singapore and the floating of Malaysian currency. Formal rules and regulations were drawn up following the split. The discussion in this section however, concentrates on the economic transformations experienced by the country over the last decade.

In retrospect, the Bank Negara Malaysia (BNM) has divided the economic transformation of Malaysian capital market into three phases: (1) Phase 1: Post Mid-1980s Recession. (2) Phase 2: The Superbull Run of 1993 and (3) Phase 3: The Asian Crisis of 1997-1998.

2.2.1 PHASE 1: POST MID-1980s RECESSION: 1988-90

In the commodity crisis of 1985-86, the Malaysian equity market faced a challenge following the collapse of a Singaporean incorporated publicly listed company, Pan-Electric Industries (Pan-El), which caused instability in the Stock Exchange of Singapore (SES). This experience led the government to announce the de-listing of Malaysian registered firms from the SES. The announcement called for significant improvements to the stock broking industry, corporate disclosure enhancement, and protection of shareholders' interest. These upgrades emphasised the government's effort to develop the domestic capital market by establishing the KLSE as an independent exchange, and to confine dealings of

Malaysian securities only to the local exchange. The purpose was to attract international investors as well as reduce the market's vulnerability to unfavourable development in the neighbouring exchange. By this split, Malaysia had been able to attract considerable capital inflows into the KLSE.

This split however, resulted in the establishment of a new over-the-counter market known as CLOB (Central Limit Order Book International) on the same day in Singapore. CLOB listed 133 actively traded Malaysian stocks and 6 other foreign stocks. Nonetheless, CLOB was declared unofficial by the KLSE, as this market was not bound by any corporate disclosure rules and listing requirements. Many challenges related to the efficiency of the KLSE and the capacities of the local stockbrokers have become apparent resulting from the split and the emergence of CLOB. Another part of the effort to transform the KLSE into a world-class stock exchange was the modernisation of the KLSE by implementing the automated trading system, known as SCORE, and central depository system (CDS).

2.2.2 PHASE 2: THE SUPERBULL RUN OF 1993

In 1993, strong economic performance in Malaysia prompted substantial inflows of short-term capital funds into the market. With a moderate level of inflation, the country achieved its sixth successive year of sustained growth above 8 percent. By September of that year, share prices and market turnover reached their phenomenal record highs. On 5 January of 1994, the Kuala Lumpur Composite Index (KLCI) reached a peak of 1,314 points before undergoing a sharp correction.

Compared to neighbouring countries, Malaysia had positioned itself comfortably with lower debt ratio and high savings, thus having relatively strong economic fundamentals (Cheng & Hossain, 2000). The BNM, in one of its reports, showed the results of a survey conducted by the International Finance Corporation (IFC) in 1991 on emerging stock markets. The survey identified Malaysia as one of the markets with the most liberal exchange control systems. In addition, the report indicated that there were tax advantages in the Malaysian stock market arising from the exemption of both dividends and capital gains from taxes.

However, during the course of the rise in KLCI, stock market speculation and asset price inflation began to emerge and led to further price inflation. The central bank (BNM) faced a dilemma of conflict in policy objectives. On one hand, the government felt that the imposed high interest rates would ensure a strong economic growth of the country. On the other hand, these high rates would promote inflows of speculative funds. These concerns were said to be among the factors that triggered the subsequent correction in the KLCI after its all time high. To lessen the anxiety, the government established the Securities Commission (SC) in March 1993. This agency assumed the responsibility for regulating and supervising the securities industry.

2.2.3 PHASE 3: THE ASIAN CRISIS OF 1997-98

Although the positive sentiment in 1996 extended into early 1997, there remained some weaknesses in the economy, especially with regard to the strong dependency of financial institutions on lending to the property sector and stock market. The triggering event at the onset of the crisis was the floating of the Thai bhat in July

1997. With the devaluation of the Thai bhat, strong pressures began building up against the Malaysian ringgit. The authorities initially attempted to defend the ringgit by increasing interest rates. However, the persistence of the exchange rate pressures indicated that the volatility of the currency would be longer term. The instability in the currency markets then fed into the stock market. Despite allegedly strong economic fundamentals, the crisis that hit the neighbouring countries spread into Malaysia as panic-stricken investors began withdrawing short-term capital flows from the country. The liquidation of portfolio positions in the stock market forced the KLSE to crash. The situation was worst in the banking sector as NPLs continued to mount. The volume of lending began to slow and credit worthiness of some borrowers was impaired by the higher interest rates. The crisis, which initially started as a currency crisis, became *a full fledged* financial crisis (Bhattacharya, 2001), hitting predominantly the exchange rate, the banking sectors, and the stock and property markets. The impact took a heavy toll on the economy with GDP falling by 7.5 percent in 1998.

To combat the crisis, the government implemented selective exchange controls on 1 September 1998. In essence, the government adopted a temporary currency and capital control regime in its new policy that includes the fixed pegging of the Malaysian ringgit to the US dollar (3.8 ringgit/US$). The main objectives of the control policies were to halt the speculative pressure on the ringgit by eliminating all international financial transactions other than those related to trade and foreign direct investment (FDI), and to provide stability through a pegged exchange rate. The immediate achievement of these controls was the closing offshore market, which created the scope for lowering domestic interest rate (Hood, 2001). The

government recognised some structural weaknesses in the Malaysian financial system that would have to be addressed. For this part, Hood (2001) sees these controls as providing a breathing space during which the government could strategise programmes to deal with the weaknesses. The Malaysian government used economic stimulus measures very cautiously as they refused to seek assistance from any international finance organisation (Chotigeat & Lin, 2001). Further, Chotigeat and Lin (2001) state that the corrective measures adopted thus far seem to be succeeding. The controls have provided insurance against the consequence of further disturbances in interest rates and volatility of exchange rates.

2.3 THE KUALA LUMPUR STOCK EXCHANGE

Under the Malaysian Securities Industry Act 1973 (currently known as the Securities Industry Act 1983), the government incorporated the Kuala Lumpur Stock Exchange (KLSE) as a limited liability company in July 1973. The main objective of the establishment of the exchange was to provide a marketplace for raising new funds and for transacting shares, bonds, and various other securities of Malaysian listed firms.

The KLSE is a self-regulatory organisation whose tasks are threefold. First, the organisation is in charge of governing the conduct of its members and of the member stock broking companies in securities dealings. Second, it is accountable for stipulating the listing requirements and maintaining disclosure standards by public listed companies. Third, it is also responsible for the surveillance of the market place. The regulatory framework that governs the exchange is designed to

maintain investors' confidence in promoting fair and open price formation, providing protection for investors, and ensuring prompt and reliable information sharing.

To cope with the increasingly competitive capital market, the exchange has also been converted from a non-profit mutual company limited by the guarantee of its members to a public company limited by shares in January 2004. Shortly, on 20 April 2004, the exchange has announced the changing of its name to Bursa Malaysia (Malaysia Exchange). This newly acquired name reflects its role as the 'one centre' for the trading of all types of financial securities in Malaysia. However, in this chapter and throughout the thesis, we still refer this exchange as the Kuala Lumpur Stock Exchange (KLSE) for consistency with earlier writers.

2.3.1 THE LISTING REQUIREMENTS

Companies that meet certain requirements can apply for listing on the exchange, and the sectors in which they are classified reflect their core businesses. These requirements ensure an orderly development of the capital market. Based on the fulfilment of the requirements set forth by the exchange and the Securities Commission, however, not all companies qualify to be listed on the main board. In November 1988, KLSE established the Second Board, which complement the Main Board, to enable small and medium size companies with strong potential growth to seek a listing on the exchange.

Table 2.1 below summarises the requirement for the companies to qualify listing into the Main Board and Second Board of the Kuala Lumpur Stock Exchange (KLSE).

TABLE 2.1 SUMMARY OF THE LISTING REQUIREMENTS[1]

MAIN BOARD	SECOND BOARD
1. Issued and Paid-up Capital: A public company seeking listing and quotation for its securities on the Main Board should have a minimum paid-up capital of **RM60 million,** comprising ordinary shares of not less than 10 sen each. At least 25% of the company's issued and paid up capital at the time of listing shall be in the hands of public shareholders. The company should ensure that at least **750** shareholders are public shareholders who are not employees.	1. Issued and Paid-up Capital: A public company seeking listing and quotation for its securities on the Second Board should have a minimum paid-up capital of **RM40 million**, comprising ordinary shares of not less than 10 sen each. At least 25% of the company's issued and paid up capital at the time of listing shall be in the hands of public shareholders. The company must ensure that at least **500** shareholders are public shareholders who are not employees.
2. Historical Profit Performance: The company should have an uninterrupted after-tax profit record for the past three (3) to five (5) full financial years, an aggregate after-tax profit of at least **RM30 million** over the aforesaid period of uninterrupted after-tax profit and a minimum after-tax profit of **RM8 million** for the most recent financial year.	2. Historical Profit Performance: The company should have an uninterrupted after-tax profit record for the past three (3) to five (5) full financial years, an aggregate after-tax profit of at least **RM12 million** over the aforesaid period of uninterrupted after-tax profit and a minimum after-tax profit of **RM4 million** for the most recent financial year.
3. Others Some other factors which could show financial stability, and corporate disclosure requirement.	3. Others Some other factors which could show financial stability, and corporate disclosure requirement.

Source: Kuala Lumpur Stock Exchange

The Main and Second Board were later complemented by MESDAQ. This over-the-counter establishment, which commenced trading in April 1999, has the objective to provide a market for young, high-growth and high technology companies to raise capital as well as to promote the development of technology-intensive industry. This market, which attempts to position itself as the emerging regional equivalent of NASDAQ in the US, was later merged with KLSE in 2001

[1] The recent updated requirements can be retrieved from the official website of Bursa Malaysia; http://www.bursamalaysia.com/website/listing/listingreqs_mbsb.htm

to form a single Malaysia exchange for the capital market. After a thin listing during its early trading (i.e. 3 firms listed in 2001), the number of listed firms had grown to 107 by December 2005.

2.3.2 THE LISTING STATISTICS

As of the end of 2000, there were 795 firms listed on the KLSE as compared to only 250 companies listed in the early 80s, an increase of more than 200 percent over the 20-year period. Out of the 795 firms, the Main Board has 498 listed firms, while the remaining 297 firms were on the Second Board. Market capitalisation grew from RM43.1 billion in 1980 to over RM400 billion in 2000. The statistics on the firms' distribution since 1980 are as in the following table.

TABLE 2.2 TOTAL NUMBERS OF LISTED COMPANIES IN THE MAIN BOARD, SECOND BOARD AND MESDAQ MARKET (AS AT 30 DEC 2005)

YEAR	MAIN BOARD	SECOND BOARD	MESDAQ MARKET	TOTAL
2005	647	268	107	1022
2004	622	278	63	963
2003	598	276	32	906
2002	562	294	12	868
2001	520	292	3	812
2000*	498	297	-	795
1999	474	283	-	757
1998	454	282	-	736
1997	444	264	-	708
1996	413	208	-	621
1995	369	160	-	529
1994	347	131	-	478
1993	329	84	-	413
1992	317	52	-	369
1991	292	32	-	324
1990	271	14	-	285
1989	305	2	-	307

1988	295	-	-	295
1987	291	-	-	291
1986	288	-	-	288
1985	284	-	-	284
1984	282	-	-	282
1983	271	-	-	271
1982	261	-	-	261
1981	253	-	-	253
1980	250	-	-	250

Source: http://www.bursamalaysia.com/website/listing/listingstats.htm

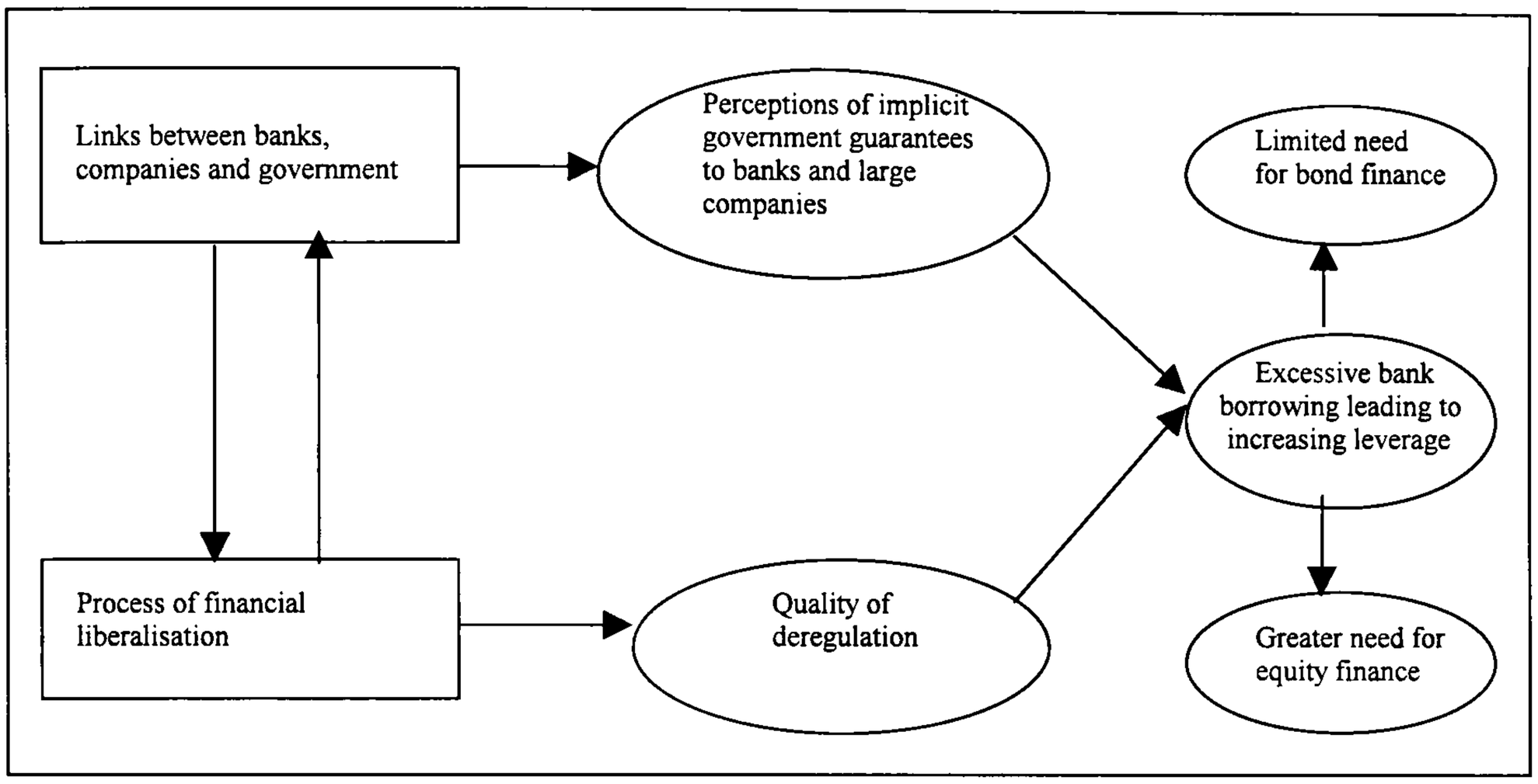
2.4 THE BOND MARKET

In Malaysia, the Ringgit bond market has been a significant source of financing for various development projects. The market comprises the government securities market and the private debt securities market. In the 80s and early 90s, Malaysian Government Securities (MGS) had essentially dominated the bond market, as the private debt securities market was practically nonexistent. MGS were issued in the early years to meet the investment needs of the Employees' Provident Fund, banks and insurance companies. MGS also served to fund public sector development expenditure. Due to the reduction in the government's borrowing programme, the new MGS issues had slowed in the period from 1988 to 1997, and only picked up from late 1999 onwards.

Sharma (2001) states that the underdeveloped bond or PDS market in the region was due to the strong links between banks, companies, and government that encouraged the increase in firms' borrowing through domestic and foreign banks. Apparently, as Malaysian economy has modelled after the Japanese, Sharma's mentioned links are observable in the country. Sharma illustrates the situation of

the corporate bond market in Southeast Asia during the period in **Figure 2.1** below.

FIGURE 2.1 INSTITUTIONAL FORCES BEHIND LIMITED BOND ISSUANCE IN THE LATE 1980s AND EARLY 1990s (SHARMA, 2001)[2]



Source: Sharma, K (2001) The Underlying Constraints on Corporate Bond Market Development in Southeast Asia, World Development, V29, N8, pg 1405-1419.

In addition to the strong relation that bank lending created between government, banks and corporate borrowers as illustrated above, Harwood (1993) states that among other factors that contribute to the underdeveloped Malaysia's PDS market during that period was the difficulty to encourage corporations to borrow outside the banking system and the cumbersome approval process for issuing bond. Unless the regulators come up with more attractive features to warrant a shift away from bank loans, banking system will continue to satisfy the need of borrowers. In addition, the long approval process makes corporate bond become less attractive if market conditions change within the time frame. Consequently, corporate issuers tend to shy away from the market.

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[2] Sharma's original chart attempts to illustrate the situation of the corporate bond market in Southeast Asia in general. Due to the similarity in the market orientations of the countries in the region, we could also apply these institutional forces to Malaysia as well.

In line with the government's aspiration to promote the private sector as the engine for growth, the private debt securities (PDS) market has undergone rapid development. It aimed to provide alternative to bank borrowings and complement the more mature market in MGS and equities, particularly aimed to meet the financing needs of privatised infrastructure projects. Although the MGS dominated the bond market, its secondary market was relatively inactive. Meanwhile, the PDS has improved significantly, as funds generated through PDS have dominated the funds provided by the private sector. This reflects the increased recourse to PDS as an alternative source of financing.

With the shift in policy, the government began downsizing its operations, reducing its involvement in the economy and allowing domestic financial resources to support private sector activities. Privatisation has become the main route. This privatisation policy was set out to encourage private sector activities through tax incentives and financial liberalisation, as to foster foreign investment in local private industry. The Ministry of Finance has also set up Khazanah Nasional Berhad in September 1993 to manage all commercial assets held by the government and undertake strategic investments. Holding the role as the government investment house, Khazanah has the primary objectives to manage investment entrusted to it by the government and to undertake new investments in strategic, high technology sectors and projects in the national interest. To date, Khazanah holds substantial controlling stakes in 24 government-linked companies (GLCs). Amongst the GLCs are the national automobiles company (Proton Holdings), the national telecommunication company (Telekom Malaysia), the national utility company (Tenaga Nasional) and Malaysian Airline System

(MAS). To date, GLCs have accounted for approximately 40 percent of the Composite Index (KLCI).

Moreover, to diversify the financing resources away from the banking sector, the government has enhanced the role of the corporate bond market as a financier of domestic economic activities. To support the rapid development of the market, the government took into account several considerations. First, following the privatisation policy, there is a need to meet the financing needs of the expanding Malaysian economy. Second, to provide alternative avenues for savings in a wide range of financial assets. Third, the need to provide cost-effective financing sources to cater the increased sophistication of corporate borrowers. In an effort to further strengthen the stability of the financial system, the government has introduced several measures to bring discipline to the banking sectors. In March 1998, in restructuring and revitalising the banking system, the Bank Negara Malaysia (BNM) announced a restructuring of the country's financial institutions: some are to be restructured into several anchor groups while the remainder are to be absorbed by their parent banks.

In coordinating the development of the bond market, the government has established the National Bond Market Committee (NBMC) in 1999. The NBMC provides overall policy direction for the systematic development of the bond market and recommends appropriate implementation strategies. The government has also made the Securities Commission (SC) the single regulatory authority over the corporate bond market as from 1 July 2000. To promote a more active and vibrant PDS market, the SC has introduced guidelines for the issuance of PDS to

provide a smooth and efficient approval process for all debt proposals. The KLSE and the Securities Commission (SC), in a concerted effort, have also implemented a series of measures in the PDS market to ensure that the regulatory framework is facilitative, transparent, cost efficient and effective.

To complement the role of traditional lenders, the range of debt securities has also widened in tandem with the growth in the market. The PDS market comprises various types of instruments with the range covering fixed rate, floating rate, zero-coupon, convertible/non-convertible and secured/unsecured. The maturity ranges from three to 20 years. The PDS instruments also include issues that are based on Islamic principles. **Table 2.3** summarises the types of instrument offered by the bond market.

TABLE 2.3 TYPES OF INSTRUMENTS IN THE 'RINGGIT' BOND MARKET

Malaysian Government Securities (MGS)	MGS are long-term government securities with interest payable semi annually. The maturity period of MGS is normally above one year and the coupon rate is determined by the weighted average of the yield.
Malaysian treasury Bills (MTB)	MTB are short-term government securities and are bid for on a yield basis. The yield is specified as a rate of discount and the life of MTB is expressed in actual number of days (normally 91 days)
Government Investment Issues (GII)	GII are government securities issued based on Islamic principles and are placed on non-competitive tender.
Bank Negara Malaysia Bills (BNB)	BNB are short-term securities issued by Bank Negara Malaysia and are bid for on a yield basis. The yield specifies the rate of discount and the maturity period of BNB is expressed in actual number of days.
Cagamas[3] Instruments: • Floating Rate Bonds	These bond are of medium/long-term tenor with an adjustable coupon rate. The interest is payable either semi annually or quarterly basis.
• Fixed Rate Bonds	These bonds are fixed-coupon medium/long-term bonds where interest is payable semi annually.
• Cagamas Notes	These notes are short-term securities with a maturity period of 12 months or less. The notes are similar to MTB and normally issued at discount.

[3] Cagamas Berhad, the national mortgage corporation, primarily issues Cagamas debt securities to fund its purchases of loans and debts. Established in 1986 to promote secondary mortgage market in Malaysia, Cagamas Berhad has a corporate mission to provide financial products that would make housing loans more accessible and affordable to Malaysians, particularly the lower income group.

• Islamic Notes- Al Mudharabah	These debt securities are of medium-term issued under the Islamic Principle of Al Mudharabah with a pre-determined profit sharing ratio.
Commercial Paper (CP)	CP is a revolving short-term paper with period of not less than one month but not more than 12 months. These securities are similar to MTB and are normally issued at discount.
Medium-Term Notes (MTNs)	MTNs are instruments with life of more than one year but up to 5 years, and may be issued based on conventional or Islamic principle. The mode of issue of MTNs can either be on direct placement and/or by way of tender.
Corporate bonds	The issuer may issue these long-term bonds based on Islamic or conventional principle, and with fixed/floating rate bonds or without interest (zero coupon bonds) attached. The interest maybe payable on a quarterly, semi annually or annually depending on the cash flows of the issuer.

Source: Bank Negara Malaysia at http://rmbond.bnm.gov.my

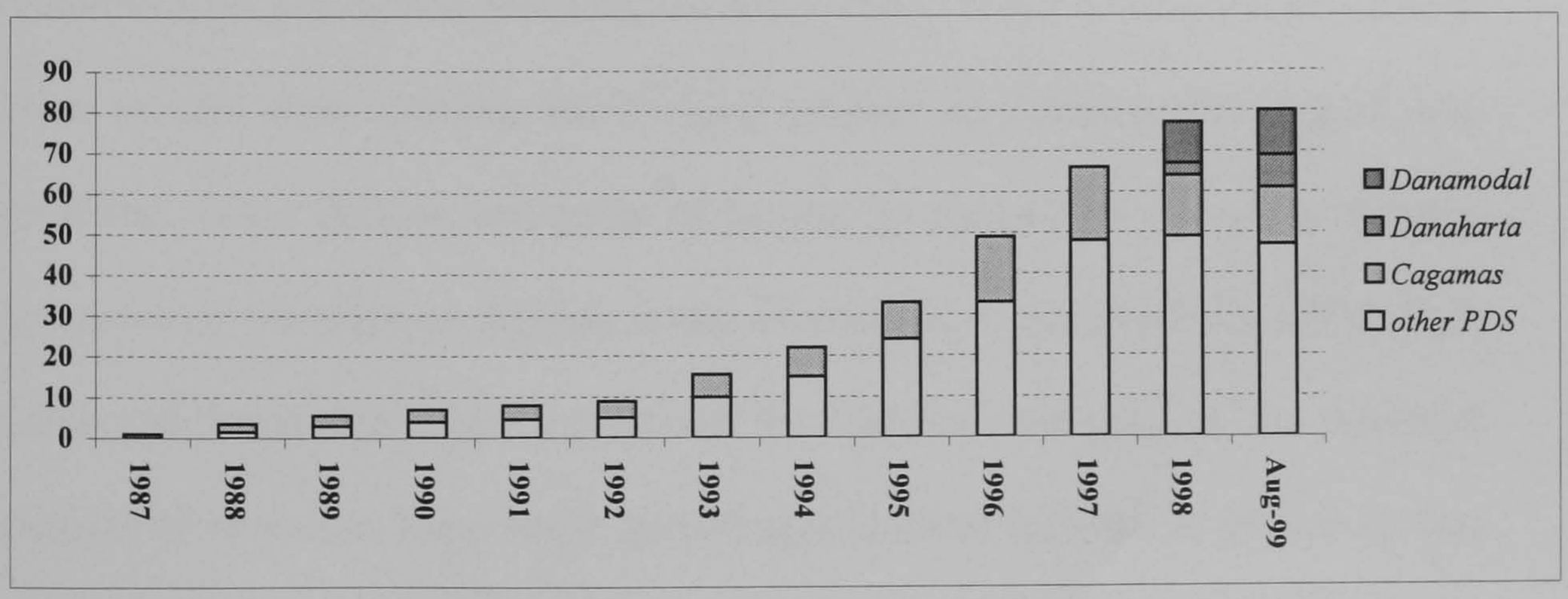
Furthermore, all tradable PDS must be rated to ensure confidence, and to assist in the investment decision-making process. Malaysia's first credit rating agency, Rating Agency Malaysia Berhad (RAM), was incorporated in November 1990 to serve this need. Amongst its functions are to rate all PDS and disseminate timely information to potential investors in both the primary and the secondary markets. As demand increases, a second credit rating agency, Malaysian Rating Agency Corporation Berhad (MARC), was established in September 1996 to complement RAM.

To cope with the 1997-98 financial crisis, the government has also set up three distinct agencies: Danaharta, Danamodal, and the Corporate Debt Restructuring Committee (CDRC). The establishment of Danaharta, an asset-management company, and Danamodal, a special purpose recapitalisation agency, was aimed to restore confidence in banking institutions. The primary assignment of Danaharta was to acquire and manage the NPLs of financial institutions. Established at the same time, the government has given a mandate to Danamodal to authorise the recapitalisation of the financially weak banking institutions by

holding representation on the board of directors after the shareholders absorbed the loss and diluted their ownership. Meanwhile, the third agency, the CDRC has the task of assisting both debtors and creditors to find out-of-court solutions to their debt problems. By end of 1999, Cheng and Hossain (2000) claimed that these agencies have made significant progresses in facilitating and accelerating corporate debt restructuring and participating in the bond market. In line with this claim, Danaharta has recently announced that it has achieved its objectives and will cease operation by the end of 2005, only after seven and a half years in operation, when initially the government estimated that the agency would take 10 years to stabilise the economy following the Asian financial crisis.

With increased participation in the market, the PDS market has gained significant market share. The following **Figure 2.2** illustrates the development and growth of debt instruments in Malaysia from 1987 to 1999.

FIGURE 2.2 DEVELOPMENT OF THE PDS MARKET (RM BILLION)



Source: Bank Negara Malaysia

As shown, the PDS market rose from RM0.4 billion as at end of 1987 to RM80 billion at the end of August 1999. By the end of September 2001, total outstanding PDS has amounted to RM152 billion (Economic Report 2000/2001). Based on the mentioned figures, PDS outstanding have grown by nearly 380 times in the fifteen-year period from 1987 to 2001. The market of PDS currently contributes to more than 30 percent of Malaysia's GDP.

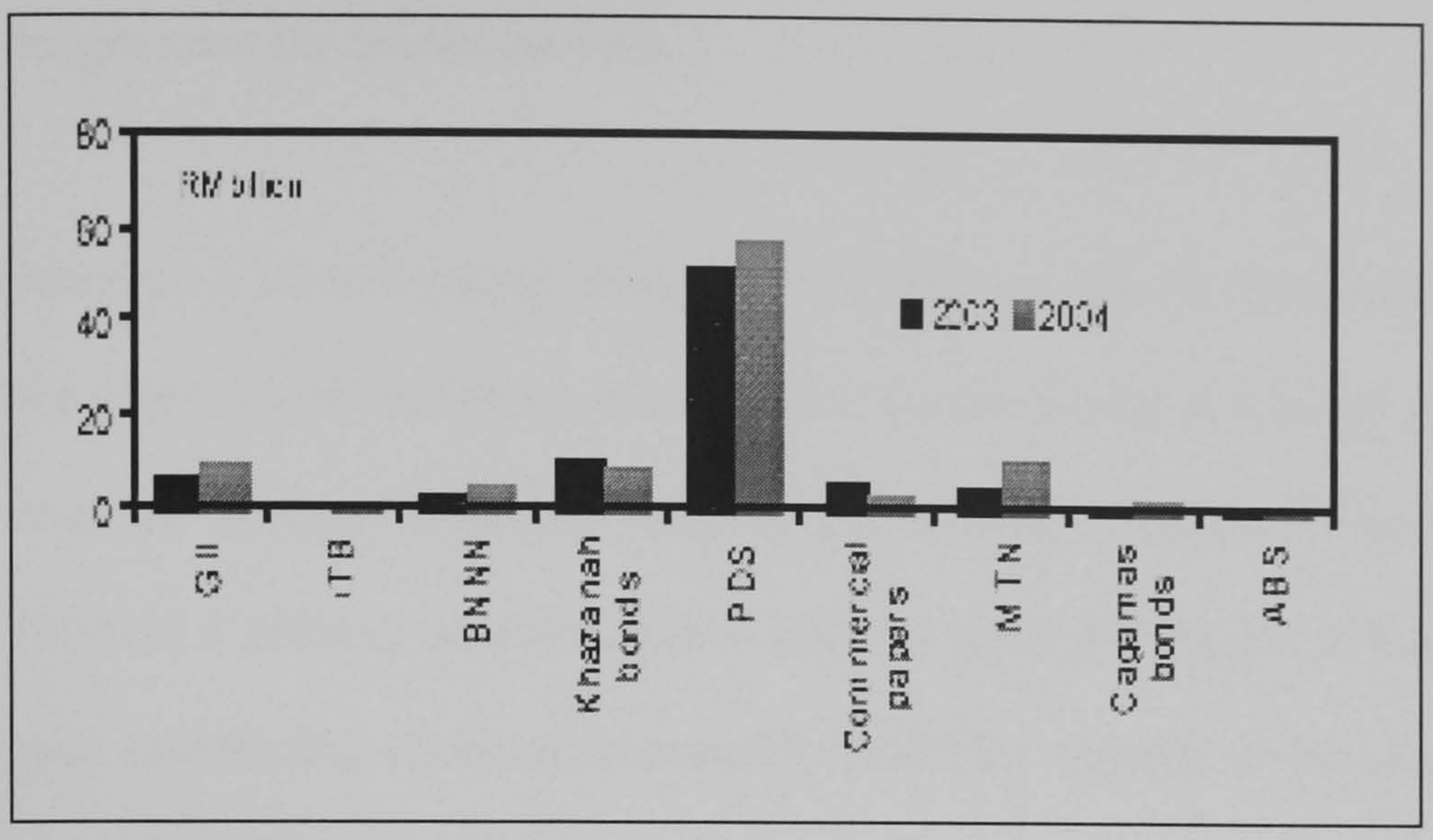
2.5 ISLAMIC CAPITAL MARKET

In Malaysia, Islamic equity investment has started as early as the mid-1960s when Lembaga Tabung Haji (Pilgrims Fund Board) was established. However, the first Islamic paper was successfully issued by Shell Malaysia in 1990. The establishment of Bank Islam (Islamic Bank), takaful companies (i.e. Islamic insurance companies) and Islamic banking divisions has proactively led to the development of the Islamic capital market (ICM). Islamic capital market refers to the market where activities are carried out in ways that do not conflict with the principles of Islam, especially with respect to the strict enforcement of the prohibition on paying and receiving interest ('*riba*'). Other prohibited activities in Islam include those activities that involve '*gharar*' or elements of ambiguity and gambling. Islam defines ambiguity as having an element of deception through ignorance of the price or through faulty description of the goods, in which both seller and buyer stand to be deceived by their unawareness of the essential element of exchange. Meanwhile, gambling as defined in Islam is an activity that involves betting whereby winner takes all and loser looses all.

In accordance with these principles, ICM comprises two distinct markets: the primary market and the secondary market. The former is a market that offers new issues of Islamic securities to the public and institutions, whereas the latter trades existing Islamic paper and securities. The market has functioned as a parallel market to the conventional market for financial seekers and providers. The Government Investment Act 1983 allows the government to issue non-interest-bearing government paper to the public based on Islamic principles. The current Islamic instruments available in the government securities market are the Government Investment Issues (GII) and the Malaysian Islamic Savings Bond.

There are two major components of the Islamic corporate securities market: the Islamic debt securities market and the Islamic equity market. Islamic debt securities (IDS) have become increasingly accepted, with various types of Islamic debt instruments. These Islamic debt securities comprise the medium-term Islamic bonds and short-term Islamic commercial paper. As of June 1999, the outstanding IDS amounted to RM17.1 billion, comprising RM14.3 billion of Islamic bonds and RM2.8 billion of Islamic commercial paper (Bank Negara Malaysia Annual Report). The issuance of Islamic PDS can be attributed to the higher demand for the instruments by Islamic banking units and Islamic unit trust funds. To date, the market share of IDS has accounted for about 25 percent of the total outstanding PDS. The following **Figure 2.3** shows the Islamic securities outstanding in the market as at end of 2003 and 2004, with Islamic PDS leading in volume.

FIGURE 2.3 OUTSTANDING ISLAMIC SECURITIES



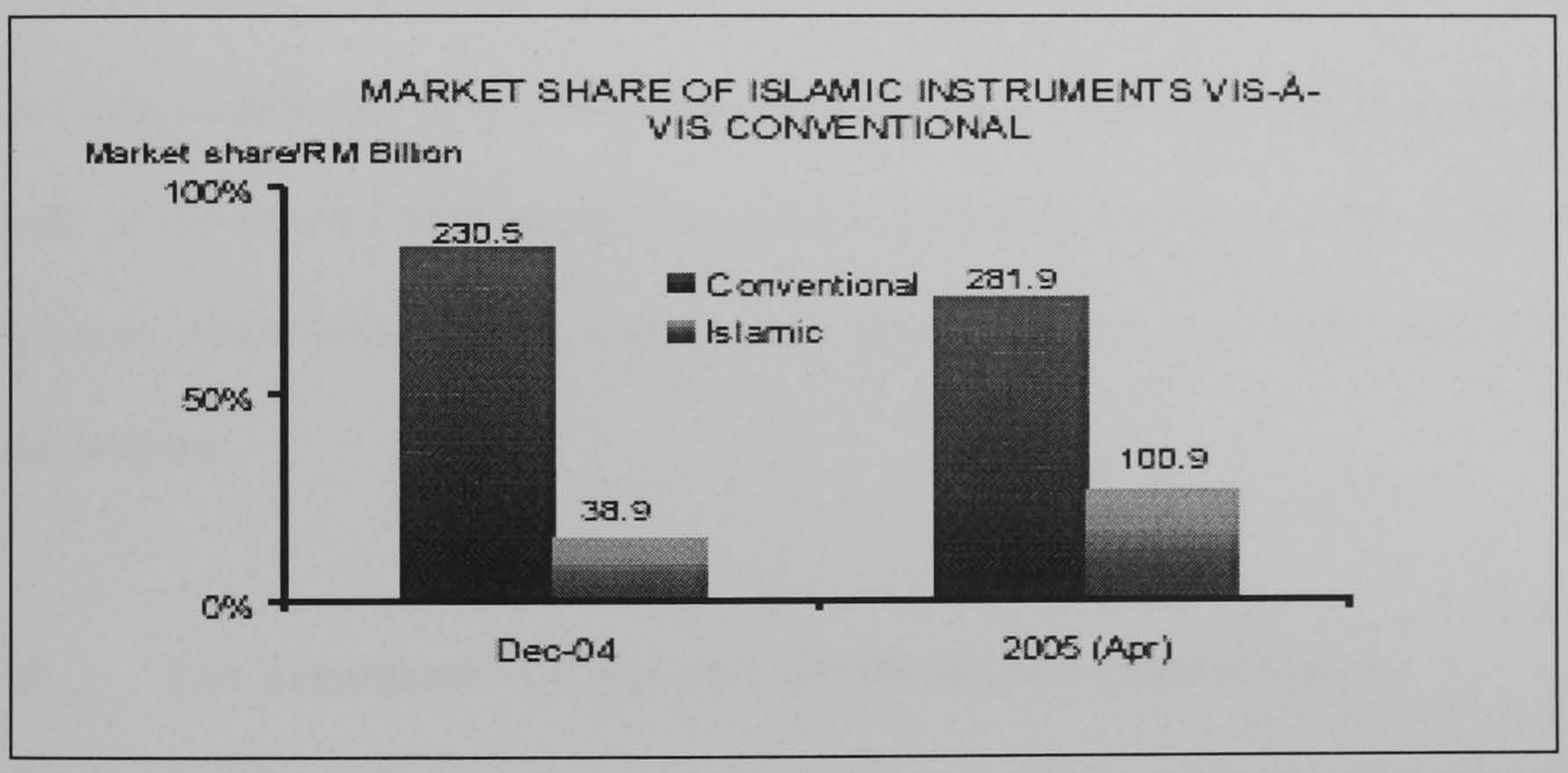
Source: Bank Negara Malaysia Annual Report 2004

Meanwhile, Islamic stock-broking operations, Islamic indices, Islamic Unit Trusts, and a list of permissible securities in the KLSE endorsed by the Securities Commission (SC), mark the presence of the Islamic equity market. Islamic equity market is essentially a subset of the conventional equity market. Only those securities whose activities fulfil certain guidelines are considered as Islamic equity. Currently, there are two Islamic indices: the RHB Islamic Index introduced in 1994 followed by the Syariah Index launched in April 1999. The Syariah Index tracks these 'Syariah-compliant' stocks in the KLSE, constructed from the list of 'Syariah-approved' securities issued by the SC based on the deliberation of the Syariah Advisory Council of the SC. The Syariah Advisory Council (SAC) was formed in May 1996 to assist the development of the ICM. This council holds the task to assess and evaluate existing instruments and ensuring the operations of ICM are in accordance with all Syariah principles. As at the end of April 2004, the Syariah Advisory Council has approved 741 securities out of the 924 total securities, which accounted for 80 percent of the total listed securities. The SAC updates the list progressively over time by

including newly approved securities and excluding existing securities that no longer meet the criteria set forth.[4]

Malaysia's Islamic capital market (ICM) has experienced significant growth over the years. As of the first quarter of 2005, Islamic financial instruments constituted over 26 percent (RM100.9 billion) of the total financial instruments issued (RM382.8 billion), as compared to only 14 percent (RM38.9 billion) out of the total outstanding financial instrument (RM269.4 billion) in the year before (see **Figure 2.4** below).

FIGURE 2.4 GROWTH IN ISLAMIC CAPITAL MARKET



Source: Bank Negara Malaysia at http://rmbond.gov.my

High demand for Islamic securities, relatively more cost effective for corporate issuers, and the increased depth and breath of Islamic money market are said to be among the contributing factors that trigger growth of Malaysia's Islamic capital market (ICM).

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[4]The most recent syariah approved list can be accessed through the Securities Commission official website at http://www.sc.com.my/html/icm/fr_icm.html

2.6 CORPORATE TAX TREATMENT OF INCOME ARISING FROM EQUITY AND DEBT

Malaysia's tax structure is based on the UK and Australian models, and is generally considered to be investment-friendly. The law governing income tax treatment in Malaysia is the Income Tax Act 1967. According to the Act, income of any Malaysian resident *accrued and derived from Malaysia or remitted from outside Malaysia into Malaysia* will be taxed. However, for non-residents, only income derived from Malaysia will be taxed, while income arising from sources outside Malaysia is exempted from tax. In essence, Malaysia operates on imputation system of company taxation. Section 3.14, Paragraph 2 Part 1 of Schedule 1, and Section 108 of the Income Tax Act 1967, govern this imputation system in Malaysia (Kamil & Mohd-Yusoff, 1998). With regard to the company's taxable income, the Inland Revenue Board charges corporation tax at a single tax rate of the year of assessment. The current corporate income tax rate is set at 28 percent. Meanwhile, the tax treatment on income arising from equity and debt are as follows:

A. Tax Treatment of Corporate Dividends and Capital Gains

Under Section 108 (1) of the Income Tax Act 1967, when a company makes dividends distribution to shareholders, this imputation system allows the company to deduct tax imposed on dividend income to shareholders at the ongoing rate of the year of assessment. If the tax paid is in excess of the amount prescribed, then the company can carry forward the excess to the following year of assessment (Section 108(6)). However, if the amount of tax paid is less, then the company is in debt to the government and will have to pay on demand (Section 108(5)).

The amount deducted by the company reflects an amount of dividend tax credit and the shareholders can claim this amount to offset the tax chargeable on their taxable income. This is necessary due to the fact that the assessment of taxable income of the shareholders is at a gross amount but they receive only the net amount from the company. In essence, shareholders do not pay additional taxes on dividend income. Capital gains on sales of shares are also generally not subject to taxation. A tax is imposed only on gains derived from disposal of real property or shares in real property company.

B. Tax Treatment of Interest

In determining the taxable income, Section 33 of the Income Tax Act specifies the general rule for deductions. The interest paid must be from the income producing expenditure in the accounting year. The Act disallows deduction of interest expenses from non-business investments against business income. The effect of this restriction is that only the portion of interest attributable to the production of business income is allowable against business source and is fully deductible. Meanwhile, interest attributable to non-business investments, such as loan to subsidiary, investment in shares and fixed deposit, will only qualify for deduction against income generated from those investments or loans.

However, the government normally would not impose interest restriction if the interest on borrowed funds charged to the business account does not exceed RM6,000 per annum for individual or RM10,000 for company (Choong, 1994). As for interest income received from borrower, this income is treated as ordinary income and taxed at the ongoing tax rate in the year of assessment.

In general, the advantage of using debt is that interest payments are deductible as an expense. They avoid taxation at the corporate level, whereas dividends associated with stocks are not deductible by the corporation for tax purposes. In fact, dividends are subjected to double taxation in the classical system of taxation, i.e. at corporation level and at personal level. Theoretical argument would favour employing debt as the total amount of payments available to both debt holders and equity holders is greater compared to equity. In Malaysia, the tax treatment of interest is similar to the west. However, the situation does not apply to the treatment of dividends and capital gains. Although dividends do not possess this tax-deductible feature, the Malaysian tax system exempts shareholders from paying additional tax on dividends received. Capital gains are also generally not subject to tax in Malaysia. On the demand side of the equation, this implies that equity purchases should be more attractive to existing and potential shareholders.

2.7 SUMMARY

The chapter provides a general overview of Malaysian economic background and capital market. In addition to describing the development of the capital market, the chapter briefly outlines the various roles assumed by the local exchange (the KLSE). The chapter extends its discussion into the progression of the private debt securities (corporate bond) market especially after the recent financial crisis of 1997-98. In obtaining some background of the country's market orientations, the chapter discusses the recent emergence of the Islamic capital market, which has gained significant growth of issuance over the years. This part also discusses the features of Islamic securities that separate them from conventional financial instruments. The chapter ends by looking briefly into Malaysian corporate

taxation treatment of dividend and interest. The differential tax treatment of interest and dividends play a part in firms' decision of whether to seek debt or equity to fund their investments. If the tax-deductibility feature of interest payment favours firms to issue debt, the tax-exempted feature of dividend income in Malaysia would make equity purchases more desirable to potential shareholders.

Perusing through the overall discussion in this chapter, we have identified three key areas in which the Malaysian financial system differs from the western market:

(1) First, the Malaysian capital market falls under the emerging market category and has undergone several phases of economic transformations from a middle-income country into an export-led economy. Despite rigorous attempts to strengthen the securities market and the country's economic prospects, the market is still considered less well developed if compared to the western market. Further improvements are still underway as part of the government's effort to transform the market into a more developed market.

(2) Second, the Islamic capital market has functioned in parallel with the conventional market. Albeit having strict requirements for their issuance, the Islamic instruments have added variety to the firms' financing alternatives. The diverse choice of financial instruments being traded in the market is one advantage that the Malaysian capital market has to offer.

(3) Third, the tax treatment with regard to dividends and capital gains received by shareholders. Unlike the classical system in which dividend is subject to double taxation, the Malaysian imputation tax system exempts shareholders from paying additional tax on dividend and capital gains. Ideally, assuming other things remain constant, this tax-exempted feature of dividend and capital gain would make Malaysian investors prefer equity to debt.

With the aforementioned differences in the country's financial system, this thesis is structured to seek the possibilities that the capital structure theories originated and tested in the developed western market can be disproved if tested in Malaysia.

PART 2

CAPITAL STRUCTURE BACKGROUND

CHAPTER 3

LITERATURE REVIEW

3.1 INTRODUCTION

This chapter covers the literature survey on the development of the capital structure theory and competing arguments with regards to the views on optimal capital structure and financing hierarchy. Before examining the capital structure theory in detail, some insights on the general capital structure patterns would help to better understand the theory. Megginson (1997) elaborate these capital structure patterns by citing that a strong theory should be able to explain the empirical patterns as outlined below (pg.306-314):

(1) *Observed capital structures show a distinct pattern.*
(2) *Capital structures have pronounced industry patterns, and these patterns are the same around the world.*
(3) *Within industries, leverage is inversely related to profitability.*
(4) *Taxes clearly influence capital structures, but not alone decisive.*
(5) *Leverage ratios appear to be inversely related to the perceived costs of financial distress.*
(6) *Existing shareholders consider leverage-increasing events to be 'good news' and leverage-decreasing events to be 'bad news'.*
(7) *Changes in the transactions costs of issuing new securities have little apparent impact on observed capital structures.*
(8) *Ownership structure clearly seems to influence capital structures, though the true relationship is ambiguous.*
(9) *Corporations that are forced away from a preferred capital structure tend to return to that structure over time.*

Perusing through more than forty years since the legacy of Modigliani and Miller (1958), many financial economists have taken great interest in investigating the capital structure issues in depth, both empirically and theoretically. These capital structure issues have concentrated on evidence at the individual firm level as well as the aggregate economy level. At the individual firm level, evidence has evolved

into finding firm specific determinants that influence its financing pattern (e.g. Frank & Goyal, 2003; Claggett Jr., 1991; Titman & Wessels, 1988). Meanwhile, the empirical work at the macro level compares capital structure practices of firms between economies and regions (e.g. Booth et. al, 2001; Krishnan & Moyer, 1997; Bartholdy et. al, 1997; Rajan & Zingales, 1995)

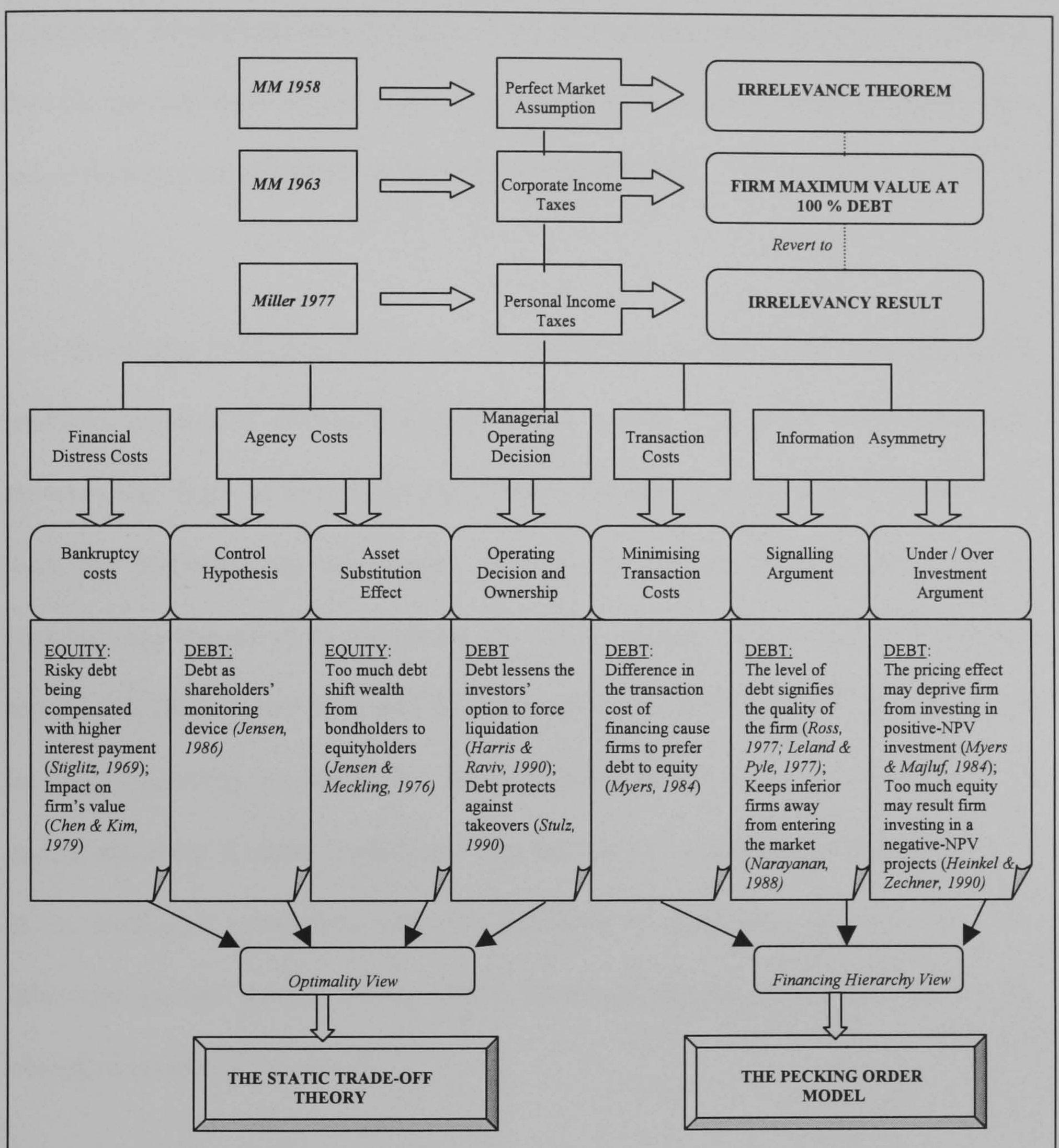
This chapter is organised as follows: Section 3.2 begins with the archetypal model inspired by Modigliani and Miller (1958) and the subsequent corporate income tax model (Modigliani & Miller, 1963) and personal income tax model (Miller, 1977). Section 3.3 describes the more recent models after incorporating 'real world' elements into the original assumptions. The later discussion in this section concentrates on the two competing capital structure of the static trade-off theory and the pecking order model. Section 3.4 looks into the evidence supporting or negating the theory domination, and other arguments related to the issues. Section 3.5 examines a number of firm-specific attributes claimed to be the motivating factors behind firms' financing choices. Section 3.6 looks into evidence of capital structure from other developing countries that contributes to the current literature work. Section 3.7 presents the general findings from the existing Malaysian-based capital structure studies. Finally, Section 3.8 concludes by unfolding the relevant issues from this literature survey.

3.2 DEVELOPMENT OF EARLY CAPITAL STRUCTURE THEORIES

The documented capital structure theories in the literature have the underlying aim towards maximising the value of firm. In presenting the complete picture of the theory development, the following **Figure 3.1** illustrates the overall progression of

the capital structure theory from the early models to the emergence of the more recent capital structure models.

FIGURE 3.1 DEVELOPMENT OF THE CAPITAL STRUCTURE THEORIES[5]



[5] The diagram was adapted from the flowchart in the article by Quan (2002) on the relationship between the Modigliani-Miller Proposition I and the Pecking Order Hypothesis. In Quan (2002), he proposed the pecking order model as an extension of the static trade-off theory. However, Quan's flowchart was modified to fit our discussion on the development of the capital structure theory. In this modified version, the pecking order and the static trade-off theories were seen as two separate strands of capital structure theory.

The flowchart above shows that all capital structure models originate from the solid based principle of firm's market value maximisation embodied in the original proposition of Modigliani and Miller (1958). The proposition relies upon the restrictive assumptions of perfect market arguments. Although it seems unrealistic, Modigliani and Miller's (MM henceforth) initial proposition asserts that the market value of any firm is irrelevant of its capital structure; hence, the use of debt has no influence on the firm's market value.

Five years after instituting this irrelevance proposition, MM (1963) corrected their previous version of corporate income taxes model. The result overwhelmingly reverses the claim of the earlier prediction. On this account, they recognise that with the corporate tax advantages of debt, the use of debt in firm's capital structure has the affect of increasing the value of firm. This corporate tax model asserts that the value of firm will be at its maximum level with 100 percent use of leverage financing. At this point, the discussion on the theoretical predictions of capital structure is either irrelevant when the market is perfect (MM, 1958), or set at its maximum prediction with the inclusion of corporate income tax in the otherwise perfect market (MM, 1963). However, neither prediction reflects the objective reality of the world.

Fourteen years later, Miller (1977) presents another model that incorporates personal income taxes to the existing corporate-tax model. In his model, Miller hypothesises that if personal tax rates on interest income are relatively higher than the personal tax rates on equity, then the gains to corporate leverage can largely be

discounted or even eliminated entirely, thus reverting to the irrelevant results of capital structure.

Whilst all models only work in an idealised world, these controversial propositions have prompted researchers to keep adding elements of the 'real world' in seeking how the theory predictions change. Among these 'real world' elements are financial distress costs (Stiglitz, 1969; Chen & Kim, 1979), agency costs (Jensen & Meckling, 1976; Jensen, 1986), managerial operating decision (Harris & Raviv, 1990; Stulz, 1990), transaction costs (Myers, 1984), and information asymmetry (Myers & Majluf, 1984; Ross, 1977; Leland & Pyle, 1977; Narayanan, 1988; Heinkel & Zechner, 1990). The development of these more recent models is discussed in the subsequent section.

3.3 THE MORE RECENT CAPITAL STRUCTURE MODELS

Following the work of MM (1963) and Miller (1977), economists began developing further extensions to the original MM hypothesis. These modifications to the basic capital structure model now become the focus of the corporate leverage issues. The possibilities for the 'debt-inducement' models have extended to include organisational efficiencies (Jensen, 1986), the managerial operating decision (Harris & Raviv, 1990; Stulz, 1990), financial planning principles (Myers, 1984; Leland & Pyle, 1977; Ross, 1977), and investment incentives (Myers & Majluf, 1984; Heinkel & Zechner, 1990). Meanwhile, the 'debt-deterrent' models arise when the elements incorporate financial distress (Stiglitz, 1969; Chen & Kim, 1979) and wealth transfer issues (Jensen & Meckling, 1986).

A. Financial distress costs model

In re-examining the original MM theorem, Stiglitz (1969) suggests the possibility of bankruptcy in a perfectly competitive market. By adding more debt into a firm, the financial distress costs exacerbate as debt imposes element of risk in the firm's financial structure. Only higher interest payment could compensate for this risky debt (Stiglitz, 1969). In support, Chen and Kim (1979) claim that risky debt gives rise to various market imperfections. With the existence of risky debt, economists recognised that to go on borrowing beyond a certain point may lead to bankruptcy. Bankruptcy costs have great impact on firm's value especially with the presence of 'me-first' rules (Chen & Kim, 1979). To achieve the value maximisation objective, a firm that utilises debt in its financing stream should be able to create a balance between tax advantage of debt and these bankruptcy costs.

B. Agency costs model

Aware of the bankruptcy cost of debt, Jensen and Meckling (1976) observe that when there is no separation between corporate ownership and control in a business entity, the owner bears all the cost and collects all the benefits. However, once the owner sells a small part of the firm's stake to outsiders, and/or hires a third party to take control and make decisions on the owner's behalf, problems start to emerge. Fama and Miller (1972) initiate the work by examining the possibility of different utility function between management and shareholders. Building on the work of Fama and Miller, Jensen and Meckling suggest two particular conflicts of interest: (1) conflicts between shareholders and managers, and (2) conflicts between debt holders and shareholders.

According to Jensen and Meckling, conflicts between shareholders and managers arise from the managers not having a 100 percent share in the firm's claim. The managers do not capture the entire gain from their profit enhancement effort, but are responsible for the cost of refraining from this effort. As a result, these managers might engage in those behaviours that will maximise their wealth at the expense of the firm's wealth. To ameliorate this conflict, debt plays a role as a monitoring device in Jensen's (1986) *control hypothesis* effects. By issuing additional debt, the amount of 'free' cash flow available to the managers reduces, as firm is now committed to service the debt rendered. For this reason, debt financing is said to mitigate the conflict between managers and equity holders. Debt however, does not call for scrutinising the total returns of the firm, but only those matters that affect bankruptcy (Stiglitz, 1988).

Meanwhile, the conflicts between debt holders and equity holders arise because the funds obtained through debt could trigger equity holders to invest sub-optimally. Leverage increases the incentive of equity holders to shift wealth from bondholders to equity holders (Fama & Miller, 1972; Jensen & Meckling, 1976). By engaging in this act, the equity holders anticipate capturing most of the gain if the investment works to the favour of the firm, while the debt holders only collect the fixed payment from the interest and principle. If the investment fails, then the debt holders will have to bear all the costs. However, having too much leverage financing increases the likelihood of financial distress (Jensen & Meckling, 1976). The loss can be more damaging if the debt holders could correctly predict the equity holders' intention. The outcome of the agency cost of debt that causes loss of value to the equity holders because of poor investment decision is called the

'asset substitution effect'. For that reason, a firm that utilises debt should be able generate a balance between the benefit and the agency cost of debt (Jensen & Meckling, 1976). In related work, Kim and Sorensen (1986) conduct a study on the presence of agency cost and its association to the corporate debt policy. They find that firms with higher degree of inside ownership have greater debt ratios than firms with lower insider ownership.

Inevitably, these early works of MM (1958), MM (1963), Stiglitz (1969), Miller (1977), and Jensen and Meckling (1976) have collaboratively contributed to the theoretical arguments in favour of the existence of an optimal value. Having introduced the bankruptcy costs and agency costs in tandem, the arguments lead to the formation of the initial trade-off model of capital structure. Equation **(3.1)** below expresses this trade-off model of capital structure.

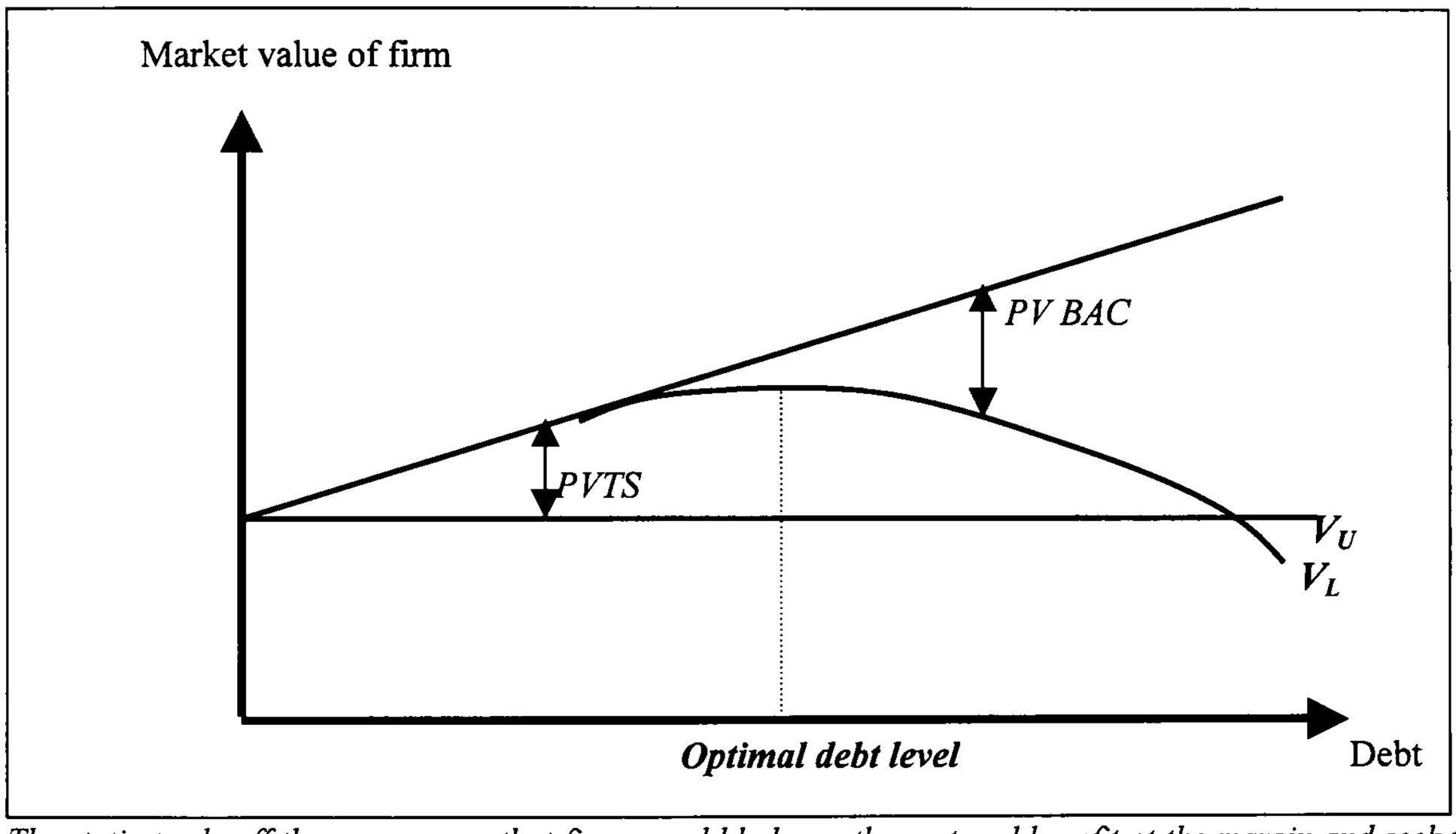
$$V_L = V_U + \boldsymbol{PVTS} - \boldsymbol{PVBAC} \qquad \textbf{(3.1)}$$

The term ***PVTS*** represents the present value of tax shield, while ***PVBAC*** is the present value of bankruptcy and agency costs. The equation states that the value of a levered firm (V_L) is actually the value of unlevered firm (V_U) after taking into account the present value of tax shields (***PVTS***), bankruptcy costs, and agency costs (***PVBAC***). When debt usage is low, the present value of tax shields (***PVTS***) is greater than present value of bankruptcy and agency costs (***PVBAC***); hence, the market value of firm increases (V_L). A firm opting to use debt reaches an optimal level by adjusting its capital structure towards a point, which the debt ratio produces the maximum tax shield value adjusted for increased probability of

bankruptcy and agency costs. However, when debt usage becomes extremely high, bankruptcy and agency costs become apparent, and the increase in the ***PVBAC*** dominates the increase in ***PVTS***. As a result, V_L drops.

Under a graphical scenario, a value-maximising firm attempts to balance the marginal present value of tax shield against the marginal present value of bankruptcy and agency cost as illustrated in **Figure 3.2.**

FIGURE 3.2 THE TRADE-OFF THEORY OF CAPITAL STRUCTURE[6]



The static-trade off theory assumes that firms would balance the cost and benefit at the margin and seek for the optimal level at the top of the curve

C. Managerial operating decision model

A more recent argument that contributes to the optimality notion has emerged from the study of Harris and Raviv (1990), and Stulz (1990) on the disagreement between managers and investors over an operating decision. Harris and Raviv

[6] This trade-off graph is a commonly discussed graph when describing the development of the early capital structure theory in modern corporate finance.

(1990) indicate that the use of debt could lessen the probability of giving investors the option to force liquidation if cash flows are poor. They further explain that firms with higher liquidation value and lower investigation costs will tend to obtain more debt and will be more likely to default. Therefore, higher leverage is always associated with larger firm value, higher debt level relative to expected income and lower probability of reorganisation following default. In their model, Harris and Raviv define optimality in capital structure as a trade-off between improved liquidation decision and higher investigation cost. Stulz (1990), on the other hand, assumes that managers always want to invest all funds available even if paying out cash to investors is a better choice. However, only when the firm is a target for takeovers, the financing structure would include more debt. Stulz views optimality as trading off the benefit of debt in preventing investment in value decreasing projects.

D. Transaction costs model

The traditional view proposed by Myers (1984) describes the differences in the transaction costs of financing instruments as the cause for firms to set preferences in the financing sources. Acquiring funds internally is free from any transaction costs, and causes minimal impact on firms' stock price. On the other hand, firms will have to pay high transaction costs for funds generated externally. These transaction costs may vary with the financing instruments issued. The transaction costs of issuing debt are normally lower than the costs of issuing equity. In an effort to minimise these costs, firms will take on the cheaper financing before resorting to the more expensive sources, hence choosing internal over external funds, and preferring debt to equity. Therefore, firms tend to seek financing

sources based on some hierarchy, which normally begin with internal funds, debt, and equity issue is the last resort.

E. Information asymmetry model

By adding more elements of the real world to the underlying assumptions of the MM original prediction, the evidence on the information asymmetry between insiders of the firm and less-informed outsiders become increasingly apparent (Myers, 1984; Myers & Majluf, 1984). Information asymmetry is a situation in which managers of a firm have more information about operations and future prospects of the firm than do investors. Assuming that managers make decisions with the goal of maximising the wealth of existing shareholders, then information asymmetry can affect the capital structure decisions that managers make. In anticipation, investors rely on the actions of these managers in assessing the firms' prospects. These investors will react based on their own interpretation of the managers' actions. Information asymmetry can be subdivided into two arguments, the signalling arguments (Ross, 1977; Leland & Pyle, 1977), and the under-investment arguments (Myers & Majluf, 1984).

The signalling arguments suggest that a firm's financing choice is an insider's tool to convey information to the market concerning investment opportunities and future prospects of the firm. Ross (1977) indicates that managers use leverage to convey signal to the market regarding their firm type. The true quality of a firm is the signal communicated by the relative amounts of debt and equity employed by the firm (Ross, 1977; Leland & Pyle, 1977). Ross further claims that the higher the level of financial leverage, the higher is the quality of the firm. Using debt to

raise funds is frequently viewed as a signal that reflects management's view of the firm's stock value. Under normal circumstances, debt financing conveys a positive signal, suggesting that management believes that the stock is currently undervalued and therefore a bargain. When the market recognises this positive outlook, the increased value will be fully captured by existing shareholders, rather than having to share with new investors. However, if the outlook of the firm is unfavourable and management believes that the firm's stock is currently overvalued, then it would be in the best interest of existing stockholders for the firm to issue equity. Therefore, outside investors often interpret the announcement of stock issues as a negative signal. The problems of asymmetric information also relate to the effort of the owners attempting to convince potential borrowers (Stiglitz, 1988), the managers impinging on the returns of capital provider (Stiglitz, 1988), and the quality firms blocking the financially weaker firms from entering the market (Narayanan, 1988).

On the other hand, the under-investment arguments (Myers & Majluf, 1984) stress how asymmetric information could affect the firms' issue-invest decisions. When a firm needs to finance a project externally, there is a possibility that the less-informed outsiders may underprice the firm. In light of the matter, the existing shareholders sometimes may have to forego a promising project. The under-investment argument is described as a firm's inability to invest in a positive-NPV investment despite having high returns. It postulates the rationale for seeking internal funds ahead of other choices since these funds are free from the pricing effect. Myers and Majluf introduce the term 'financial slack' to represent the sum of internal financing and the default-risk free debt. Firms with sufficient financial

slack will never have to issue risky debt or equity in order to fund their investment projects. Firms that seek funds for investment through this 'financial slack' have lesser risk exposures and would avoid price valuation by investors, thus *able to finesse asymmetric information problems between managers and investors* (Megginson, 1997).

Another related view brought forward by Heinkel & Zechner (1990) claims that debt issuance could also lessen the over-investment opportunity problem. Too much equity financing can result in a firm investing even in negative NPV projects if the equity holders believe that the stock price is overvalued. Further, Heinkel and Zechner suggest that firms could seek funding by issuing preferred stock to moderate both the under-investment and over-investment problems. Preferred stock is often considered as 'quasi-debt' or hybrid financing instrument. Among the features of preferred stock is that the payment of preferred dividends is much like dividends to common stockholders, but this claim is fixed and takes precedence over the claim of the common stockholders, and this feature is much like interest on debt. Use of preferred stock to complement debt financing could lessen the problems caused by the pricing effect of equity financing. However, the capital structure literature has given little attention to the issues related to the preferred stock financing (Heinkel & Zechner, 1990). Albeit the positive aspects associated with debt issues, the effect of having too much debt can also have negative sides (Jensen & Meckling, 1976; Myers, 1977; Heinkel, 1982).

Most capital structure studies have offered useful interpretation behind their proposed ideas, however, none has been completely successful in describing the

choice of financial structure (Hart & Moore, 1990). For example, the question of how much debt is enough has remained unanswered (Megginson, 1997; Ross, 1988; Miller, 1991). Furthermore, the central question in corporate financial decision has revolved around trying to find the optimal balance between the two sources: debt and equity. In understanding these forces, one must consider the nature of corporate financing decisions. When a firm finances its investment, it offers investors a set of financial services with the different return streams, which include some combination of risk, return and liquidity (Taggart; 1986).

Theoretical contributions on capital structure issues have led to two main financing descriptions, the optimality view in the static trade-off theory, and the financing hierarchy view specified in the pecking order model. These two separate strands of capital structure theories have been the subjects of most recent extensive debates in capital structure (see Frank & Goyal, 2003; Chirinko and Singha, 2000; Shyam-Sunder & Myers, 1999; Ghosh and Cai, 1999). One similarity between the two theories is that both assume shareholders' wealth maximisation as the corporate objective.

3.3.1 THE STATIC TRADE-OFF THEORY

In its broadest term, the static trade-off theory derives from the prediction that firms maximise their value by maintaining a target debt ratio through minimising the cost of market imperfections. It predicts a cross-sectional relation between debt ratios and asset risk, asset type, profitability and tax status. The static trade-off theory has managers seeking for optimal capital structure, with any deviations from it will result in a mean-reverting behaviour. As described earlier, this theory

stems from the modifications of the original irrelevance hypothesis (MM, 1958) and the documentations from the tax-related proposition (MM, 1963; Miller, 1977; Modigliani, 1982; Miller, 1988). This trade-off theory proposes a corporate debt policy that requires an optimal balance between present value of tax savings from the tax-deductibility feature of interest and the present value of personal tax (Miller, 1977), agency costs (Jensen & Meckling, 1976), and potential bankruptcy costs (Stiglitz, 1969; Chen & Kim, 1979). Titman and Wessels (1988) who extend this optimal theory by using a factor-analytic technique rather than the conventional regression approach also report consistency with the static trade-off theory

In addition, there are several opinions put forward on the relation between optimal capital structure and the tax-based presumptions. DeAngelo and Masulis (1980) present a theory of optimal capital structure that is motivated by corporate tax shield substitutes for debt such as accounting depreciation, depletion allowances and investment tax credits. DeAngelo and Masulis suggest that regardless of the leverage-related costs, firms can have a unique interior optimal level in the presence of these corporate tax shield substitutes. Lewis (1990) on the other hand, implies that in a world of market perfection except for taxation, a firm may have a set of debt ratios, which are consistent with the value maximisation objectives. He claims that any debt structure that produces a consistent series of promised interest payments would result in the same market value. In the effort to explain the tax advantage of debt, Berens and Cuny (1995) offer a different view of optimal capital structure. They argue that there are many optimal capital structure levels when referring to the choice of debt levels over time. However, until today, no

consensus has emerged about the tax-based predictions, and the opinions thus far are not unanimous (Fama & French, 1998; Graham, 2000).

Further, the optimality view also describes financing decisions as adjusting existing debt and equity levels toward some value-maximising target. In selecting between debt and equity, firms will behave as though they have some target levels in mind (Marsh, 1982), and eventually converge towards their industry mean (Claggett Jr., 1991). Using logit model, Marsh (1982) concludes that market conditions and past security prices heavily influence firms' financing behaviour. Jalilvand and Harris (1984) propose the partial adjustment model in an attempt to measure the speed of financing adjustment between firms. They introduce an empirical framework that focuses on the market imperfection issues such as adjustment costs and interdependencies among corporate decisions. Their results still suggest that the firms' targets are the driving forces in their financing behaviour. Nonetheless, the adjustments are considerably smaller for firms with low long-run dividend payout ratio (Vogt, 1994).

Fischer et. al (1989) develop a more dynamic model by refining the meaning of optimal debt level. Rather than a static ratio, their model uses a range of debt ratios. As an empirical measure of leverage, they allow the debt ratio to swing between the specified critical upper and lower limit. Their findings indicate that smaller, riskier, lower-bankruptcy cost firm's exhibit wider swings in debt ratios over time. In defining the optimal level, Ariff and Lau (1996) present a more indirect demonstration of optimality on the fact that firm's debt ratio is always below unity. However, since the definitive optimal level is difficult to measure,

Ariff and Lau submit to the idea of prescribing industry average as a benchmark in capital structure decision. This idea is very much in agreement with the earlier empirical work by Claggett Jr. (1991).

In a survey to 392 CFOs of Fortune 500 firms, Graham and Harvey (2001) find that actual debt ratios vary across firms and through time. In addition, they discover that firms do not rebalance these ratios when market value changes. Consistent with the attempt to seek the tendency of capital structure readjustment, a study by Hovakimian et. al (2001) suggests that high past profits' firms tend to issue debt rather than equity and repurchase equity rather than debt. They observe this type of behaviour in firms that are trying to offset accumulated earnings. However, they discover a few complications that would prevent a firm from moving towards its target ratio. One of the hindrances is the debt overhang problem. This problem prevents a wealth transfer to debt holders if the firms were to reduce debt especially those financial distress firms, and the low stock price that would translate into a lower market-to-book ratio.

In sum, apart from striking a balance between present value of interest-tax savings, agency costs and potential bankruptcy costs, the static trade-off theory must also consider other market imperfections, such as the corporate tax shield substitutes, industry averages, changes in stock price, and market conditions. The static trade-off financing suggests that firms will adjust their capital structure towards their target level if the adjustment costs (i.e. costs of market imperfections) can be tolerated.

3.3.2 THE PECKING ORDER MODEL

Firms have no clear-cut target debt ratios in the alternative pecking order model (Myers, 1984). Albeit having value maximisation objective, this theory does not view seeking optimal capital structure as the way to achieve this objective. Instead of aiming for some targeted debt level, firms implementing this pecking order financing rule follow some sort of hierarchy in sourcing their funding.

This idea of financing hierarchy originates from the pioneering work of Donaldson (1961). This view has been circulating for many years before Myers (1984), and Myers and Majluf (1984) present a clear theoretical rationale on the issue. They later label this type of financing behaviour as the pecking order model. There are four underlying predictions about corporate financing behaviour of this pecking order model. First, the model assumes that dividend is 'sticky' and managers will try to maintain a stable nominal dividend despite earnings fluctuation. Second, firms prefer internal financing to external financing. Third, if a firm must obtain external financing, it will choose the safest financing first. Finally, as more external financing needed, it will work down the pecking order beginning with safe debt and eventually progressing through risky debt. Issuing external equity will be the last resort. This hierarchical behaviour is the result of information frictions associated with each financing source. Aware of management's ability and incentives to issue overvalued securities, the mere act of announcing new issue will lead investors to revise downward their estimates of the firm's value. In view of investors' reaction, retained earnings normally pose no information frictions. However, debt has minor frictions, and equity is subject to serious information frictions.

In essence, there are three documented views on the main underlying motives for opting this financing hierarchy. The first view, which was initiated by Donaldson (1961), claims that financing hierarchy is the management's device to avoid market monitoring. The second view by Myers (1984) suggests financing hierarchy as a way to minimise transaction costs of financing instrument. The third view as proposed by Myers (1984) and Myers and Majluf (1984) is to reduce the repercussion of the asymmetric information between firms and outside investors. Myers and Majluf (1984) argue that outsiders tend to constantly assess firms that have high asymmetric information. This information asymmetry notion is consistent with the previously discussed signalling arguments of Ross (1977) and Leland and Pyle (1977), and the under-investment arguments of Myers and Majluf (1984). The asymmetric information's prediction of the pecking order theory by implication rejects the notion of a target capital structure. In addition, asymmetric information is argued by Dierkens (1991) to be related to two primary factors: 1) uncertainty about the firm (i.e. variance of return), and 2) information environment concerning the firm (i.e. public announcement).

In a survey to chief financial officers of Fortune 500 firms on opinions regarding capital structure theory, Pinegar and Wilbritch (1989) find that managers are more likely to follow a financing hierarchy than to maintain a target debt ratio. In their results, Pinegar and Wilbritch stress the importance of the pecking order model in firms' financing, but their survey does not link asymmetric information to firms' financing decisions. Building on this idea, Hittle and Haddad (1992) conduct a survey on over-the-counter firms and note a strong support for the pecking order

financing preference. They claim that these firms seem more likely to experience asymmetric information than the Fortune 500 firms, as the managers believe that their stock is mispriced compared to those of Fortune 500. To add, Hittle and Haddad claim that asymmetric information is not an observable event. On related note, Baskin (1989) states that pecking order hierarchy arises as a portrayal of corporate practice. He argues that such financial planning is important in governing firms' financial behaviour.

A recent study by Frank and Goyal (2003) tests the pecking order theory of corporate leverage on American publicly traded firms from 1971 to 1998. They find firms used external financing heavily if internal funds are insufficient to cover capital expenditure. However, their results indicate that net equity issues follow financing deficit more closely than do net debt issues. The use of equity issues to meet financing deficit reinforces Atkin and Glen's (1992) claim on the market-based orientations of the United States. Frank and Goyal also conclude that the support for the pecking order theory has declined over time. Their study finds the greatest support on this theory only among firms in the early years.

Overall, the pecking order theory lies on the fundamental concept of financing hierarchy, after taking into account varying transaction costs and information asymmetry. In minimising these imbalances, firms should seek the most convenient and cheapest financing before working down the hierarchy. Inevitably, internal funds meet these financing criteria. However, between internal and external financing, seeking funds externally is an observable event. To facilitate firms' financing observation, firms following the pecking order behaviour should

seek financing through debt before resorting to issuing equity whenever they experienced deficit.

3.4 THE TWO THEORIES TOGETHER

The assumption of optimal debt ratio has implicitly guided most empirical literature on capital structure. Although firms' debt ratios seem to converge to their industry means, which represent the targeted ratios (Gosh & Cai, 1999; Claggett Jr., 1991), there may be financing constraints that induce pecking order behaviour (Vogt, 1994). Earlier, Baskin (1989) has already stated that the alternative static trade-off theory appears to have little power over the pecking order model in explaining corporate behaviour. Consistent with this idea, a study by Shyam-Sunder and Myers (1999) also indicates that the pecking order model has provided greater confidence and has much better explanatory power than the target-adjustments model. They claim that the pecking order model is a better empirical description of capital structure than the alternative static trade-off theory.

Perusing through some of the body of literatures in this area, there are a range of studies that examine the empirical performance of existing theories of capital structure. **Table 3.1** below summarises some of the earlier tests performed in finding consistency with the claimed theories.

TABLE 3.1 EMPIRICAL TESTS ON THE ESTABLISHED THEORIES

	STUDIES	TESTS	RESULTS
1.	Marsh (1982)	*Logit Analysis*	Firms' financing behaviour as though they have target levels in mind
2.	Jalilvand & Harris (1984)	*Pooled Cross-sectional time series. Generalised Least Squares*	Firms' target levels are the driving force in the firms' financial behaviour
3.	Kim & Sorenson (1986)	*ANOVA & Multiple Regression*	Firms with higher inside ownership tend to finance with greater LT debt.
4.	Titman & Wessels (1988)	*LISREL: Measurement & Structural Model*	Document empirical regularities that are consistent with existing capital structure theories.
5.	Fischer, Heinkel & Zechner (1989)	*OLS Regressions*	Smaller, riskier, low tax, low bankruptcy cost firms exhibit wider swings in their debt ratios over time.
6.	Claggett Jr. (1991)	*Non-parametric Fisher Exact Probability Test (FEP). Goodman-Kruskal Measure*	Suggest that convergence and pecking order coexisted; however pecking order explains capital structure decisions better.
7.	Chiarella et. al. (1992)	*LISREL: Measurement & Structural Model*	The direction of effect for each indicator variable is in accord with theoretical predictions
8.	Hittle & Haddad (1992)	*Chi-Squares*	Over-the-counter firms indicate a stronger preference for pecking order than Fortune 500 firms.
9.	Vogt (1994)	*Three-stage Least Squares*	In favour of both partial adjustment model and pecking order behaviour.
10.	Ghosh & Cai (1999)	*Non-parametric Fisher Exact Probability Test (FEP). Goodman-Kruskal Measure*	Majority of firms converged toward their industry means esp. from firms above the industry means. Results also support the pecking order hypothesis.
11.	Shyam-Sunder & Myers (1999)	*Ordinary Least Square Regressions*	Results suggest greater confidence in the pecking order than in the target adjustment model.
12.	Frank & Goyal (2003)	*Panel Regressions*	Financing deficit only adds a small amount of extra explanatory power over the conventional leverage factors.

Most capital structure literature has proposed separate motives that induce the pecking order and the static trade-off financing behaviour. An article by Quan (2002) however, takes an opposite perspective. In his article, he refutes the notion that the pecking order and the optimal capital structure views are two separate strands of the capital structure theory. In fact, he suggests that the pecking order hypothesis is a general extension of the static trade-off theory. To comment on this claim, it is noted that the theoretical and empirical literatures on capital structure have generally agreed that both theories stem from the irrelevance proposition of Modigliani and Miller (1958) after applying several different arguments to the original proposition. However, to suggest that both theories are directly related, some supporting empirical evidence is in order.

In another work, Graham (2000) points out that conservative firm should incur low cost of debt financing and as a result, use debt aggressively. Further, Graham states that due to the more severe adverse selection impact of equity, firms should use equity more conservatively. However, his results indicate otherwise. He finds that rather than utilising high levels of debt, these conservative firms use less debt, suggesting that the pecking order model does not work. He concludes that neither the pecking order, nor the static trade-off theory explains why firms use debt conservatively. Therefore, there must be other factors that initiate a firm to choose a specific financing over the other. The following section discusses some of the contributing factors that influence firms' financing decisions.

3.5 FIRM–SPECIFIC DETERMINANTS OF CAPITAL STRUCTURE

Cross-sectional studies on capital structure determinants have verified the correlation between the corporate financing decisions and certain factors. The discussions in this section examine the importance of firm-specific attributes as they are alleged to be amongst the heavily discussed factors in firm' borrowing debate. Among the cited firm-specific determinants of capital structure are firms' asset composition, size, profitability, taxation, growth opportunities, business risk, and industry. Of the factors, four are the key determinants of the static trade-off explanations (i.e. asset, profitability, tax and risk), while past profitability is alleged to have a strong link with the pecking order behaviour. In addition, growth opportunities can also be incorporated in firms' profitability (i.e. future profitability). Finally, firms in different industries and of different sizes are also alleged to have dissimilar capital structure composition. Brief discussions on the mentioned variables are as follows.

(i) Asset Composition

High levels of debt financing are only feasible if a firm can offer tangible collateral as financial security. Inevitably, with valuable asset as collateral, a firm can borrow on relatively favourable terms, hence incurring a low borrowing cost. Thus, we expect firms with higher tangible assets to have high level of debt, and retain more value in liquidation. The greater the proportions of tangible assets in a firm's balance sheet, the more loans the lenders should be willing to supply (Rajan & Zingales, 1995). With regards to the empirical evidence, earlier studies have reported a significant positive effect between leverage and asset tangibility (Marsh, 1982; Titman & Wessels, 1988; Rajan & Zingales, 1995;

Wiwattanakantang , 1999). However, Chiarella et. al. (1992) finds no support for collateral value attributes.

(ii) Size

Large firms use more debt financing than do their smaller counterparts as these large firms have better access to credit markets. In addition, these large firms often incur lower informational costs in borrowing and more hold diversified investment portfolio, thus able to support more debt. A number of studies find a significant positive relation between size and leverage (Myers, 1982; Jalilvand & Harris, 1984; Fischer et.al., 1989, Chiarella et.al., 1992; Lasfer, 1995). Consistent with this finding, Rajan and Zingales (1995) expand the geographical scope by showing that leverage increases with size in most G-7 countries. Several other cross-country studies on capital structure determinants also suggest size to have a significant positive relation to debt (Booth et. al. 2001; Chui et. al, 2002). However, if debt is split into short-term and long-term measures, Titman and Wessels (1988) find that firm size relates negatively to short-term debt. They argue that smaller firms would have more short-term debt and less long-term debt because of the elevated agency conflict between shareholders and debt holders in small firms.

(iii) Profitability

There are some conflicting theoretical predictions on the profitability effects on leverage. In view of the pecking order hypothesis discerned from Myers (1984) and Myers and Majluf (1984), leverage should relate negatively to firms' past profitability. Earlier empirical works have provided evidence on this negative

relation (see Titman and Wessels, 1988; Chiarella et. al., 1992; Rajan & Zingales, 1995; Wiwattanakantang, 1999). This pecking order hypothesis postulates that firms with high past profit will employ more internal funds and use less debt. Consistent with this claim, Graham (2000) finds that large profitable firms use debt sparingly. This finding indeed explains the sufficient internally generated cash flow to support the financing needs. However, Jensen's (1986) *control hypothesis* claims that leverage relates positively to profitability. This positive relation is also consistent with Ross' (1977) signalling theory, as a firm's financing behaviour should vary accordingly to indicate future prospects of the firm. Shenoy and Koch (1996) point out that the theoretical predictions of leverage and profitability differ because the pecking order behaviour describes the simultaneous relation between the two variables, while the signalling implication captures the dynamic aspect of the variables. Several studies have established this positive relation between leverage and current profitability (Chui et. al, 2002; Chiarella et. al., 1992) as well as future profitability (Mohamad, 1995).

(iv) Taxation

"*...One cannot easily dismiss the possibility that taxes influence the aggregate corporate leverage in a country*" (Rajan & Zingales, 1995). The tax-based model claims the major benefit for issuing debt is the tax deductibility feature of interest. By resorting to debt financing, this tax-deductible feature of interest would increase the firm's after-tax cash flow. Although the tax-based opinion is inconclusive and often contradictory (e.g. Myers, 1984; Titman & Wessels, 1988; Stulz, 1990), evidence has indicated that tax benefits are among the factors affecting firm's financing choice (Graham, 1996, Wiwattanakantang, 1999).

DeAngelo and Masulis (1980) point out that other non-cash expenses reported in firms' profit and loss statement are also tax-deductible. The tax-deductibility feature of these non-cash items could also substitute for the debt tax benefit, hence lessening the need to use additional debt financing as heavy debt use may exacerbate agency problems and other countervailing issues.

(v) Growth Opportunities

Growing firms shun lenders from interfering with their investment decision. With greater funds needed to finance future investment, these firms have the inclination to retain more earnings, as debt can be costly to firms with good investment prospects (Pandey, 2001). Myers (1977) states that future investment opportunities signify an increase in firm's value although they neither can be collateralised nor generate current income. He adds that highly leveraged firms normally fail to take profitable investment opportunities due to the existence of agency problem. Myers argues that firms with many growth opportunities should not use debt as a financing instrument if these firms want to reduce the under-investment problem. Building on this idea, earlier studies have found that growth is negatively related to long-term debt (Ozkan, 2001; Graham, 2000; Titman & Wessels, 1988), however, positively related to short-term debt (Baskin, 1989; Titman & Wessels, 1988). Ozkan (2001), Graham (2000), and Titman and Wessels (1989) claim that firms with growth options are conservative in their debt usage. If the need calls for acquiring fund through debt, these firms are inclined to use more short-term debt rather than long-term debt (Titman & Wessels, 1988). Even though Baskin (1989) reports a significant positive relation between growth and leverage, this leverage comprises more of the short-term component. In

support, Lasfer (1995) observe fewer-growth opportunities firms tend to have more long-term debt in their capital structure.

(vi) Business Risk

Based on the trade-off theory, the higher the risk, the higher is the probability of financial distress. This theory predicts a negative relationship between leverage and risk. Consistent with this prediction, previous empirical results have indicated a negative relationship between leverage and the proxy for risk (Marsh, 1982; Bradley et. al, 1984; Friends & Hasbrouk, 1988, Fischer et. al., 1989). For the evidence to show negative relation between risk and leverage, bankruptcy costs must also be quite large (Bradley et.al., 1984).

vii) Industry

Schwartz and Aronson (1967), and Scott Jr. and Martin (1975) have provided early evidence on the relation between industry and financial structures. Together, both studies observe direct evidence of different leverage levels across industries. However, they find that within the same industry, firms' leverage ratios are relatively stable over time. The later piece on capital structure determinants also indicates the same relation between industry and financing mix (see Varela & Limmack, 1998; Boquist & Moore, 1984, Bradley et. al, 1984; Bowen et. al, 1982). Bowen et. al. (1982) address several views with regards to the relationship between leverage and industry class. First, there is a statistically significant difference between mean industry financial structures. Second, the rankings of these mean industry financial structures demonstrate significant stability over time. Third, firms exhibit a tendency to move towards their industry mean over a

period. Their views are shared by many who set industry mean as the targeted capital structure (see Gosh & Cai; 1999, Ariff & Lau, 1996; Claggett Jr., 1991; Marsh, 1982).

3.6 CAPITAL STRUCTURES IN INTERNATIONAL SETTING

Research on capital structure has become increasingly internationalised in recent years. Across regions, there are two types of institutional orientation: the bank-dominated systems such as those implemented in Japan and Germany, and the market-based orientations of the US and the UK (Atkin & Glen, 1992). Comparative studies on international capital structure show that firms in the developing countries rely more on debt financing than their counterparts in the developed countries (Atkin & Glen, 1992; Demirguc-Kunt & Maksimovic, 1996). The Japanese *keiretsu* system is an example of a financial system that is always associated with higher level of debt (Gul, 1999). Atkin and Glen (1992) further indicate that among the developing countries, only Korea, India, and Thailand are highly leveraged. Moreover, they observe a convergence between the US market-based and Japan bank-dominated financing mode. They report that Japanese gearing has been reduced while US gearing has risen to the point that the major differences that existed before are no longer present. On another study conducted on six OECD countries by Bartholdy et. al (1997), they observe that capital structure choices of firms are closer to those in the US than Japanese firms. Regardless of the institutional differences, evidence has indicated that most firm-specific leverage-related factors identified by studies in the United States also apply to other countries as well (see Booth et. al., 2001; Wald, 1999; Bartholdy et. al., 1997; Rajan & Zingales, 1995).

Emerging equity markets apparently have grown in importance in recent years. The stock market has undergone remarkable development especially in countries where governments have embarked on some financial liberalisation measures, as well as countries with rapid economic growth (Glen & Pinto, 1994). Despite the improvement efforts in the emerging equity markets, Glen and Pinto indicate that these markets are still falling behind in size by those of the developed countries. Aggarwal (1990) surveys 474 companies from 20 Asian countries during 1981 to 1982 using average equity ratio as a leverage measure. He finds that capital structure among large companies in Asia depends mostly on geographic location and less significantly on industry classification. He claims that there are significant international and inter-industry differences in capital structures among Asian companies. In investigating 30 industrial and developing economies, Demirguc-Kunt and Maksimovic (1996) document a significant correlation between stock market development and leverage ratios. They find that large firms become more leveraged as stock market develops, but small firms do not appear to be significantly affected by the market development.

Other studies on international capital structure attempt to seek consistency of the capital structure theory of the static trade-off and the pecking order to firms' financing practices. Examples are studies conducted by Krishnan and Moyer (1997), and Booth et. al. (2001). These studies however, present mixed results. Krishnan and Moyer (1997) offer some support for the static trade-off view in their study of four countries - Hong Kong, Malaysia, Singapore and Korea. Their results lend weak evidence supporting the pecking order theory. Meanwhile, Booth et. al. (2001) conduct a cross-country study on capital structure practices in

10 developing countries. Their results show an inclination for the financing behaviour of firms in developing countries to follow the pecking order theory than the static trade-off theory. Evidently, the findings by Booth et. al. (2001) are inconsistent with those of Krishnan and Moyer (1997).

Some studies have also shown interest in seeking managements' opinions on firms' financing preferences. A few have used the adaptation of Pinegar and Wilbricht's (1989) questionnaire on managers' views of capital structure theory. For example, this questionnaire has been replicated to seek opinions of CEOs from a sample of South Korean firms by Ang and Jung (1993), Finnish firms by Kjellman and Hansen (1996), and Hong Kong firms by Fan and So (2000).

The South Korean financing preferences do not fit with the usual interpretation of the pecking order model (Ang & Jung, 1993). Ang and Jung find that firms with high asymmetric information prefer a financing order of outside debt, outside equity and finally the inside funds. The heavy debt preferences in Korean firms explain the impact of *Chaebols* structure, similar to *Keiretsu* in Japan (Krishnan and Moyer, 1997). Kjellman and Hansen (1996) in their study also conclude that Finnish managers' perceptions contradict the general pecking order view. However, their results do not contradict the relation between asymmetric information and the pecking order behaviour. As for their part, Fan and So (2000) find that Hong Kong firms' financing behaviour is more consistent with the pecking order principle rather than the trade-off theory of capital structure. Among the five specified capital-raising instruments, internal equity came first, followed by bank debt and new common equity. Non-bank straight debt and non-

bank convertible debt appeared to be the least preferred choice. Although this ranking does not portray the actual pecking order hierarchy, Fan and So find that the high degree of asymmetric information and firm size have some impact on the firms' financing preferences.

3.7 MALAYSIAN CAPITAL STRUCTURE

In a cross-country study by Booth et. al. (2001), they have indicated that the Malaysian market has a significant proportion of total equity capitalisation and belongs to a low-debt country category. Malaysia accumulates relatively less foreign borrowings than other Southeast Asian countries. Moreover, the country's economy falls under a low inflation group amongst the developing countries and enjoys a high real-growth rate, but has a high business risk. The Malaysian data for their study comprised of abbreviated financial statements for only the largest companies in the country from 1980 to 1990 collected by International Finance Corporation (IFC). However, the events that surfaced during the 90s might have changed the current market scenario. For example, the rapid development of the PDS market and the emergence of the Islamic securities in the 90s have contributed to the various financing alternatives circulating in the market. Nevertheless, Booth's proposition along with the claim by Demirguc-Kunt and Maksimovic (1996), on how the development of equity market has made less use of leverage financing, have offered preliminary insights on Malaysian corporate financing decisions.

Thus far, there is not a great deal of empirical work done on the capital structure issues of the Malaysian firms. Annuar & Shamsher (1993), Kester and Mansor

(1994), Mohamad (1995), Fauzias and Shamshubaridah (1997), and Muhammad (1998) are among the exceptions. In Annuar and Shamsher (1993), they document various aspects of firms' capital structure during the period of 1975 to 1989 by sampling 60 firms in five sectors. Their results indicate that leverage in Malaysia is industry-specific. Nevertheless, they claim that the leverage ratios differ within and between industrial sectors. In addition, they fail to find any significant relationship between capital structure and risk, contradicting most empirical findings on the negative relations between leverage and proxy for risk (see Marsh, 1982; Friends & Hasbrouk, 1988; Fischer et. al, 1989). Annuar and Shamsher indicate that their findings are due to the conservative attitude of financial institutions in making loans, and well available equity financing in the capital market. However, the situation was only true in the 80s, and no longer a general reflection of the Malaysian financial market in the 90s.

A study by Mohamad (1995) examines the determinants of Malaysian firms' capital structures for the period from 1986 to 1990. He finds that firm's size and industry class has significant effects on its financing decisions. Mohamad also concludes that highly leveraged firms tend to earn higher profits when his results show a positive relation between leverage and future profitability. This finding is consistent with Ross' (1977) signalling theory and Jensen's (1986) control hypothesis. Meanwhile, a related work by Muhammad (1998) examines 109 listed firms from 1986-1995 based on the industry classification set by the PACAP databases. His findings reinforce the significant effect of industry classification and earnings volatility, but conclude mixed results on the size effect. His finds only five out of the ten industries in his study follow the pecking order financing.

For their part, Fauzias and Shamshubaridah (1997) seek to investigate whether the changes in firms' capital structure affect Malaysian stock prices and earnings per share performance. They sample 82 firms that have continuous listing from 1988 to 1992 and pay dividends every year. In their conclusion, they assume the existence of industrial and pecking order effects in Malaysian capital structure. However, we feel that this inference is weak as they based this claim after finding a significant positive relation in some industries while a negative relation in some other. A robust analysis is in order before submitting to this claim.

In a more recent study, Pandey (2001) investigates the effects of several firm-specific factors on different types of debt ratios in Malaysian firms from 1984 to 1999. To capture the impact of different economic conditions, he divides the data into several sub-periods. His overall results show a significant positive relation of all type of leverage to growth and size, and a negative relation between profitability and debt ratios. With greater funds needed to finance future investment, high growth firms have the inclination to retain more earnings. His results also indicate that risk relates negatively to long-term debt, but positively to short-term debt ratios. If additional funds need to be acquired through debt, these high-growth and high-risk firms are inclined to use short-term debt rather than long-term debt. Asset tangibility however indicates the opposite. The results show a negative relation between asset tangibility and short-term debt ratios, as short-term debts generally need not to be collateralised. Despite the changes in the economic conditions, his results for each sub-period also reveal that profitability, size, risk and asset tangibility have consistent influence over short-term and total debt ratio, but inconclusive results with regard to the long-term debt ratios.

One survey that attempts to investigate directly the justification of the traditional capital structure theories in explaining Malaysian firms' financing behaviour is the study by Kester and Mansor (1994). Kester and Mansor, who replicate the same one-page questionnaire of Pinegar and Wilbricht (1989), seek the chief executive officers' views on their preferred financing means. From the 104 responses received and analysed, almost 80 percent of the respondents indicate preferences for a financing hierarchy while the remaining prefer a target capital structure. The former respondents rank internal funds as the first choice before seeking external financing. However, Kester and Mansor have earlier amended the types of financing by incorporating another category of common equity issuance through rights issues, rather than the conventional category as in Pinegar and Wilbricht (1989). While still maintaining the internal-external hierarchy, they observe that firms prefer rights offerings before seeking additional debt. They indicate that firms may find rights offerings cheaper and easier than debt. In line with other studies, they presume that preserving financing flexibility is one of the most important considerations affecting firms' financing decision (see Myers & Majluf, 1984; Pinegar & Wilbricht, 1989; Graham & Harvey, 2001). They conclude that capital structure issues in Malaysia, Singapore, and Hong Kong financial markets are fundamentally consistent with the developed United States market. This claim, which is also shared by others (Booth et. al., 2001; Bartholdy et. al., 1997; Rajan & Zingales, 1995), will be the base for this research.

3.8 CONCLUSION

The theoretical and empirical literatures have identified a wide range of capital structure issues. Within some modest range, firms should exhibit a preference

towards internal funds over funds generated externally, and whenever external funds are required, firms would seek for the cheaper source first, let it be debt or equity depending on the lower costs between the two sources. This preference for internally generated funds should evidently create a negative relationship between firms' cash flow (and profitability) and debt usage. In relation, the costs associated with external funds may be lower for firms with lower asymmetric information between the respective stakeholders (i.e. equity holders, debt holders, managers and investors).

Nevertheless, if firms seek external funds, their leverage level might also be determined by the trade-off between relative cost of debt and relative cost of equity. An optimal debt ratio would minimise the cost of market imperfections and firm would revert its debt ratio to this targeted level if there is deviation away from it. The static trade-off theory predicts a cross-sectional relation between leverage ratios and the four firm-specific capital structure determinants, i.e. operating risk, asset composition, profitability, and tax. In essence, leverage should have a negative relation with risk inherent by the firms in terms of the expected financial distress cost and the volatility of earnings. It also implies a positive relation between leverage and firms' collateralised value measured by the tangibility of assets in hand.

The remaining two factors however, show some conflicting theoretical evidence. Leverage may relate either positively or negatively to profitability depending upon the timing of the profits generated. To describe the pecking order behaviour, leverage is supposed to correlate negatively to past profitability. However,

Jensen's (1986) suggests otherwise. His control hypothesis claims a positive relation between leverage and past profitability. The contradicted relations between leverage and profitability arise from firms' different financing motives. As for the relation between leverage and tax, the literature has produced mixed and inconclusive evidence. Nonetheless, leverage should submit to minimise firms' effective tax rate.

In sum, the review on capital structure literature has offered several general principles, which provide some empirical support that may be reflected in the Malaysian scenario. These general themes along with the corporate financial structure theories of the static trade-off and the pecking order have provided directions towards the development of the empirical model for Malaysian capital structure. Earlier work on the relevance of different capital structure models in explaining firms' financing behaviour has also fed some thoughts on the methodology for this thesis. This thesis lies on the fundamental claim that most capital structure issues are similar across regions, regardless of the institutional differences. Therefore, we anticipate some consistency between the aforesaid capital structure evidence cited in the literature and Malaysian firms' financing behaviour.

CHAPTER 4

METHODOLOGY

4.1 INTRODUCTION

The chapter describes the data collection procedures and the process of transforming the data source into a workable data set. All data are secondary in nature. The main discussion in this chapter includes definitions of the attributes and variables extracted from the financial data of firms listed in the Kuala Lumpur Stock Exchange (KLSE).

In addition, this chapter explains the process of creating a simplified fund flow statement from the data collected. The construction of this fund flow statement serves as a preliminary step in the descriptive exploration of firms' financing behaviour. Several distinct patterns emerge from our interpretation of the firms' financing behaviour during the period of this study. The classification of these financing patterns ranges from leverage-decreasing financing to leverage-increasing financing. The chapter ends with a brief explanation on the planned empirical analyses for this thesis. The issues addressed in Chapter 1 are reiterated in the form of testable hypothesis statements. In general, this chapter specifies the source of the data, the transformation process that the data has undertaken, and the types of analysis that this thesis proposes to implement.

4.2 DATA COLLECTION PROCEDURES

As at the end of 2000, the total population in the Kuala Lumpur Stock Exchange (KLSE) was 795 firms. However, we have imposed specific requirements in the

sample selection criteria. Firstly, the data set must cover all non-financial firms listed in the KLSE since 1990 or before. Consistent with most capital structure studies, the sample excludes firms in the finance-related sectors, as they depend largely on borrowed funds and have low net asset bases. In practice, these firms operate as net lenders on borrowed funds. For that reason, the method of classifying their accounting variables differs from the rest of the firms in other industry sectors. Secondly, the selected firms must also not be involved in a major merger during the sample period. Merger moves could generate a misleading change in firms' sustainable capital structure, therefore the firms should not have engaged in this activity during the period. The exclusion of firms involved in merger does not have much impact on the results as not many merger activities were observed during the period of the study. Taking into account both restrictions, the number of firms included in the sample at this point is 245. We reach this initial number after attaching the date listed in the exchange to the list of population.

Another decisive factor put forward in the data selection criteria is that all firms must have a complete and continuous accounting record for the 10-year period from 1991 to 2000. Nonetheless, the 1990 data is also needed to construct the fund flow statement and for the inclusion of lagged variables in 1991.

4.2.1 BACKGROUND OF THE DATA

To date, KLSE classifies all firms into 13 industry sectors. After removing finance-related sectors (i.e. Finance, Trusts and Close-end sectors), there are 10 non-finance-related sectors remaining. Due to the disparity in the number of firms

between sectors, we merge some of the industries into one combined sector. For example, we combine technology sector with the consumer product sector since there are only two firms in the technology sector. The distribution of firms in the revised sectors is as follows:

TABLE 4.1 FIRMS LISTED SINCE 1990 BY SECTORS

COMBINED SECTORS	NO. OF FIRMS
Technology/Consumer Products	41
Industrial Products	61
Construction/Properties	56
Trading Services / Hotels	51
Others (Plantation/Mining/IPC*)	36
TOTAL FIRMS	**245**

** IPC = Infrastructure Project Companies*

Subsequently, we remove several firms from the sample to comply with the continuous data flow requirements. Two hundred and twenty five (225) firms from five combined industry groupings with continuous listing of at least ten years are finally included in the research. Thus, **Table 4.2** below summarises the final number of firms according to the five combined sectors.

TABLE 4.2 DISTRIBUTION OF THE FINAL SAMPLE IN COMBINED SECTORS

COMBINED SECTORS	NO. OF FIRMS
Technology/Consumer Products	35
Industrial Products	60
Construction/Properties	52
Trading/Services and Hotels	42
Others	36
TOTAL FIRMS	**225**

4.3 THE DATA SOURCE

As mentioned, the data are from secondary sources. Except for the market value of equity data, which is downloaded from DATASTREAM, we extract other financial information from the firms' annual reports and publications of KLSE. A five year-summary of the Balance Sheet and Profit and Loss statements items are also available in the KLSE Annual Companies Handbook. The KLSE has recently made efforts to compile a database of its member firms' financial information in a CD-ROM. The content, however, is not complete. Therefore, it is more practical to start with a manual data collection from firms' annual reports. Nonetheless, some annual reports turn out to be difficult to obtain, creating gaps in the data flow. We fill the gaps, where possible, from information in the KLSE Annual Companies Handbook that provides summaries of the firms' financial information. If still there were gaps, then we remove the firm from the sample as non-compliant to the continuous data flow requirement.

Furthermore, we are aware of the changes in the accounting years for some of the firms during the sample period. For example, a financial report that ends in July 1992 will have to be pro-rated between the year 1991 and 1992 to standardise the accounting years across firms. In the middle of collecting the data, we also encounter with some firms changing names and migrating across industries. Having anticipated these changes, we retain the most recent name and industry membership.

4.3.1 DESCRIPTION OF DATA

The data sources are the Balance Sheet, the Profit and Loss Statement, and the Cash Flow Statement of the firms. The Balance Sheet items covers the main component items in total assets such as current assets, fixed assets and intangible assets, while the liabilities and equity components includes current liabilities, long-term liabilities, share capital and total reserves. As for the Profit and Loss Statement, the main items are such as turnover/sales, depreciation and amortisation, interest expense, after-tax profits and dividends. We extract the actual dividend paid amount from the Cash Flow Statement of the firms. Whilst most of the data are accounting figures, at times we need to calculate and derive some of the relevant data from the accounting variables and notes to the financial statements.

Table 4.3 summarises the variables and the respective definitions, and subsequently follows by the detailed explanation on the derivation of the variables.

TABLE 4.3 VARIABLE DEFINITIONS

Variable	Description and Definition
d	Leverage ratio: • Ratio of total liabilities to total assets • Ratio of total long-term liabilities to total assets
ASSET	Ratio of fixed assets to book value of total assets
RISK	Standard deviation of the ratio of operating income to book value of total assets
PRFT	Ratio of operating income to book value of total assets
TAX	Ratio of tax expense to operating income
Δ	The change in variable from *t-1* to *t*

CX	The change in total long term asset from *t–1* to *t*
DIV	Cash dividend payments
NWC	Current assets minus current liabilities
LD	Total liabilities minus current liabilities
CP	Common Stock (exclusive of retained earnings)
FCF	Free cash flow amount after deducting tax, changes in NWC and CX from operating profits after depreciation add backs.
EGF	The sum of the issuance of additional loans and equity

Leverage ratio (*d*) Leverage can be defined in several ways, depending on the objective of the analysis (Rajan & Zingales, 1995). Some measures of leverage include the ratios of total liabilities to total assets, debt to equity, and total long-term liabilities to total assets. These debt measures can further be divided into short-term and long-term debt, as well as in terms of book and market values. This thesis uses the ratio of total liabilities to total assets and the ratio of total long-term liabilities to book value of total assets to represent leverage ratio as the dependent variable.

Asset Composition (*ASSET*) Asset composition represents firm's asset structure, which comprises tangible and intangible components. In this research, asset composition corresponds to the tangibility of a firm's assets. The proxy for the tangible component of assets is the ratio of fixed assets to the book value of total assets (Wiwattanakantang, 1999; Friend & Hasbrouk, 1988).

Operating Risk (*RISK*) Risk represents the volatility of a firm's operating activities, measured by the variability in the reported annual earnings. The proxy for this risk attribute is the standard deviation of the ratio of operating income (profit before interest and tax) to the book value of total assets (Booth et.al., 2001; Titman & Wessel, 1988; Marsh, 1982).

Profitability (*PRFT*) Ratio of operating income to the book value of total assets is a proxy for a firm's profitability (Booth et. al., 2001; Friend & Hasbrouk, 1988).

Tax Status (*TAX*) Ratio of tax expense over operating income is used to represent a firm's tax status (Booth et. al., 2001).

Cash Dividend Payment (*DIV*) The amount of cash dividend payment is taken directly from the Cash Flow Statement if readily available. If unable to trace the amount, then the next move is to look at the difference between the beginning and ending dividend payable item in the Balance Sheet, after adding the dividend expense amount from the Profit and Loss Statement. The following expression calculates the amount described.

$$\textit{Div Payable}_{(t-1)} - \textit{Div Payable}_{(t)} + \textit{Div Expense}_{(t)} = \textit{Cash Dividend}_{(t)} \qquad (4.1)$$

The cash dividend figures from the former and the latter sources should be reconcilable. If there were discrepancies, then the tiebreak would come from the dividend amount in the Cash Flow Statement. In the case where cash dividend is

unavailable from the Cash Flow Statement, and also there exists some aggregations in the current liability (i.e. dividend payable item is unavailable independently to calculate the figure), then we assume that the firm pays dividend the following year after the reported Profit and Loss Statement.[7]

Change in Net Working Capital (*ΔNWC*) Net working capital is the amount after subtracting current liabilities from the current assets. Therefore, change in net working capital is the difference in the net working capital from the Balance Sheet for two consecutive years. An increase in net working capital is a use of cash flow and a decrease denotes a reduced use of cash flow.

Change in Long-term Debt (*ΔLD*) Long-term debt[8] comprises the total items in the liabilities section excluding current liabilities (i.e. long-term debt plus other long-term liabilities). An increase denotes a cash inflow and a decrease indicates otherwise. We take the value as the difference in the Balance Sheet item for two consecutive years.

Change in Common Stock (*ΔCP*) The value comes directly from the difference in the Balance Sheet item for two respective years. The net change indicates either equity issues (a positive ***ΔCP***) or share buyback (a negative ***ΔCP***).

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[7] We based this assumption on several observations on the trend of cash dividend paid by comparing the firms' reported dividend in the Profit and Loss Statement and the subsequent year's Cash Flow Statement for a number of years. The Cash Flow Statement items gathered by us were not complete, as more emphasis was given to the collection of the Balance Sheet and Profit and Loss items.

[8] The items are actually all long-term liabilities items such as hire purchases, financial leases, deferred taxation, retirement benefits, and all other long-term obligations outstanding at the reported Balance Sheet date. We used this standard definition for long-term debt.

Capital Expenditures (*CX*) The capital expenditures amount[9] is taken directly from the difference in total fixed assets, net of capital sales between two consecutive years. This is a gross amount before depreciation.

Free Cash Flow (*FCF*) We describe a firm's free cash flow as the internal cash surplus (denoted by the positive sign) or the internal cash deficit (denoted by the negative sign). Based on the accounting information, we express a firm's free cash flow (FCF_t) at time t as follows:

$$(PBIT_t + DEPR_t) - TAX_t - \Delta NWC_t - CX_t = FCF_t \qquad (4.2)$$

Equation **(4.2)** states that free cash flow for the year (FCF_t) will be supplied by deducting tax (TAX_t), changes in net working capital (ΔNWC_t) and capital expenditures (CX_t) from profit before interest and tax ($PBIT_t$), and after depreciation add back ($DEPR_t$).

Externally Generated Fund (*EGF*) Externally generated fund is a derived amount comprising the sum of the issuance of additional loans and external equity. The issuance (repayment) of loans or issuance (repurchase) of external equity is usually made whenever there is a deficit (surplus) in the FCF_t. Firms, however, pay interest (INT_t) and dividend (DIV_t) obligations first before any issue/repay attempts. Therefore, despite generating cash surpluses, sometimes firms still issue shares or debt to meet these interest and dividend obligations. A

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[9] The amount can also be verified by inserting these identities into the following accounting expression: (** C_t ***is*** firm's after-tax cash flow at time t)

$$CX_t \equiv (C_t - DIV_t) - \Delta NWC_t + \Delta LD_t + \Delta CP_t$$

negative amount indicates a requirement for some external financing. Equation **(4.3)** illustrates the calculation.

$$-EGF_t = FCF_t - (INT_t + DIV_t) \qquad \textbf{(4.3)}$$

4.4 CLASSIFICATION OF FIRMS' FINANCING PATTERNS

The initial phase in exploring the financing behaviour of firms is to transform the accounting data into a simplified fund flow statement. A natural question would be why the need to construct a separate fund flow statement when a published cash flow statement is readily available. In defending this, it could be argued that there is some inconsistency in the firms' reported cash flow, especially in the early years of the sample period. For example, a number of firms have been reporting their cash flow in the Statement of Changes in Financial Position in early 90s. In providing some degree of reconciliation and standardisation in the cash flow reporting across all firms throughout the entire period, we develop our version of a simple fund flow statement instead of relying on the figures reported in the respective statement.

We construct a simplified annual fund flow statement for each firm from 1991 to 2000. As a framework, we classify the firms' pattern of financing by examining the characteristic of financing behaviour of three states throughout the whole 10-year time span[10]; (1) State of Net Fund Flow[11], (2) State of Issue/Repurchase of

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[10] Once the accounting data are transformed into a fund flow statement, the period has now become 10 years rather than 11 years since the fund flow statement is developed from the differences in two respective years' statements.

Share Capital and (3) State of Issue/Repayment of Loans. The structure of a fund flow statement appears as follows:

FIGURE 4.1 FRAMEWORK OF A FUND FLOW STATEMENT

Internal Financing:

Operating Profit before Interest and Tax
Add: Depreciation
Less: Tax
Less: Change in NWC
Less: Capital Expenditure

Free Cash Flow[12]

Less: Dividends
Less: Interest

Net Fund Flow

External Financing:

Add: Issuance of Share Capital
(*Less: Repurchase of Share Capital*)
Add: Issuance of Loans
(*Less: Repayment of Loans*)

Externally Generated Fund[13]

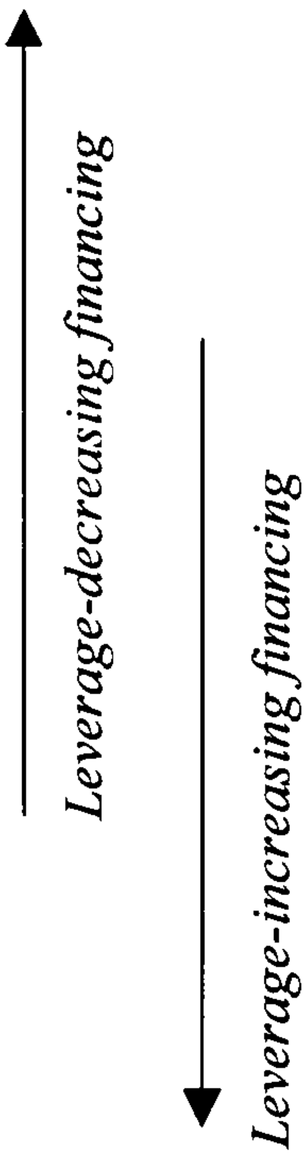
Based on the developed framework, when there is deficit in the net fund flow, firms will raise capital externally either by issuing debt-only, equity-only, or a simultaneous debt and equity. Meanwhile, firms will normally repay debt when there is excess, although we also have observed firms repurchase equity in a few rare cases. From the financing behaviour identified in each firm during the period, we sort similar patterns together. Six unambiguous financing patterns have emerged from this effort. The financing patterns range from 'no-leverage' (all-

[11] Net fund flow is the free cash flow net of interest and dividend payment.

[12] A negative amount of FCF_t indicates a deficit that requires some external funds to meet the INT_t and DIV_t obligation.

[13] The amount matches the net fund flow amount but with opposite sign. For example, a negative net fund flow indicates a deficit that will be met by issuing externally generated fund. As this issuance is now a cash inflow, it holds a positive sign.

equity) financing to 'all-leverage' (no equity) financing. The suggested classifications of the financing patterns are as follows:



I. *All equity-only issues (no debt issues)*

II. *Simultaneous debt and equity issues and/or equity-only issues (no year with debt-only issues)*

III. *Sometimes equity-only issues and sometimes debt-only issues (no year with simultaneous debt and equity issues)*[14]

IV. *All types of financing (debt-only, equity-only, and debt /equity simultaneous issues) at different times*

V. *Simultaneous debt and equity issues and/or debt-only issues (no year with equity-only issues)*

VI. *All debt-only issues (no equity issues)*

We realise that this classification is not the only possible one, as the interpretation of financing behaviour is subjective. However, the groupings above should serve as an unambiguous preliminary classification in exploring the firms' financing pattern. (**Appendix I** illustrates an example of how the patterns for this classification are established.)

4.5 PROPOSED ANALYSES AND HYPOTHESES

Overall, we have divided this research into two parts: (1) descriptive investigation, and (2) empirical analyses.

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[14] We later realise that *Type III* financing could also be grouped together with *Type IV,* as the financing behaviour of both types is almost similar. In addition, *Type III* and *Type IV* fit neither the *leverage-increasing* nor the *leverage-decreasing* arrows. Nonetheless, both financing types position themselves moderately between the two extreme financing of equity-only (*Type I*) and debt-only (*Type VI*).

The descriptive investigation deals with the initial exploration into the Malaysian firms' financing background, and attempts to relate the financing behaviour to the economic cycle. Based on this investigation, we intend to build preliminary inferences on the relation between the financing behaviour detected and the descriptions of the capital structure theories of static trade-off and pecking order.

Meanwhile the empirical analyses seek evidence of capital structure decisions in the Malaysian context. We perform three main empirical analyses. The first analysis attempts to seek consistency of prior Malaysian-based claims on the alleged firm-specific effects (i.e. size, risk, profitability and industry class) on firms' financing decisions. We subsequently extend the investigation to restate the relation between leverage and firm-specific theory-related factors of asset tangibility, profitability (past, current and future profits[15]), business risk, and tax effects. Equation **(4.4)** below specifies the link between leverage ratios (d_{it}) and the aforementioned variables.

$$d_{it} = \alpha_i + x_{it}\,\beta + \varepsilon_{it} \qquad \textbf{(4.4)}$$

where $x_{it} = [ASSET_{it}, PRFT_{it-1}, PRFT_{it}, PRFT_{it+1}, RISK_{it}, TAX_{it}]$, while α_i and ε_{it} are constant and error terms respectively. In re-establishing the relations between leverage and the explanatory variables listed above, **Table 4.4** below summarises the testable hypothesis of each independent variable.

[15] Future profitability also reflects the growth opportunities of firms as it signifies an increase in the firms' value.

TABLE 4.4 PREDICTED DIRECTION OF CAPITAL STRUCTURE DETERMINANTS

Independent Variables	Dependent Variables: Leverage Ratios		
	Direction of Coefficient	H_O: Null Hypothesis	H_A: Alternative Hypothesis
Asset Tangibility ($ASSET_{it}$)	+	$\beta_1 = 0$	$\beta_1 > 0$
Past Profitability ($PRFT_{it-1}$)	-	$\beta_2 = 0$	$\beta_2 < 0$
Current Profitability ($PRFT_{it}$)	-	$\beta_3 = 0$	$\beta_3 < 0$
Future Profitability ($PRFT_{it+1}$)	+	$\beta_4 = 0$	$\beta_4 > 0$
Business Risk ($RISK_{it}$)	-	$\beta_5 = 0$	$\beta_5 < 0$
Tax (TAX_{it})	+	$\beta_6 = 0$	$\beta_6 > 0$

If the coefficients (β's) are in the directions predicted and are statistically significant, then there is strong evidence that our results are consistent with the theoretical predictions. When these coefficients produce the sign as predicted, rejection of the null hypothesis of no-significant effect (H_o: β=0) would amount to a direct probability that the firm-specific determinants cited in the literature also work in Malaysia.

The second analysis performs empirical investigation on whether the static trade-off and the pecking order models are able to describe the firms' financing behaviour. The static trade-off or target adjustment model adopted from Shyam-Sunder and Myers (1999) is as in Equation **(4.5)** below.

$$\Delta LD_{it} = \alpha + \beta_{TA} (LD^*_{it} - LD_{it-1}) + \varepsilon_{it} \quad (4.5)$$

where β_{TA} denotes the target-adjustment coefficient, and LD^*_{it} denotes the target or optimal long-term debt level for firm *i* in the current period. The above

equation states that the current change in debt level (ΔLD_{it}) is an attempt to adjust the previous year's debt level (LD_{it-1}) to the targeted level (LD^*_{it}).

However, we have revised the pecking order model of Shyam-Sunder and Myers. Myer (1984) and Myers and Majluf (1984) predict a negative relation between leverage and profitability, while Jensen (1986) and Ross (1977) predict a positive relation. In view of these conflicting theoretical predictions on the relation between leverage and profitability, we include a lagged profitability variable to check the prediction of profitability in our model. We also change the model's underlying assumption as a response to Chirinko and Singha's (2000) comment on the original model's strict assumption. In our pecking order model, we allow possible issuance of equity in the financing hierarchy if additional debt is insufficient to cover the current deficit level. Chirinko and Singha describe this type of financing behaviour as the semi-strong form of pecking order model. The following Equations **(4.6)** and **(4.7)** illustrate the revised pecking order model.

$$\Delta LD_{it} = \alpha_1 + \beta_{PO}\,(DEF_{it}) + \beta_{PRFT}\,(PRFT_{it-n}) + \varepsilon_{1it} \qquad \textbf{(4.6)}$$

$$\Delta CP_{it} = \alpha_2 + \beta_{SS}\,(DEF_{it} - \Delta LD_{it}) + \varepsilon_{2it} \qquad \textbf{(4.7)}$$

where β_{PO} denotes the pecking order coefficient in response to the deficit level (DEF_{it}), and β_{PRFT} is the coefficient for the lagged value of profitability ($PRFT_{it-n}$). Meanwhile, β_{SS} is the coefficient for the semi-strong assumption. This β_{SS} value should be greater than zero to qualify for this assumption. Equation **(4.7)** suggests the issuance of equity (ΔCP_{it}) in the event when debt issues cannot

fully cover the deficit level (DEF_{it} - ΔLD_{it}). The ε's are the error terms in the specifications.

Based on our adaptations of Shyam-Sunder and Myers' (1999) target adjustment model (Equation **(4.5)**) and pecking order model (Equation **(4.6)** and **(4.7)**), we have developed the following hypotheses.

H_1: $\beta_{TA} > 0$

There is some adjustment of debt ratio from the current level to the target level if the static trade-off model were able to explain the financing behaviour.

H_2: $\beta_{PO} > 0$

Firms that utilise debt in response to current deficit level explain the pecking order behaviour, i.e. there is a positive relation between the change in debt level and the level of deficit.

H_3: $\beta_{PRFT} < 0$

Firms that generate substantial past profits tend to exhaust internal funds for investment and use less debt, i.e. there is a negative relation between past profitability and debt.

H_4: $\beta_{SS} > 0$

Firms seek to raise external equity if the additional debt could not fully support the current deficit level, i.e. this type of financing portrays the semi-strong assumption of pecking order.

The β coefficients in the models should produce the predicted signs for both or either models (the static trade-off (via target-adjustment model) and/or the pecking order models) to be able to explain the capital structure behaviour. The purpose of the enquiries is neither to derive a conclusion on the theory domination nor to examine the dependability of the specifications of the models by comparing

the adjusted-R^2 value. To reiterate, the analysis based on our versions of Shyam-Sunder and Myer's model is entirely an attempt to investigate whether the traditional capital structure theories are able to provide plausible explanation of Malaysian firms' financing behaviour using these developed models.

The final analysis attempts to seek consistency with the claim of Shyam-Sunder and Myers (1999) on the greater confidence of the pecking order model than in the target adjustment model. In essence, this part of the thesis assesses the statistical explanatory power of both the target-adjustment and the pecking order models developed for this research. In performing the statistical power tests for this analysis, we initially need to generate two types of hypothetical financing series; one type to reflect the hypothetical target-adjustment series, and the other to represent the pecking order financing time-series. In each financing series, firms' financing is supposed to behave as if the firms are following the assumed financing rules. We conduct the tests by fitting the target-adjustment and the pecking order models specifications independently and later jointly to each simulated financing series. We anticipate the results from these fitted tests to indicate the empirically better model between the two specifications when judged on explanatory power. The hypothesis developed for this analysis is as follows.

H_5: The pecking order model has no significant explanatory power for the simulated data based on the target adjustment specifications.

The results from this simulated experiment should imply that an acceptance of the above hypothesis indicates that the pecking order model should generate statistically significant results for the pecking order hypothetical financing series

and correctly reject the significant results for the target-adjustment time series. Whereas, presumably being a weaker counterpart, the target adjustment model is anticipated to falsely produce significant explanatory power for the alternative pecking order financing series just as well as fitting its own hypothetical series. A model lacks statistical explanatory power if it fails to accept the true and reject the false.

4.6 SUMMARY

To recapitulate, the chapter may be summarised as follows: First, the sample comprises 225 non-financial firms from five combined industry sectors listed in the Kuala Lumpur Stock Exchange since 1990. We have imposed several restrictions before reaching the final sample size. In addition to having a continuous accounting record for the prescribed period, the firm must also not be involved in a major merger during this period as this activity may severely alter the firm's sustainable capital structure. All data are secondary in nature and collected from the firms' published accounting reports from 1990 to 2000. From the financial data, we define several attributes and variables for the analyses proposed.

Second, in exploring the financing behaviour of the firms, we have classified the firms into six distinct financing patterns. We base the classification on the financing decisions following the state of firms' net fund flow during the period of the study. If the net fund flow shows a deficit, then firms raise financing through issuing additional equity-only, debt-only or simultaneous debt and equity. However, when there is a surplus in the net fund flow, firms normally repay debt,

and/or repurchase shares. Subsequently, we group firms with similar financing pattern together as they are assumed to have comparable financing behaviour.

Third, the final part of this chapter outlines the planned investigations along with the associated testable hypotheses. In addition to the descriptive exploration, the first empirical analysis seeks to investigate the significant effects of firm-specific factors to capital structure decisions. The second analysis explores the extent to which the static trade-off theory and the pecking order model work in the Malaysian context. The specifications also highlight the predicted directions of the coefficients in both model specifications. The final analysis attempts to build a better empirically based theory of corporate leverage that can very much explain firms' financing behaviour by testing the statistical explanatory power of both models on simulated financing time-series.

In general, this chapter revolves around discussing the description of the relevant data and the exploration of the firms' preliminary financing patterns. The chapter ends with a brief overview of the proposed analyses and a list of testable hypotheses on the submitted issues. The chapters hereafter discuss the detailed analyses and the achieved results.

PART 3

DESCRIPTIVE EXPLORATION

CHAPTER 5

PRELIMINARY DATA ANALYSIS

5.1 INTRODUCTION

This chapter provides the descriptive exploration on firms' financing background from 1991 to 2000. The discussion begins with the observation on firms' financing trend during the last decade. For this part, we have classified the firms based on the financing patterns identified in Chapter 4. For each pattern, we present detailed description of its financing flow throughout the ten-year period. Subsequently, the discussion centres on the exploration to seek whether each pattern's financing behaviour fits the description of the static trade-off theory, the pecking order model, or both.

The second part of this chapter presents the firms' financial performance in the period identified. It focuses on the description and movement of selected annual key financial ratios during the time. These annual ratios are compared to capture the trend and the financial impact when economic condition changes. We conclude the discussion in this part by presenting the descriptive statistics of the key attributes proposed for the empirical analyses of this thesis.

The final part of this chapter presents preliminary results from a regression analysis on firms' book-debt ratio against the manifested Malaysian evidence, as cited earlier in Chapter 3. The preliminary analysis attempts to seek consistency on the relation between leverage and the proposed factors using our data. In

general, this chapter provides initial ideas on Malaysian firms' financing profiles during the period of this study.

5.2 PRELIMINARY FINANCING PATTERNS

Prior to ascribing the firms to a specific financing pattern as described in the preceding chapter, we initially do a count on firms' financing behaviour for each year and observe the frequency of specific financing manner across industries. To accomplish this task, we divide firms' financing into three broad categories. These financing categories are: (1) equity financing, (2) debt financing, and (3) mixed financing.

Figure 5.1 below illustrates the frequency of financing in the above categories across industries during the period of 1991 to 2000.

FIGURE 5.1 FREQUENCY OF FIRMS' SPECIFIC FINANCING ACROSS INDUSTRIES FROM 1991 TO 2000

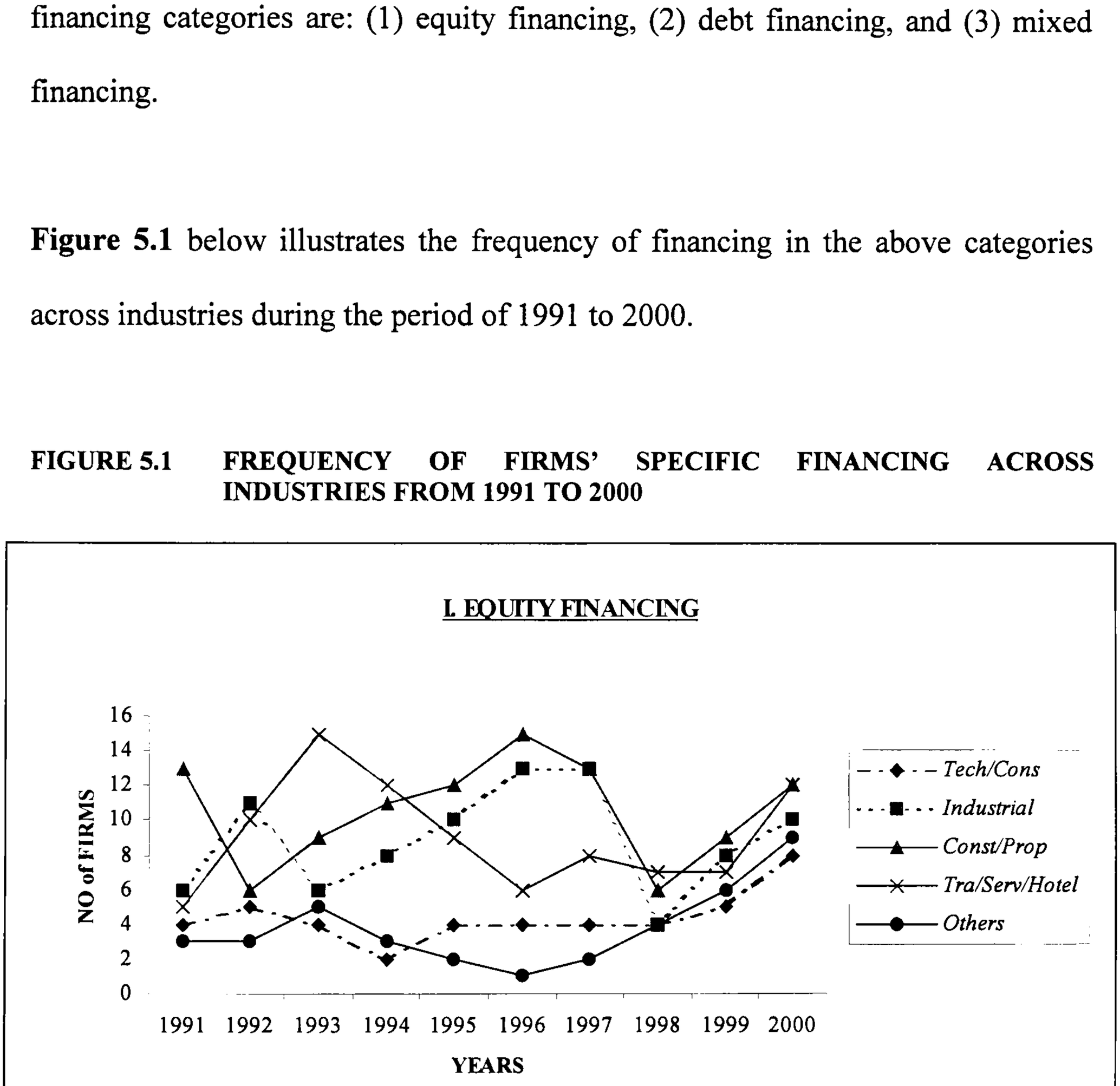
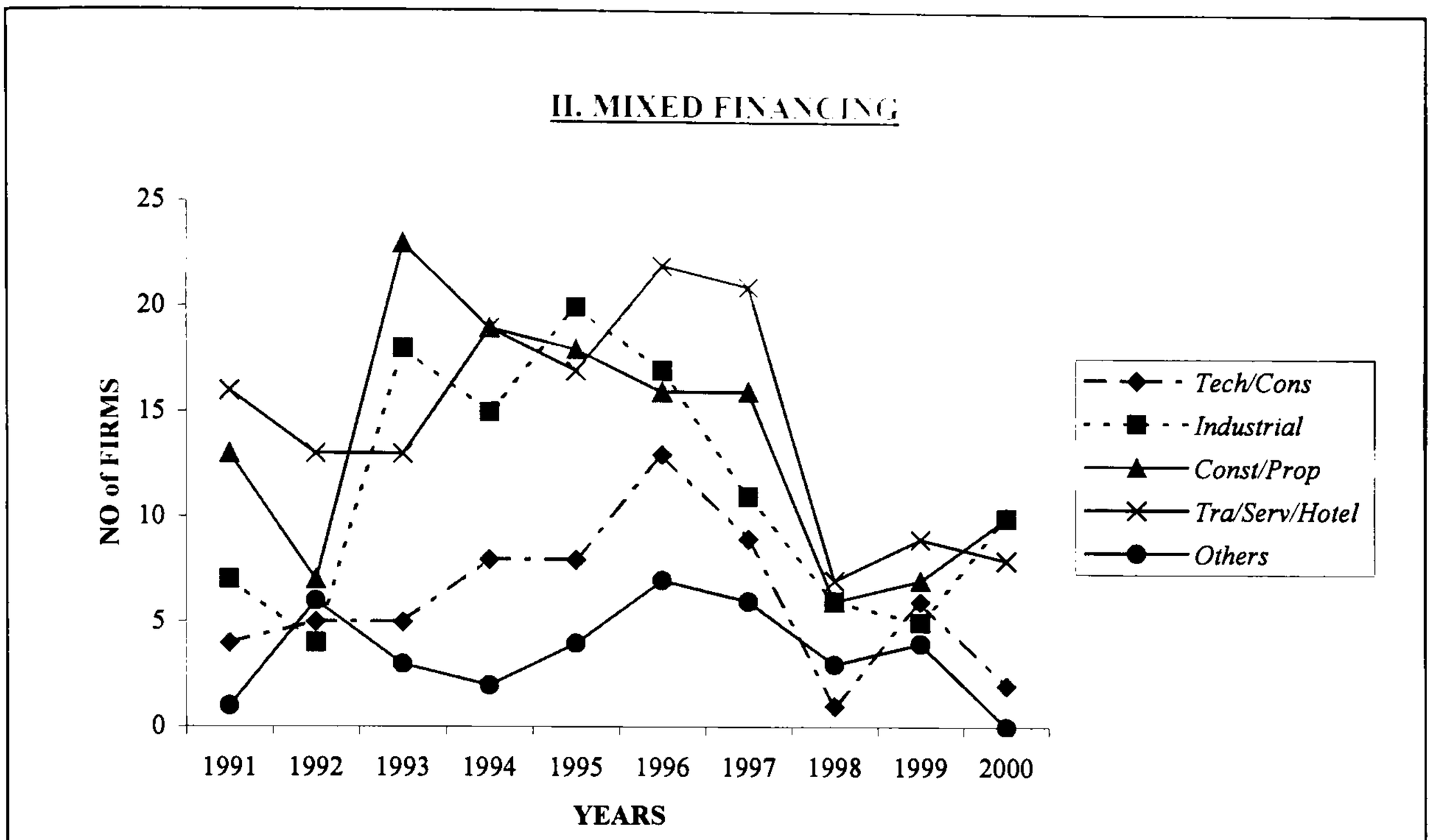
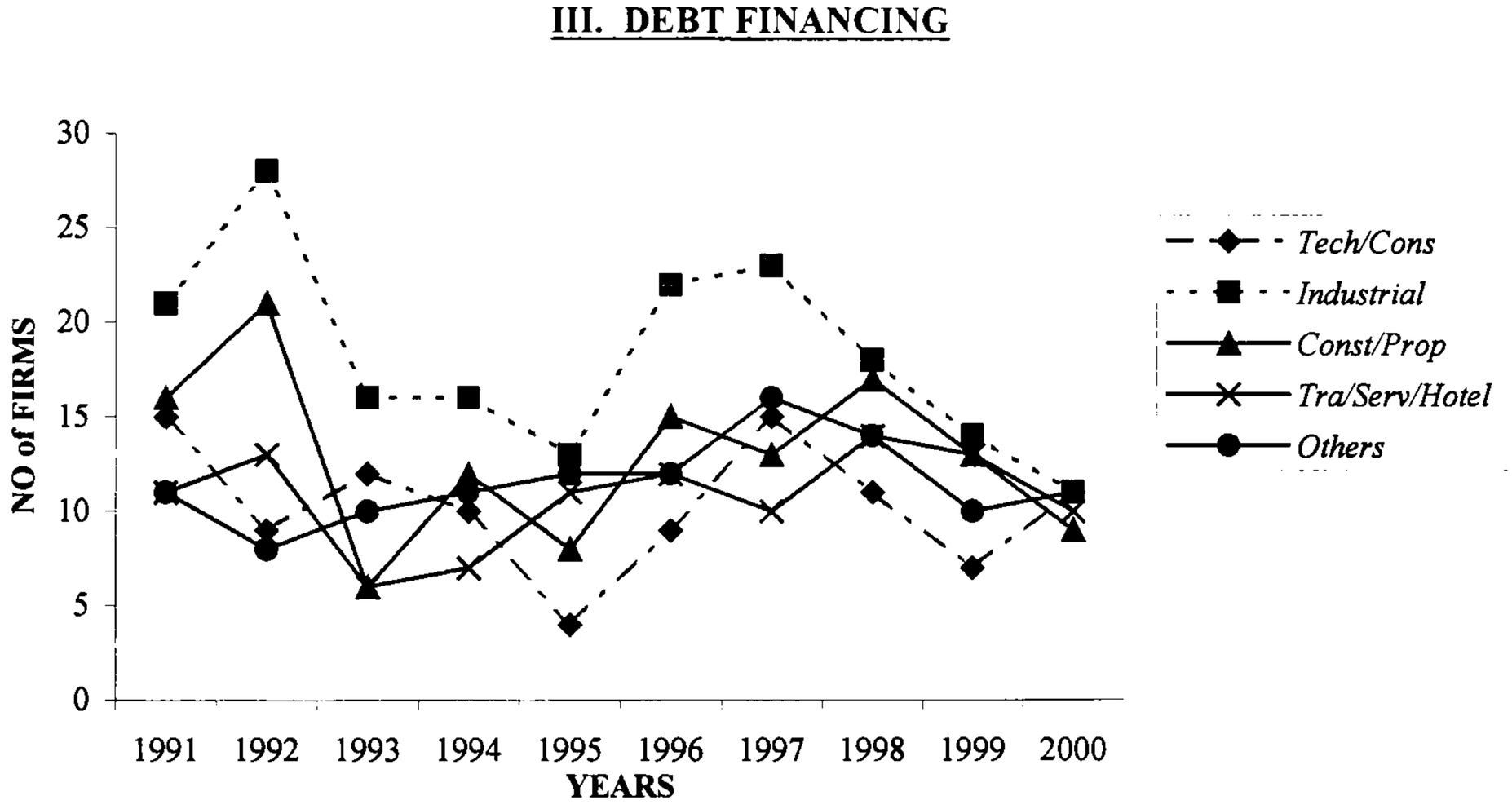


***FIGURE 5.1** (continued):*





The first graph shows the frequency of equity financing, while the second and third graphs illustrate the frequency of mixed financing and debt financing respectively. From the three time-temporal graphs above, we assess the frequency of each financing category utilised by firms in the sample throughout the period.

As shown, 'technology/consumer products' and 'others' sectors seem to have the least number of firms utilising equity and mixed financing compared to other industry sectors. From 1991 to 1997, we observe sectors such as 'industrial products', 'construction/properties', and 'trading/services' have alternately dominated the use of both equity and mixed financing. We also notice that firms in 'industrial products' sector utilise more debt financing compared to other means of financing. By the end of 1997 until 1998, all three financing categories had slowed due to the crisis that hit the region during the time. However, we observe that the frequency of debt financing by firms in 'construction/properties' and 'trading/services' sectors began to increase slightly during this crisis period.

After the economic crisis of 1997-98, equity financing in firms from all industries started to pick up, while the graph shows a varying direction of mixed-financing utilisation across industries. For example, the number of firms that utilise mixed-financing in 'industrial product' and 'construction/properties' sector increases, while other sectors show a decline. The graph also indicates a decreasing number of firms utilising debt financing in most industries immediately after the crisis. However, from 1999 onwards, the frequency of debt financing in 'technology/consumer products' sector started to pick up again after experiencing a decline during the period of the crisis.

With regard to the average frequency of financing within each industry, **Table 5.1** provides a snapshot on the average percentage of firms engaging in the three aforementioned financing categories. In the table, frequency averages from each financing category are calculated according to industry class (i.e.

'technology/consumer products', 'industrial products', 'construction/properties', 'trading/services' and 'others'). Please note that the frequency averages do not add to 100 percent as not all firms raise finance in a given year.

TABLE 5.1 AVERAGE FREQUENCY OF FINANCING WITHIN INDUSTRY

1. TECHNOLOGY/CONSUMER PRODUCTS (100%=35 firms)

	Equity (%)	Mixed (%)	Debt (%)
1991	11.43	11.43	42.86
1992	14.29	14.29	25.71
1993	11.43	14.29	34.29
1994	5.71	22.86	28.57
1995	11.43	22.86	11.43
1996	11.43	37.14	25.71
1997	11.43	25.71	42.86
1998	11.43	2.86	31.43
1999	14.29	17.14	20.00
2000	22.86	5.71	31.43
Average	**12.57**	**17.43**	**29.43**

2. INDUSTRIAL PRODUCTS (100% = 60 firms)

	Equity (%)	Mixed (%)	Debt (%)
1991	10.00	11.67	35.00
1992	18.33	6.67	46.67
1993	10.00	30.00	26.67
1994	13.33	25.00	26.67
1995	16.67	33.33	21.67
1996	21.67	28.33	36.67
1997	21.67	18.33	38.33
1998	6.67	10.00	30.00
1999	13.33	8.33	23.33
2000	16.67	16.67	18.33
Average	**14.83**	**18.83**	**30.33**

3. CONSTRUCTION/PROPERTIES (100% = 52 firms)

	Equity (%)	Mixed (%)	Debt (%)
1991	25.00	25.00	30.77
1992	11.54	13.46	40.38
1993	17.31	44.23	11.54
1994	21.15	36.54	23.08
1995	23.08	34.62	15.38
1996	28.85	30.77	28.85
1997	25.00	30.77	25.00
1998	11.54	11.54	32.69
1999	17.31	13.46	25.00
2000	23.08	19.23	17.31
Average	**20.38**	**25.96**	**25.00**

4. TRADING/SERVICES/HOTELS (100% = 42 firms)

	Equity (%)	Mixed (%)	Debt (%)
1991	11.90	38.10	26.19
1992	23.81	30.95	30.95
1993	35.71	30.95	14.29
1994	28.57	45.24	16.67
1995	21.43	40.48	26.19
1996	14.29	52.38	28.57
1997	19.05	50.00	23.81
1998	16.67	16.67	33.33
1999	16.67	21.43	30.95
2000	28.57	19.05	23.81
Average	**21.67**	**34.52**	**25.48**

5. OTHERS (100% = 36 firms)

	Equity (%)	Mixed (%)	Debt (%)
1991	8.33	2.78	30.56
1992	8.33	16.67	22.22
1993	13.89	8.33	27.78
1994	8.33	5.56	30.56
1995	5.56	11.11	33.33
1996	2.78	19.44	33.33
1997	5.56	16.67	44.44
1998	11.11	8.33	38.89
1999	16.67	11.11	27.78
2000	25.00	-	30.56
Average	**10.56**	**10.00**	**31.94**

From these averages, we observe that firms in all five industries utilise debt financing more frequently than equity financing. The difference in average percentage of utilisation between equity and debt financing is quite high in some of the industries (for example; the difference of 21.38% for 'others' sector and 16.86% for 'technology/consumer products' sector). Apparently, the frequency of mixed financing has positioned itself moderately between the frequency of equity and debt financing in three industries. The average mixed-financing utilisation is slightly higher for 'construction/properties' sector, and even very much utilised by 'trading/services/hotel' sector (34.52%).

In general, the above descriptions suggest that firms in 'technology/consumer products', 'industrial product' and 'other' sectors raise finance more frequently through debt than through equity. The aversion towards risk (i.e. avoiding debt financing) of technology-products firms may not be observable in this thesis since there are only two technology-products firms included in the 'technology/consumer' sector (refer to Section 4.2.1 in Chapter 4). Firms in 'trading/services/hotel' sector, however, utilise mixed financing more frequently than other types of financing, while a moderate use of all three types of financing by firms in 'construction/properties' sector.

5.2.1 DESCRIPTIONS OF THE FINANCING PATTERNS

This section provides detailed explanations on the financing flow captured by each type of financing pattern described in Chapter 4. In the course of assigning the firms to their respective pattern, we have discarded two firms since they did not raise any additional debt or equity throughout the 10-year period (i.e. the rows

for 'issue/repurchase of share capital' and 'issue/repayment of loans' in **Figure 4.1** of Chapter 4 are filled with zeros). These two firms seemed to be able to generate the amount of operating cash surplus just enough to service their interest and dividend payment. Therefore, the external financing for the two firms appeared to be nil. The allocation for the remaining 223 firms is as follows (**Appendix II** has examples of firms from each type of financing pattern):

TYPE I FIRMS
All equity-only issues

Only **one (1)** firm belongs to this group. The firm, which is in the 'technology/consumer products' sector, raised additional equity for only one year when it experienced a deficit in the net fund flow, whereas for other years, the required annual payment of interest and dividend matched exactly to the amount of operating cash surplus generated. We could assume that the year when the firm employed equity financing was the year when all other means of financing were not available.

TYPE II FIRMS
Simultaneous debt and equity issues and/or equity-only issues

Sixteen (16) firms match this category. These firms issued either equity only or mixture of debt and equity simultaneously to finance deficits. There were no debt-only issues observed during this 10-year period. Firms in this category repaid debt when there was excess in the net fund flow. We could justify that this type of financing behaviour reflects some adjustments to targets. Nonetheless, the pattern could also indicate a smoothing financing hierarchy from a mixed financing to equity-only issues. These firms are from the following industries:

Industry	No. Of firms
Technology/Consumer Products	3
Industrial Products	1
Construction/Properties	4
Trading/Services and Hotels	7
Others	1

TYPE III FIRMS

Sometimes equity-only issues and sometimes debt-only issues

The **eighteen (18)** firms that fit into this category issued either equity-only or debt-only whenever there were deficits in net fund flow. There was no single year with simultaneous issues of debt and equity. These firms normally repaid debt when there was a surplus as we only observe two cases of equity repurchases. We presume that these firms were adjusting towards some targeted amount. The distribution of firms in this category is as follows:

Industry	No. Of firms
Technology/Consumer Products	1
Industrial Products	8
Construction/Properties	2
Trading/Services and Hotels	2
Others	5

TYPE IV FIRMS

All types of financing (debt-only, equity-only and simultaneous debt /equity issues)

One hundred and twenty (120) firms adopt all three types of financing behaviour to finance deficit in net fund flows. The firms repaid debt or/and repurchased equity if there was a surplus. With the alternate financing, these firms behaved as if they were adjusting the debt ratios towards some targeted levels. Nevertheless, if the sequence could be determined, it may also be that these firms behaved as if they were following some sort of hierarchy in financing. All firms

that fall in this type of financing pattern belong to the following industry distribution:

Industry	No. Of firms
Technology/Consumer Products	14
Industrial Products	36
Construction/Properties	35
Trading/Services and Hotels	25
Others	10

TYPE V FIRMS
Simultaneous debt and equity issues and/or debt-only issues

Forty (40) firms correspond to this type of financing pattern. These firms acted as if they were avoiding equity-only issues during this period. In addition to repaying debt when there was a surplus, these firms sometimes repurchased shares. The mixed financing of debt and equity would suggest a transition to involve equity financing when raising debt alone could not afford to support the year's financing needs. Nonetheless, the pattern could also reflect some adjustment behaviour, as the simultaneous issuances may be an act to rebalance the debt ratios to targets. The distribution of these firms based on industrial sectors is as below:

Industry	No. Of firms
Technology/Consumer Products	6
Industrial Products	8
Construction/Properties	8
Trading/Services and Hotels	9
Others	9

TYPE VI FIRMS
All debt-only issues

Twenty-eight (28) firms fit the description of this pattern. It seems that all firms in this category only issued additional debt to meet deficits in net fund flow. Otherwise, these firms repaid part of the outstanding debt whenever there was excess in the fund flow. This all-debt utilisation appears to reflect a strict

financing hierarchy since there were no equity issues observed. The following is the distribution of firms according to industry sectors:

Industry	No. Of firms
Technology/Consumer Products	10
Industrial Products	7
Construction/Properties	3
Trading/Services and Hotels	1
Others	7

5.2.2 FIRMS' FINANCING PATTERNS AND RELEVANT THEORY

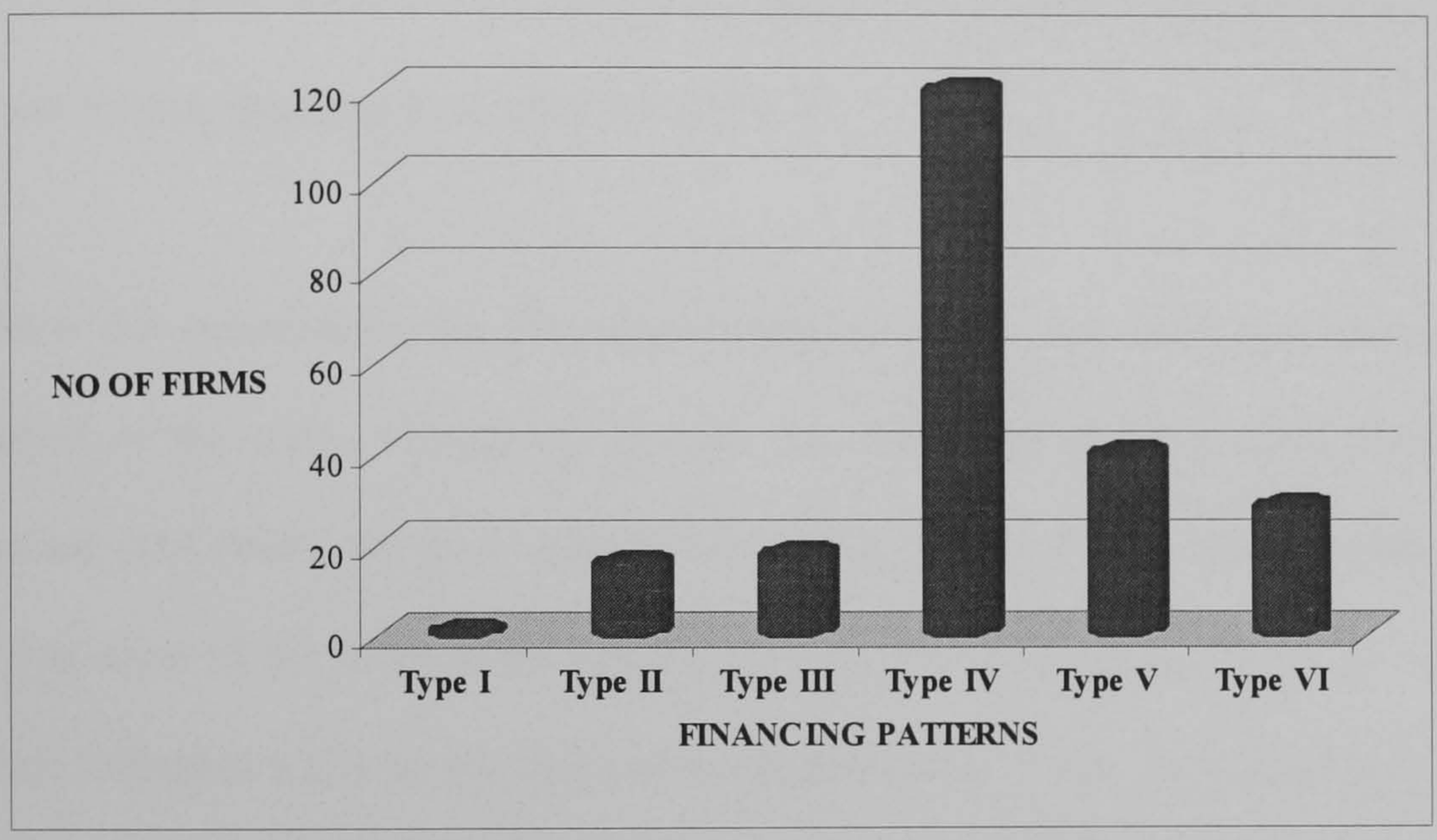
From the number of firms shown in each financing pattern, it seems that majority of the firms, which account for 87 percent of the total firms, have the tendency to combine both debt and equity financing rather than to concentrate on only one type of financing source. To illustrate, **Appendix III** plots a stem-and-leaf chart of the financing patterns and firms according to industry. However, when comparing between debt and equity financing, most firms seem to incline towards leverage-increasing financing. **Table 5.2** below matches the financing types with the relevant theoretical description.

TABLE 5.2 FINANCING PATTERNS AND THEORETICAL DESCRIPTION

FINANCING PATTERNS (FIRM TYPES)	ADJUSTING TOWARDS TARGET	FINANCING HIERARCHY BEHAVIOUR	NO. OF FIRMS
TYPE I FIRMS	✗	✓	1
TYPE II FIRMS	✓	✓	16
TYPE III FIRMS	✓	✗	18
TYPE IV FIRMS	✓	✓	120
TYPE V FIRMS	✓	✓	40
TYPE VI FIRMS	✗	✓	28
		TOTAL FIRMS	**223**

We reinforce this assertion further by presenting a histogram of the firms' distribution according to financing types, as in **Figure 5.2**. With the two extreme financing of equity-only (*Type I*) on the far left and debt-only (*Type VI*) on the far right, the distribution of firms clearly stacks in the centre around *Type IV* and *Type V*, and particularly clusters at *Type IV* pattern.

FIGURE 5.2 FINANCING PATTERNS BASED ON THE NUMBER OF FIRMS



The assertion about how these patterns fit the description of both theories may possibly be the explanation why some of earlier studies offer mixed evidence on the consistency of capital structure theory in Malaysia (see Krishnan and Moyer, 1977; Muhammad, 1999; Booth et. al., 2001). The above descriptions however, are only little more than cursory impressions at this exploration phase. From the observations at this stage, we can generally infer that both the target adjustment and the financing hierarchy views may have some relevance in explaining the broad financing behaviour of Malaysian firms.

5.3 DESCRIPTIVE STATISTICS OF THE DATA

Prior to engaging into the main empirical analyses, we examine the background of the main variables collected. This section discusses the descriptive statistics of these variables and the trend of the key indicators during the observed period. In essence, we estimate book and market debt ratios, market value of equity and return on assets in each year to identify movements in leverage and profitability. We derive most ratios directly from the accounting information in the firms' financial report. However, in calculating market-debt ratio[16], we obtain the firms' market value database from DATASTREAM.

Table 5.3 summarises the descriptive statistics of the key indicators during the period of the study. Glimpsing through the maximum value of both book and market debt ratios, we have anticipated having values of debt ratios greater than 1.0 as some of the firms in the sample have negative capital reserves. The overall trend indicated a rise in the mean of book-debt ratio[17] from 42.4 percent in 1991 to 74.8 percent in 2000, a 76.4 percent increase. Having an increase of about 60 percent, the market-debt ratio too escalated from 27.3 percent in 1991 to 43.6 percent in 2000. However, profitability as represented by the return-on-assets ratio seemed to topple from the mean of 4.8 percent in 1991 to a negative value (–5.6 percent) in 2000. The triggering event for this negative mean of return-on-assets ratio was the Asian economic crisis in 1997, and this negative rate continued until 2000.

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[16] We calculate market-debt ratio as the ratio of total liabilities to the sum of book value of total liabilities and the market value of equity.

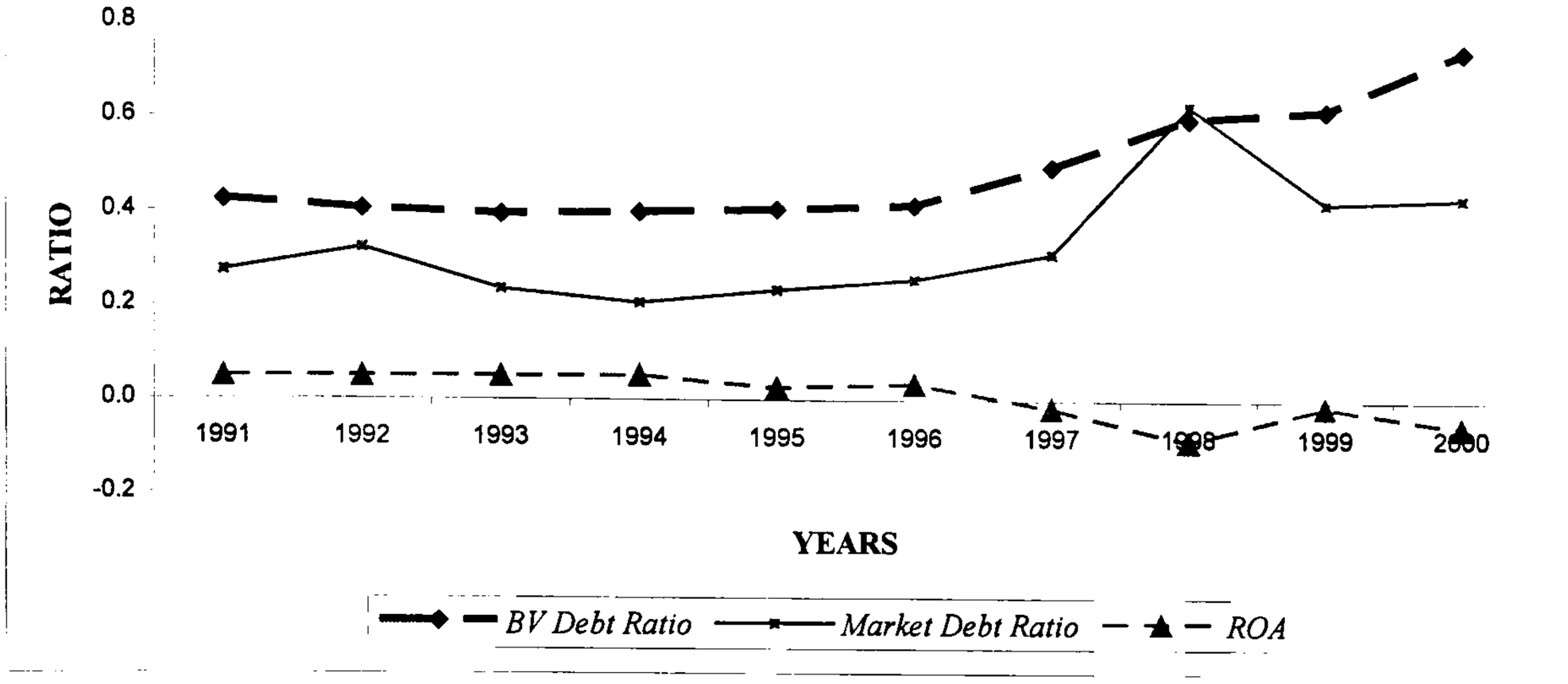
[17] For standardised comparison, we calculate book-debt ratio based on the ratio of total liabilities to book value of total assets.

TABLE 5.3 DESCRIPTIVE STATISTICS OF THE DATA

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
BOOK DEBT RATIO										
Mean	0.424	0.405	0.395	0.400	0.407	0.417	0.499	0.603	0.622	0.748
Minimum	0.007	0.005	0.006	0.004	0.011	0.000	0.033	0.001	0.009	0.011
Maximum	2.824	2.326	2.322	1.425	1.749	1.702	3.751	7.070	9.785	18.674
SD	0.331	0.269	0.254	0.224	0.229	0.232	0.395	0.782	0.908	1.663
MARKET DEBT RATIO										
Mean	0.273	0.322	0.235	0.207	0.235	0.259	0.314	0.631	0.424	0.436
Minimum	0.007	0.016	0.004	0.002	0.007	0.007	0.016	0.043	0.016	0.012
Maximum	0.887	0.911	0.946	0.797	0.854	0.901	1.439	12.432	2.477	3.709
SD	0.179	0.198	0.156	0.148	0.172	0.189	0.215	0.879	0.284	0.340
MV OF EQUITY (RM 'million)										
Mean	630.151	618.417	939.561	1369.027	1503.973	1597.948	1490.832	611.056	1167.488	1138.988
Minimum	15.540	15.020	24.120	47.170	69.330	85.460	91.060	11.810	32.860	32.860
Maximum	22463.7	27029.6	31177.1	38992.2	35461.1	40725.0	30885.6	18141.5	35688.1	36711.5
SD	1746.9	2065.9	2516.0	3267.4	3109.6	3268.4	2567.1	1558.4	2934.8	2962.6
RETURN ON ASSETS										
Mean	0.048	0.048	0.049	0.051	0.025	0.035	-0.017	-0.087	-0.013	-0.056
Minimum	-0.304	-0.228	-0.476	-0.267	-6.502	-5.678	-4.573	-3.448	-3.146	-3.095
Maximum	0.509	0.293	0.586	0.412	0.913	1.248	1.718	0.709	0.874	0.494
SD	0.074	0.065	0.077	0.063	0.448	0.399	0.390	0.406	0.281	0.335

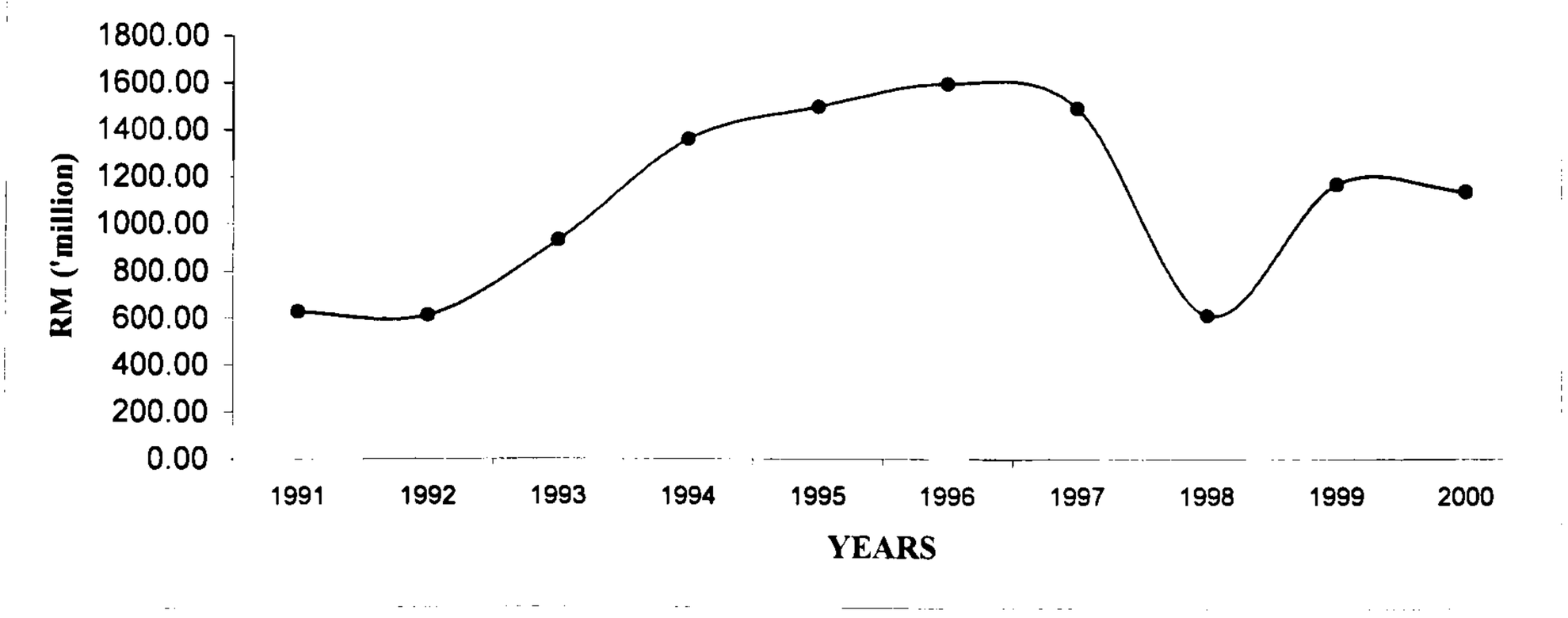
Figure 5.3 further illustrates the trend of debt and profitability ratios graphically during this period. Book-debt ratio demonstrated a slight decrease in the earlier years before starting to increase in 1996 and onwards, while the market-debt ratio experienced a mixed movement. Return on assets (ROA), however, suffered the most in 1998 following the already downward trend of profitability during this period.

FIGURE 5.3 DEBT RATIOS AND ROA OVER THE PERIOD OF 1991 TO 2000



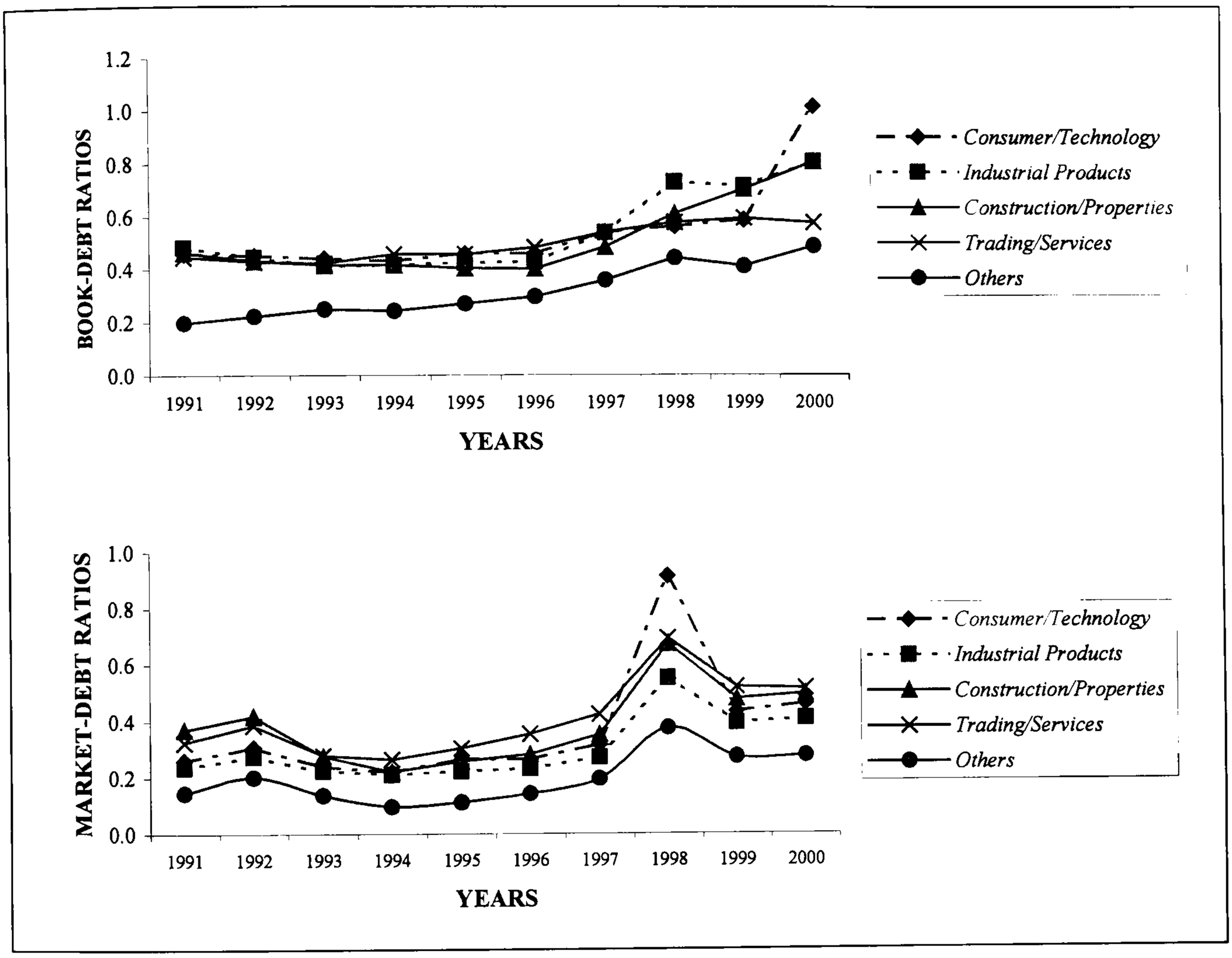
The market-debt ratio links inversely to the market value of equity. This ratio seemed to have a less volatile movement in the first half of the period before experiencing a sharp increase in 1997, reaching its peak in 1998, and decreasing in the year that follows before regaining its steady movement. This sharp increase in 1997 to 1998 reflected the decline in the market value of equity (see **Figure 5.4**) in response to the economic crisis that hit the country at that time.

FIGURE 5.4 MV OF EQUITY OVER THE PERIOD OF 1991 TO 20000



Next, we compare the changes in these leverage ratios by charting the movement of book-debt ratio and market-debt ratio separately, as in **Figure 5.5**.

FIGURE 5.5 LEVERAGE RATIOS (BASED ON INDUSTRY SECTORS)



During the period, 'others' sector has demonstrated as having the lowest mean of book-leverage among all sectors, while the mean of book ratios for the remaining sectors did not show too much variation between one other. However, the book ratio mean for 'consumer/technology products' showed an increase in 1999 and after. Meanwhile, the market-debt ratios for all five sectors have illustrated comparable movement during the period. 'Others' sector still maintained as having the lowest market-leverage. However, during the crisis of 1997-98, the

increase in the market-debt ratio for 'consumer/technology products' sector had overshadowed the rest. We could translate this elevated market-debt ratio as having a soaring market value of equity. From the rise in this ratio, we presume that the 'consumer/technology products' sector had been the most affected sector during this economic turmoil.

In comparing between book-debt ratio and market-debt ratio measurements, the latter appears to be more sensitive to the variation in the economy, thus, reflecting the 'true' situation. We observe the book-debt ratio measure is less volatile, i.e. less sensitive, to changes in the market despite the various economic events that took place during the last decade, as discussed in Chapter 2. This evidence provides some support to the theoretical foundation on market-value based capital structure which claim that the results based on market value measures outdo those on book value (see Bennett & Donnelly, 1993)

To supplement the descriptive analysis discussed in this section, we also report the summary statistics of other key attributes that will be included in the main analyses of this thesis, as presented in the following **Table 5.4**.

TABLE 5.4 SUMMARY STATISTICS OF $ASSET_{it}$, $PRFT_{it-1}$, $PRFT_{it}$, $PRFT_{it+1}$, TAX_{it}, and $RISK_{it}$

	$ASSET_{it}$	$PRFT_{it-1}$	$PRFT_{it}$	$PRFT_{it+1}$	TAX_{it}	$RISK_{it}$
Mean	0.373	0.052	0.061	0.066	0.171	0.091
Median	0.351	0.069	0.072	0.074	0.230	0.052
Maximum	1.212	0.616	0.616	0.616	16.314	2.479
Minimum	0.000	-6.482	-6.482	-6.482	-79.933	0.014
Std. Dev. (sd)	0.244	0.260	0.252	0.249	2.025	0.199

Asset composition (***ASSET***) shows a mean of 37.3 percent (sd = 24.4%), lagged and lead profitability indicate a mean of 5.2 percent (sd = 26 %) and 6.61 percent (sd = 24.9%) respectively, while 6.1 percent (sd = 25.2%) for current profits. Meanwhile, tax status (***TAX***) produces a mean of 17.1 percent (sd = 202.5%); and a mean of 9.1 percent (sd = 19.9%) for operating risk (***RISK***). Please note that a zero minimum value for ***ASSET*** is probably due to the missing value in 1990, as the continuous accounting data requirement in firms' selection criteria is set only from 1991-2000. In addition, a loss reported by a firm in its profit and loss statement would cause a negative ***TAX*** (see the minimum value for ***TAX***).

5.4 RELATION BETWEEN LEVERAGE AND PROPOSED MALAYSIAN FACTORS

This section takes the groundwork a step further by initially testing the relationship between capital structure and the firm-specific Malaysian evidence using our data. To reiterate, the Malaysian-based studies have established significant effects of leverage to industry (Annuar & Shamsher, 1993; Mohamad, 1995; Muhammad, 1998) and profitability (Mohamad, 1995). Nonetheless, leverage has posed mixed results on the effects of earning volatility (see Annuar and Shamsher, 1993; Muhammad, 1998) and size (see Mohamad, 1995; Muhammad, 1998). Therefore, with industry, size, earning volatility, and profitability as the manifested factors in Malaysia, we set the following cross-sectional expression, based on period averages, to recapture their relationship with leverage.

$$d = \alpha + \beta_{size}(SIZE) + \beta_{evol}(EVOL) + \beta_{prft}(PRFT) + \sum_{j=1}^{N-1} \lambda_j (IND)_j + \mu \qquad (5.1)$$

where the dependent variable ***d,*** the leverage ratio, is regressed against the list of explanatory variables of ***SIZE*** using natural log of sales as proxy; ***EVOL*** using the standard deviation of the ratio of net operating income to sales, a proxy for earning volatility; ***PRFT,*** the average return on total assets, a proxy for profitability, and industry sectors (***IND***) as dummy variables.

A regression analysis performed between book-debt ratio and the above variables produce the following results:

EXHIBIT 5.1 RESULTS FROM A PRELIMINARY REGRESSION BETWEEN DEBT RATIO AND THE PROPOSED MALAYSIAN FACTORS

Dependent Variable: ***d*** **Variable**	**Coefficient**	**STD Error**	**t-Statistic**	**Prob.**
Constant	0.20	0.077	2.551	0.011
SIZE	0.05	0.015	3.710	0.000 *
PRFT	-1.98	0.166	-11.934	0.000 *
EVOL	-0.00	0.001	-0.885	0.377
IND1	0.10	0.073	1.391	0.166
IND2	0.13	0.062	2.097	0.037 **
IND3	0.08	0.064	1.229	0.221
IND4	0.11	0.071	1.474	0.142
R^2	0.422			
Adjusted-R^2	0.404			
F-statistic	22.67			
Prob(F-statistic)	0.000			

* *Significant at 1% level*
** *Significant at 5% level*
IND1= Technology/Consumer Products *IND2= Industrial Products*
IND3= Construction/Properties *IND4= Trading/Services/Hotels*

Exhibit 5.1 indicates that the overall model is statistically significant (F-statistic = 22.67, Prob (F-statistic) = 0.000). Both size (***SIZE***) and profitability (***PRFT***) variables produce a statistically significant coefficient at 1-percent level, hence rejecting the zero null. Size produces a positively significant coefficient ($\beta_{size}>0$), indicating a positive relation to debt ratio (t-statistic = 3.710, prob = 0.000). This

positive relation between size and leverage is consistent with earlier studies (Mohamad, 1995; Chiarella et.al., 1992; Fischer et. al., 1989; Myers, 1982). Meanwhile, the negatively significant coefficient of profitability ($\beta_{prft}<0$) demonstrates its inverse relation to debt ratio (t-statistic = -11.934, prob = 0.000). This negative relation between profitability and leverage is consistent with the pecking order description of Myers (1984), and Myers and Majluf (1984). Although producing a negative coefficient, earning volatility (***EVOL***) fails to reject the null of no-significant effect to debt ratio ($\beta_{evol}=0$).

The results shows that only ***IND2*** produces a significant coefficient at 5-percent level (t-statistics=2.097, prob=0.037), while the remaining industry sectors fail to show significant relation to debt ratio (***d***) at any level. We then test the restrictions of the dichotomous industry variables using a Wald test. This test determines whether the industry coefficients λ's produced by the regression result are consistently different from zero. The Wald test reports the following findings:

EXHIBIT 5.2 WALD TEST RESULT ON THE INDUSTRY COEFFICIENTS

Wald test:

Null Hypothesis: $\lambda_1 = \lambda_2 = \lambda_3 = \lambda_4 = 0$

F-statistic	1.129	Probability	0.344
Chi-square	4.518	Probability	0.340

The high probability of the F-statistics and chi-square values has failed to reject the zero-null hypothesis ($\lambda_j=0$). Our effort to combine the many industry sectors

into only five combined sectors may possibly be the contributory factor to the insignificant effect of industry to leverage.

In this preliminary analysis, the overall regression results show a significant effect of leverage to size and profitability. However, risk (via earning volatility) and industry produce inconclusive outcome.

5.5 SUMMARY AND CONCLUSIONS

In this chapter, we have divided the discussion of the preliminary data analysis into three parts. The first part attempts to descriptively identify whether there exists some specific financing across industries. An initial impression has suggested some inclination of certain industries to follow specific financing patterns. Further, the preliminary inference on the financing patterns has provided some relevance to the description of both the static trade-off and the pecking order theories in justifying firms' financing behaviour. However, we have yet to empirically disprove the ability of these two capital structure theories in explaining firms' financing behaviour in the forthcoming analyses.

The second part assesses the trend of the key financial indicators of book-debt ratio, market-debt ratio, profitability, and market value of equity during the period of 1991 to 2000. Book-debt ratio trend has shown a relatively stable movement to economic cycle. Meanwhile, market-debt ratio has demonstrated a mixed movement in response to the shaky economic situation during the period. However, profitability has indicated a constant downward movement throughout the sample period and this trend was more visible during the 1997-98 crisis.

The third part of the discussion attempts to preliminarily regress firms' leverage against firm-specific factors of size, profitability, earning volatility, and industry. We select these four factors following the literature on Malaysian capital structure (see Annuar & Shamser, 1993; Mohamad, 1995; Muhammad, 1998; Pandey, 2001). The result from this test serves as an opening verification of whether our data are able to refute the relationship established by the aforementioned Malaysian evidence. Nonetheless, our results show some consistency on the relationship of leverage to only two out of the four alleged variables.

In general, the inferences dictated in this chapter are only passing intuitions espoused at this preliminary stage. In the following chapters, we will embark on a deeper empirical investigation of the issues raised.

PART 4

EMPIRICAL INVESTIGATION

CHAPTER 6

ANALYSIS (1)
CAPITAL STRUCTURE DETERMINANTS

6.1 INTRODUCTION

This chapter continues the discussion of this thesis by empirically investigating whether the factors alleged to be the determinants in Malaysian firms' capital structure decision are consistent with those factors specified in the literature. The empirical literature on capital structure determinants has suggested a number of factors that influence firms' financing decisions. Some of these factors vary either across firms or across time, yet there are also firm-and-time-varying factors as well. Examples of variables that vary across both firms and time would be firms' reported earnings, size, tax status, and asset tangibility, while industry sectors vary across firms. The basic approach for this type of empirical work is to identify certain proxies for the unobservable theoretical factors. Earlier work on capital structure determinants were conducted by financial economists such as Titman and Wessels (1988), Fischer et. al. (1989), Friends and Hasbrouk (1988), and Marsh (1982). Extensions of this empirical evidence include those in G-7 countries (Rajan & Zingales, 1995), Asian countries (Aggarwal, 1990), and developing countries (Atkin & Glen, 1992; Demirguc-Kunt & Maksimovic, 1996; Booth et.al., 2001).

Following these prior studies, we seek to examine the relevance of firm-and-time-varying factors on capital structure choices in Malaysia. The first part of this chapter restates the relation between firms' financing patterns and the firm-and-

time-varying factors of size, profitability, and earnings volatility. Although only vary across firms, we also incorporate industry in this analysis to see whether the results produced are consistent with the preliminary suggestion on the inclination of individual industry to adopt specific financing strategy. In support, Scott Jr and Martin (1975) have concluded that "*...it is unwise to disregard industry class as a determinant of financial structure because financial structures are not, in fact, identical across wide array of industries*". Meanwhile, the second part of the chapter concentrates on finding the relation between firms' financing behaviour and the theory-supported factors of asset tangibility, profitability, tax status, and operating risk.

In general, both analyses in this chapter seek to examine whether the commonly cited capital structure determinants in the literature can be disproved when tested using Malaysian data.

6.2 FIRM FACTORS AND FINANCING PATTERNS

The first analysis employs a contingency table framework in testing H_o of no-association between each of the four alleged Malaysian factors (i.e. industry, size, earnings volatility and profitability) and firms' financing types. The process begins by grouping the data into specific functional categories. For the industry groupings, the five combined categories as previously sorted are: (1) technology/consumer products, (2) industrial products, (3) construction/properties, (4) trading/services/hotels, and (5) others. Moreover, each financing type has already identified the industry sectors in which the component firms are operating. For the remaining factors, we split firms' size into small, medium, and large,

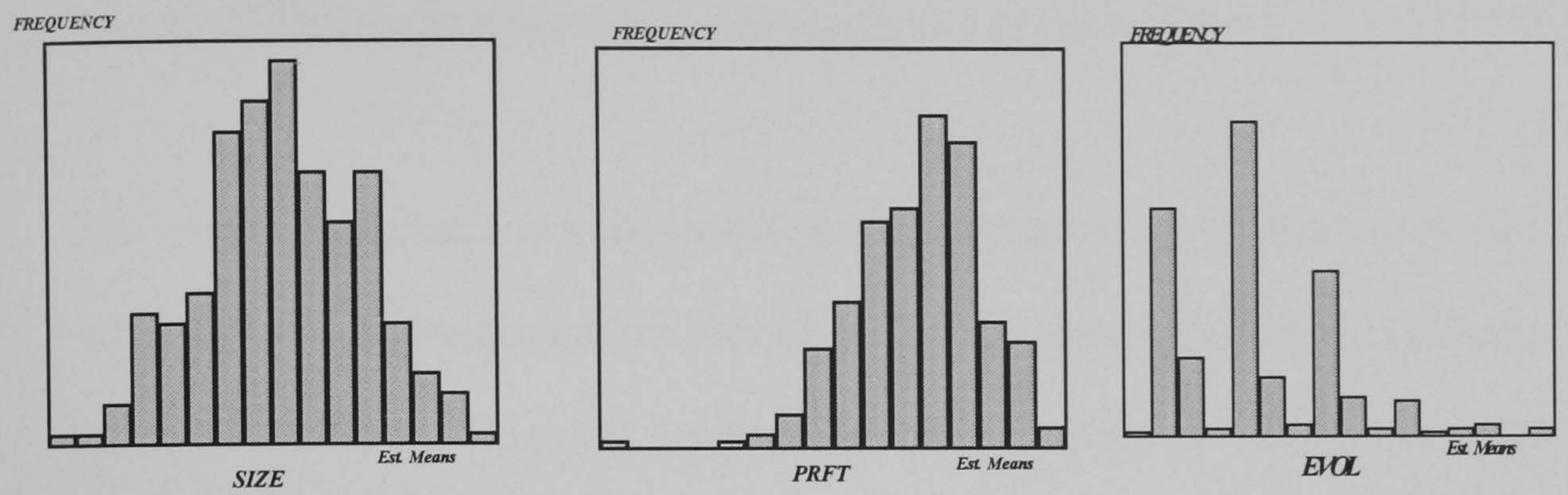
while earnings volatility and profitability are classified into low, medium, and high according to some percentile range.

In assessing the accuracy of the parameter estimates, we embark on the bootstrap re-sampling procedure introduced by Efron and Tibshirani (1986; 1993). This technique enables the calculation of the actual distribution of the sample parameters without having to resort to strong parametric assumptions. This procedure focuses on robust estimation of sampling means by randomly drawing with replacement new samples of the same size from the original sample. Subsequently, we calculate the empirical distribution of the estimated means from the re-sampled series.

Figure 6.1 below exhibits the bootstrap sampling distributions for size, profitability, and earnings volatility across two resample sizes of 250 (Panel A) and 1000 (Panel B). The distribution of the estimated means for size (***SIZE***) approximates quite closely to the normal distribution assumed in parametric analyses, with a skewness of –0.203 for Panel A and 0.001 for Panel B. The other two estimates, however, differ markedly. The distribution of profitability (***PRFT***) skews negatively for both resample sizes (with a slightly less negative skewed in Panel B), whereas earnings volatility (***EVOL***) shows an opposite orientation. The distribution of estimated means for ***EVOL*** appears to skew positively, in which the larger the resample size, the more positive skewed the distribution is.

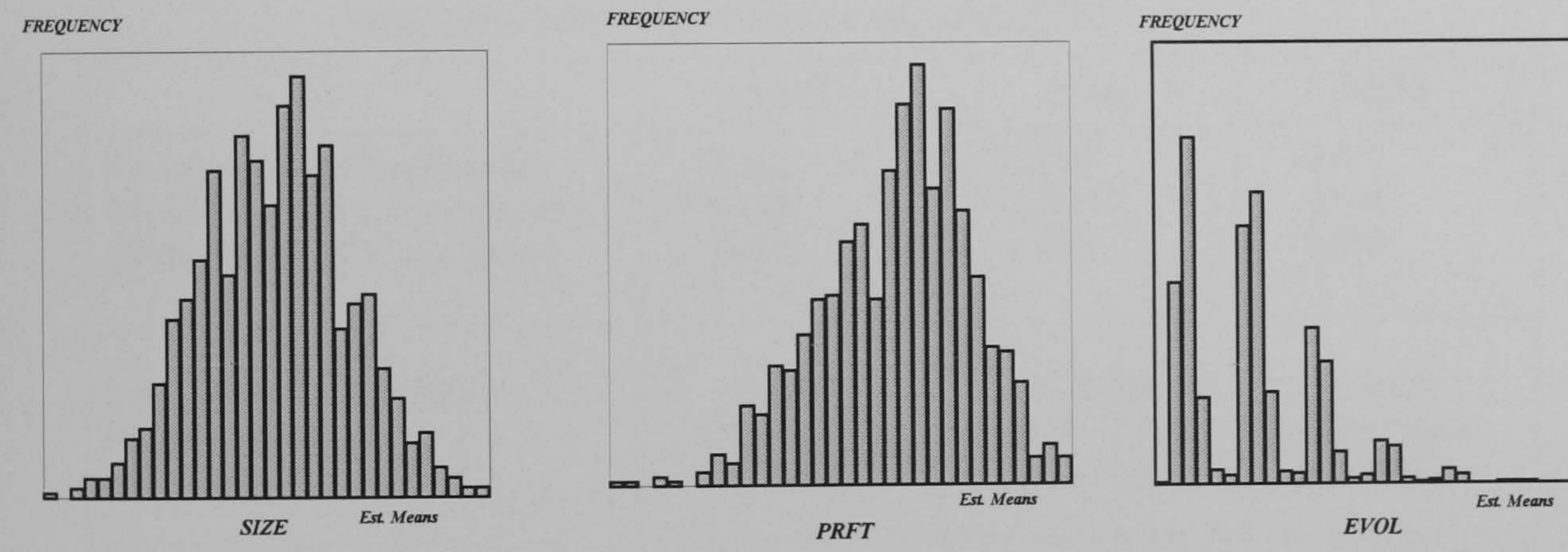
FIGURE 6.1 BOOTSTRAP SAMPLING DISTRIBUTIONS

PANEL A: Number of bootstrap resamples =250



Mean	*= 5.401*	*Mean*	*= 0.048*	*Mean*	*= 2.107*
Standard deviation	*= 0.107*	*Standard deviation*	*= 0.008*	*Standard deviation*	*= 1.250*
Kurtosis	*= 2.698*	*Kurtosis*	*= 4.064*	*Kurtosis*	*= 1.102*
Skewness	*= -0.203*	*Skewness*	*= -0.566*	*Skewness*	*= 0.981*

PANEL B: Number of bootstrap resamples =1000



Mean	*= 5.407*	*Mean*	*= 0.048*	*Mean*	*= 1.987*
Standard deviation	*= 0.101*	*Standard deviation*	*= 0.008*	*Standard deviation*	*= 1.202*
Kurtosis	*= 2.772*	*Kurtosis*	*= 3.047*	*Kurtosis*	*= 4.243*
Skewness	*= 0.001*	*Skewness*	*= -0.397*	*Skewness*	*= 1.021*

In comparing the shapes of the histogram in both panels, it appears that the shape of the larger resample size (Panel B) forms better, especially the distribution of size, which approximates the normal distribution. The distribution of profitability may require a larger resample size for the approximation of a normal distribution.

We also observe the distribution of both size and profitability in Panel B to have a kurtosis value close to 3.0. However, not much we can assess about the distribution of earnings volatility. It seems that when we increase the resample size for ***EVOL***, the kurtosis value increases to a value exceeding 3.0.

The underpinning issue is to determine how large should the sample size be. We settle with the bootstrap resample size of 1000 as the basis for estimating the array of small (low), medium and large (high) for the variables. Based on these estimates, the descriptive distribution of size (***SIZE***), earnings volatility (***EVOL***), and profitability (***PRFT***) are as follows:

TABLE 6.1 DESCRIPTIVE PARAMETERS OF THE BOOTSTRAP DISTRIBUTIONS OF *SIZE, EVOL*, AND *PRFT*

	SIZE	***EVOL***	***PRFT***
First Quartile (25th percentile)	5.333	0.870	0.043
Second Quartile (50th percentile)	5.410	1.929	0.049
Third Quartile (75th percentile)	5.474	2.946	0.053
Small (**Sm**) or Low (**Lo**)	***< 5.333***	***< 0.870***	***< 0.043***
Medium (**Med**)	***5.333 - 5.474***	***0.870 - 2.946***	***0.043 - 0.053***
Large (**Lg**) or High (**Hi**)	***> 5.474***	***> 2.946***	***> 0.053***

6.2.1 DISCUSSION OF THE ANALYSIS AND RESULTS

To form the basis of association between financing patterns (***FIN_TYPE***) and the series of variable (***IND, SIZE, EVOL*** and ***PRFT***), we obtain a standardised chi-square measure in comparing the actual cell frequencies with the expected cell frequencies. The distance of the difference between the actual and expected cell count under the 'no-association' hypothesis will be the basis for the test statistics.

In **Table 6.2**, each contingency table contains the number of firms for the following combinations: (I) ***IND-FIN_TYPE***, (II) ***SIZE-FIN_TYPE***, (III) ***EVOL-FIN_TYPE***, and (IV) ***PRFT-FIN_TYPE***.

TABLE 6.2 CONTINGENCY TABLES BETWEEN *FIN_TYPE* AND THE FACTORS OF *IND*, *SIZE*, *EVOL* AND *PRFT*

I. CROSS-TABULATED DATA DETAILING *IND* BY *FIN_TYPE*

	IND					
FIN_TYPE	Tech/ Cons	Industrial	Cons/ Prop.	Trad/Serv.	Others	**TOTAL**
I	1	0	0	0	0	1
II	3	1	4	7	1	16
III	1	8	2	2	5	18
IV	14	36	35	23	12	120
V	6	8	8	9	9	40
VI	10	7	3	1	7	28
TOTAL	35	60	52	42	34	223

Measures of Association	Value
Phi Coefficient	0.44
Cramer's V	0.22

Test Statistics	df	Value	Prob
Pearson X2	20	43.44	0.002
Likelihood Ratio G2	20	41.99	0.003

II. CROSS-TABULATED DATA DETAILING *SIZE* BY *FIN_TYPE*

	SIZE			
FIN_TYPE	Sm	Med.	Lg	**TOTAL**
I	1	0	0	1
II	5	1	10	16
III	7	1	10	18
IV	56	5	59	120
V	18	0	22	40
VI	17	0	11	28
TOTAL	104	7	112	223

Measures of Association	Value
Phi Coefficient	0.19
Cramer's V	0.14

Test Statistics	df	Value	Prob
Pearson X2	10	8.22	0.607
Likelihood Ratio G2	10	10.56	0.393

III. CROSS-TABULATED DATA DETAILING *EVOL* BY *FIN_TYPE*

	EVOL			
FIN_TYPE	Lo	Med.	Hi	**TOTAL**
I	1	0	0	1
II	13	2	1	16
III	14	2	2	18
IV	102	12	6	120
V	33	5	2	40
VI	21	3	4	28
TOTAL	184	24	15	223

Measures of Association	Value
Phi Coefficient	0.14
Cramer's V	0.10

Test Statistics	df	Value	Prob
Pearson X2	10	4.38	0.929
Likelihood Ratio G2	10	3.95	0.950

IV. CROSS-TABULATED DATA DETAILING *PRFT* BY *FIN_TYPE*

	PRFT			
FIN_TYPE	Lo	Med.	Hi	**TOTAL**
I	0	0	1	1
II	5	1	10	16
III	5	0	13	18
IV	37	13	70	120
V	13	4	23	40
VI	10	0	18	28
TOTAL	70	18	135	223

Measures of Association	Value
Phi Coefficient	0.17
Cramer's V	0.12

Test Statistics	df	Value	Prob
Pearson X2	10	6.66	0.757
Likelihood Ratio G2	10	10.58	0.392

Table 6.2(I) shows the number of firms that varies across industry sectors (***IND***) and financing types (***FIN_TYPE***). In determining whether there exists an association between the two variables, the cross-tabulated data indicates that for 20 degrees of freedom, the test statistics of Pearson χ^2 and likelihood-ratio produce a value of 43.44 and 41.99 respectively. Both probability values of 0.002 for Pearson χ^2 and 0.003 for likelihood-ratio are less than the 1-percent level. Therefore, we reject the no-association hypothesis. A large value of chi-square relative to the degree of freedom signifies that the actual and expected matrices differ significantly. The values of Phi-coefficient of 0.44 and Cramer's V of 0.22 infer a modest relationship between financing types and industry sectors.

However, the test statistics have not been able to find any significant association between financing patterns (***FIN_TYPE***) and the remaining variables. For 10 degrees of freedom, the cross-tabulated data between ***SIZE*** and ***FIN_TYPE*** produces a value of 8.22 for Pearson χ^2 and 10.56 for likelihood-ratio (see **Table 6.2(II)**). The cross-tabulated data in **Table 6.2(III)**) and **Table 6.2 (IV)** indicates similar results as well. For 10 degrees of freedom, the table between ***EVOL*** and ***FIN_TYPE*** (**Table 6.2 (III)**) indicates a Pearson χ^2 value of 4.38, and a likelihood-ratio of 3.95. Meanwhile, the cross-tabulated data of ***PRFT*** and ***FIN_TYPE*** (**Table 6.2 (IV)**) yields a Pearson χ^2 value of 6.66 and a likelihood-ratio value of 10.58. All three contingency tables produce probability values greater than 1 percent.

The deductions from the contingency tables above are only able to show a significant association between industry sectors and firms' financing types.

Meanwhile, size, earning volatility, and profitability fail to reject H_o of no association with our predetermined financing types.

6.3 PANEL DATA ANALYSIS ON LEVERAGE FACTORS

The second part of the analysis examines the relative merits of firm-specific theory-related attributes for the 10-year period from 1991 to 2000 in determining firms' leverage. The static trade-off theory predicts cross-sectional relation between debt ratios and asset risk, asset type, profitability and tax, while the pecking order model implies a negative relation between debt ratios and past profitability. In view of the above claims, we obtain measures for the four attributes from firms' financial accounts and test them jointly against leverage ratios. However, instead of analysing for the cross-sectional differences, the analysis uses a panel data framework to capture both cross-sectional and time effects in exploring aggregate capital structure (Francis & Leachman, 1994). Panel data set could improve the efficiency of the estimates as it increases the degree of freedom and reduces the collinearity among explanatory variables (Hsiao, 2003)

To re-establish the expected signs for these mentioned variables, we reiterate the literature on the relation between risk, asset composition, profitability and tax, and leverage as follows:

Risk (*RISK*) Most studies have shown a negative relationship between leverage and risk (Fischer et. al., 1989; Friends & Hasbrouk, 1988; Marsh, 1982). We calculate risk as the standard deviation of the ratio of operating income to the value of total assets based on the eleven-year time span from 1990 to 2000. With

this single standard deviation value for each firm, the firm's operating risk is assumed constant throughout the period (Wiwattanakantang, 1999; Chiarella et. al., 1992).

Asset Composition (*ASSET*) A positive relation for the collateral value attributes is detected by Marsh (1982), Friends and Hasbrouk (1988), and Wiwattanakantang (1999), but not by Chiarella et. al. (1992).

Profitability (*PRFT*) Cross-sectional evidence indicates that leverage relates negatively to firms' past profitability (Titman & Wessels, 1988; Chiarella et. al., 1992), and positively to future profitability (Chiarella et. al., 1992; Mohamad, 1995). We measure profitability predictors in terms of past ($PRFT_{it-1}$), current ($PRFT_{it}$), and future profits ($PRFT_{it+1}$) in seeking some consistency with the theoretical predictions.

Tax status (*TAX*) Tax-related factors have offered inconclusive evidence (e.g. Stulz, 1990; Titman & Wessels, 1988; Myers, 1984), however, there is evidence indicating that tax benefits are one of the factors affecting a firm's financing choice (Graham, 1996, Wiwattanakantang, 1999).

Further, we reconcile the issues regarding the measurement of leverage ratios (***d***) by using both book and market-debt measures[18]. Myers (1977) defines market value consisting of present value of assets in place and present value of future growth opportunities. His main concern is that, since market values would

[18] It is quite difficult to get a published market data for debt instruments traded in the Malaysian PDS market. Therefore, the study assumes for convenience that debt is riskless, and hence adopts the book value amount for debt. Only equity reflects the market value amount.

incorporate the present value of future growth opportunities, issuing debt against these values can distort future real investment decisions. He suggests using book value measure as a reference to assets already in place. However, the theoretical foundations of capital structure are more concerned with the changes in firm's market value as compared to the book value. In relation, Bennett and Donnelly (1993) observe that when debt uses both book and market value measurements, the results based on the latter measure surpass the former. Moreover, they stress on the notion that managerial decision-making process tends to employ market-based measures in understanding capital structure. These managers assume the capital structure choices as having substances if these choices have an impact on firms' market value.

For this analysis, the adoption of both measurements of debt ratio lies on the following two rationales:

(1) Thus far, capital structure theories have not explicitly specified on which debt ratio to use.

(2) Most empirical studies have used both measures of leverage ratios in seeking evidence on capital structure decisions.

6.3.1 DISCUSSION OF THE ANALYSIS AND RESULTS

The equation below specifies the features of the observed explanatory variables and the nature of the unobserved effects. The specifications embedded in this analysis are as follows:

$$y_{it} = \alpha_i + x_{it}\,\beta + \varepsilon_{it} \qquad \textbf{(6.1)}$$

or

$$y_{it} = \sum_{J=1}^{N} \alpha_i D_{ij} + x_{it}\,\beta + \varepsilon_{it} \qquad \textbf{(6.2)}$$

where

$$D_{ij} = \begin{cases} 1 & \text{if } i=j \\ 0 & \text{Otherwise} \end{cases}$$

In the model, $y_{it} = d_{it}$ (book-debt or market-debt ratio), and $x_{it} = [ASSET_{it}, PRFT_{it}, PRFT_{it-1}, PRFT_{it+1}, TAX_{it}, RISK_{it}]$, where $i = 1, 2, 3, \ldots\ldots, 225$, $t = 1, 2, \ldots\ldots, 10$. We could treat α_i either as a random effect or as a fixed effect. As a random effect, there is no correlation between α_i and the observed variables. However, if we treat α_i as a fixed effect, then the parameter is estimated to be constant for each cross section observation i with a correlation between the observed explanatory variables and the unobserved effect. Moreover, when α_i is a fixed effect, the model assumes that: (1) the strictly exogeneity of x_{it} is conditional on the unobserved effects. (2) If x_{it} contains a time-invariant element, then the corresponding element is identical to zero for all t and any draw from the cross section. (3) The error terms, ε_{it}, have a constant variance across t and are serially uncorrelated. Under the above assumptions, the fixed effects estimator is consistent and asymptotically normal.

(1) Book-debt ratio as the dependent variable

This section discusses the result from the test using book-debt ratio as the dependent variable. **Exhibit 6.1** summarises the regression results between book-debt ratio as the dependent variable and the discussed predictors. The test covers

2023 observations using three estimations: (1) pooled OLS estimation, (2) fixed-effects (FE) estimation, and (3) random-effects (RE) estimations.

EXHIBIT 6.1 PANEL DATA REGRESSION BETWEEN BOOK-DEBT RATIO AND THE OBSERVED EXPLANATORY VARIABLES

Variable	Pooled OLS	Fixed Effects	Random Effects
1. Asset Tangibility	- 0.07 *(0.039)*	0.03 ** *(0.013)*	0.013 *(0.049)*
2. Profitability at *t-1*	-0.53 * *(0.041)*	-0.42 * *(0.029)*	-0.53 * *(0.035)*
3. Current Profitability at *t*	-0.41 * *(0.050)*	-.0.46 * *(0.025)*	-0.39 * *(0.035)*
4. Profitability at *t+1*	-0.12 * *(0.038)*	-0.04 ** *(0.020)*	-0.09 * *(0.032)*
5. Tax Status	-0.002 *(0.004)*	-0.003 ** *(0.001)*	-0.003 *(0.003)*
6. Operating Risk	-0.010 *(0.052)*	----------	0.020 *(0.080)*
7. Constant	0.55 * *(0.019)*	----------	0.51 * *(0.027)*
Adjusted R-squared Durbin-Watson stat Observations	0.23 0.547 2023	0.96 1.045 2023	0.45 0.77 2023

Standard error in parentheses
* *Significant at 1 % level*
* * *Significant at 5% level*

At the outset, Hausman specification test is used to test the hypothesis of no misspecification in the random effects estimator based on its differences with the fixed effects estimator. The estimators are consistent under H_o and may be inconsistent under the alternative. This specification test produces a test statistic of 5.61 with a p-value of 0.346. The statistic is asymptotically χ^2 distributed with 6 degrees of freedom. The result fails to reject H_o at any conventional critical value. This finding suggests that both the fixed effects and the random effects estimators do not differ substantially. For comparison purposes, we also report the results based on the basic pooled OLS.

Referring to **Exhibit 6.1**, the first column of basic pooled OLS shows that all profitability variables have significant inverse relation to book-debt ratio. Although indicating negative signs, the remaining predictors of asset tangibility, tax status, and operating risk have failed to reject H_o of no-significant effect on leverage. The second column highlights the results from the fixed effects. The estimation produces no estimates for any time-invariant elements in the model, as previously stated in the assumption. Therefore, the coefficients for constant and operating risk are zero since we assume these variables are constant for each cross section during the 10-year period. However, the fixed effects result shows a significant positive relation between asset tangibility and book-debt ratio. Meanwhile, profitability factors show a significant negative effect on book leverage (i.e. past and current profitability are significant at 1-percent, while future profitability is significant at 5-percent level). Tax status too shows a significant negative relation to leverage at the 5-percent level. In the third column, the random effects results further testify the significant negative relations between all profitability factors and book-debt ratio at 1-percent level. The remaining predictors of asset tangibility, operating risk, and tax status have not been able to demonstrate their significant effects in predicting firms' leverage in this random effects model.

Further, the Durbin-Watson statistics indicates possible existence of serial correlation in the models. In violation of the third assumption of constant variance and serially uncorrelated of the error terms, the fixed effects expression gives an improper variance matrix estimator, thus the reported standard errors can be misleading (Wooldridge, 2002:274). This calls for a robust variance estimator that

is valid in the presence of any heteroskedasticity or serial correlation in (ε_{it}: t=1,……,T}, provided that T is small relative to N (Wooldridge, 2002: 276). To resolve this concern, we obtain robust estimates by adjusting the standard errors using White's heteroskedasticity-consistent standard errors.

The revised version after applying the variance matrix estimators is in **Exhibit 6.2**. After correcting the standard errors, the results suggest that all factors are statistically significant in predicting the book debt ratio at 1-percent level as predicted. Asset tangibility shows a positive relation, whereas the remaining factors of profitability and tax status indicate a negative relation to book leverage.

EXHIBIT 6.2 RESULTS FROM FIXED-EFFECTS (FE) SPECIFICATION AFTER CORRECTING THE STANDARD ERRORS USING WHITE HETEROSKEDASTICITY-CONSISTENT STANDARD ERRORS (Book-debt ratio determinants)

Variable	Fixed Effects Coefficient
1. Asset Tangibility	0.03 * *(0.003)*
2. Profitability at *t-1*	-0.42 * *(0.034)*
3. Current Profitability at *t*	-.0.46 * *(0.023)*
4. Profitability at *t+1*	-0.04 * *(0.010)*
5. Tax Status	-0.003 * *(0.000))*
6. Operating Risk	----------
7. Constant	----------

Standard error in parentheses
* *Significant at 1% level*

(2) Market- debt ratio as the dependent variable

Next, when market-debt ratio replaces book-debt ratio as the dependent variable, the number of total observations reduces to 1818 observations, as some firms' market value data are unavailable. In dealing with missing values, the panel regression drops cross sections without valid observations. **Exhibit 6.3** summarises the results from the three estimations.

EXHIBIT 6.3 PANEL DATA REGRESSION BETWEEN MARKET-DEBT RATIO AND THE OBSERVED EXPLANATORY VARIABLES

Variable	Pooled OLS	Fixed Effects	Random Effects
1. Asset Tangibility	- 0.08 ** *(0.035)*	0.02 *(0.013)*	0.015 *(0.044)*
2. Profitability at *t-1*	-0.15 * *(0.043)*	-0.10 * *(0.019)*	-0.11 * *(0.040)*
3. Current Profitability at *t*	-0.11 ** *(0.046)*	-.0.17 * *(0.019)*	-0.09 ** *(0.041)*
4. Profitability at *t+1*	-0.11 * *(0.041)*	-0.04 ** *(0.018)*	-0.06 *(0.038)*
5. Tax Status	-0.006 *(0.004)*	-0.006 * *(0.002)*	-0.007 *(0.004)*
6. Operating Risk	-0.26 * *(0.054)*	----------	0.20 * *(0.075)*
7. Constant	0.40 * *(0.018)*	----------	0.36 * *(0.023)*
Adjusted R-squared	0.025	0.68	0.23
Durbin-Watson stat	1.27	1.37	1.60
Observations	1818	1818	1818

Standard error in parentheses
* *Significant at 1% level*
** *Significant at 5% level*

Hausman specification test on the random effects estimation reveals that with 5 degrees of freedom, the test statistic produces a value of 32.83. With the associated p-value of 0.000, this test rejects H_o of consistent estimators. The result indicates a strong evidence of inconsistency in the estimators, thus implying that the fixed effects and the random effects estimators do differ substantially. Therefore, the test on the market-debt ratio determinants will follow closely the

results of the fixed effects estimator. Here, we present the results from pooled OLS and random effects estimators for comparison purposes only.

Referring to **Exhibit 6.3**, the pooled OLS in the first column indicates significant negative relation between market debt ratio and all predictors except for tax status. The random effects estimator in the third column indicates similar negative effect of profitability predictors (past and current profitability) to market-debt ratio. Operating risk however, indicates a positively significant relation to market leverage. Albeit failing to reject H_o of no-significant effect, future profitability and tax status indicate a negative relation to market-debt ratio, while asset tangibility predicts otherwise. When tested using fixed effects estimators (in the second column), the results suggest a negatively significant relation between market-debt ratio and the factors of profitability and tax status. All these factors are significant at 1-percent level except for future profitability, which is significant at 5-percent level. Asset tangibility however, has not been able demonstrate its significance to leverage. As stated earlier, the fixed effects estimation omits reporting the effect of risk and constant value for their time-invariant element.

To obtain robust estimates, we revise the standard errors using White heteroskedasticity-consistent standard errors. **Exhibit 6.4** that follows presents the results from the fixed-effects estimation after correcting the standard errors. In the exhibit, all predictors indicate significant relation to market-debt ratio at the 1-percent level. All profitability variables and tax status show negatively significant relations to market-debt ratio, whereas asset tangibility indicates a positively significant relation to market leverage. Nonetheless, we take all results presented

with caution in view of the existence of both autocorrelation and heteroskedasticity in the presented estimations.

EXHIBIT 6.4 RESULTS FROM FIXED-EFFECTS (FE) SPECIFICATION AFTER CORRECTING THE STANDARD ERRORS USING WHITE HETEROSKEDASTICITY-CONSISTENT STANDARD ERRORS (Market-debt ratio determinants)

Variable	Fixed Effects Coefficient
1. Asset Tangibility	0.02 * *(0.004)*
2. Profitability at *t-1*	-0.10 * *(0.018)*
3. Current Profitability at *t*	-.0.17 * *(0.019)*
4. Profitability at *t+1*	-0.04 * *(0.012)*
5. Tax Status	-0.006 * *(0.000)*
6. Operating Risk	----------
7. Constant	----------

Standard error in parentheses
** Significant at 1% level*

6.4 SUMMARY AND CONCLUSIONS

The chapter re-examines the relevance of different firm-specific determinants in explaining Malaysian firms' leverage decisions. Based on the cross sectional and panel data regressions during the period of 1991 to 2000, we conclude that the overall findings on firm-specific predictors and industry class are consistent with the empirical capital structure literature.

Specifically, the main empirical findings in this chapter are as follows: (1) Our result suggest a strong association between industry and firms' financing patterns.

We deduce this claim after finding a significant chi-square value on a contingency table between industry class and firms' financing patterns. (2) However, the results from this contingency table framework have not been able to produce any significant association between firms' financing patterns and the factors of size, earnings volatility and profitability. (3) For the theory-related factors of profitability, asset tangibility, and tax status, these variables have been able to demonstrate their significant predictions to firms' leverage. (4) Finally, our tests produce comparable results when using book-debt ratio and market-debt ratio as the dependent variable to measure firms' leverage. Despite earlier claims that the market measure surpasses the book measure, our results are inconsistent with this claim.

For the industry effect, we conclude that a firm's industry class plays a significant role in determining the firm's capital structure decisions, even if there are possibilities that some results may not show significant relation between industry and leverage. One example of this claim is the inconsistent industry effect between our results in the regression analysis (see **Exhibit 5.2** & **5.3** in Chapter 5) and the contingency table framework (see **Table 6.2**). This conflicting results between industry and firms' financing corroborate with the claim that empirical findings maybe susceptible to how the concepts of industry groupings and leverage are characterised (see Bowen et. al., 1982). Furthermore, although our findings do not produce different empirical results when using book and market leverage to measure firms' capital structure, our preliminary assessment of the data, in Chapter 5 has indicated the opposite. In comparing the behaviour of the two ratios, we have described that the former measure is less sensitive to the

movement in the market, if compared to the latter measure. The arguments that the use of market over book leverage to measure firm's capital structure can lead to differing empirical results (see Myers, 1977; Bennett & Donnelly, 1993; Strong, 1998) is plausible. The leverage measure may need to be rigid to show the disparity of the empirical outcome as claimed.

Finally, the general conclusion reiterates the findings from earlier empirical capital structure work. Regardless of different economic, political and social background, we find that the determinants of Malaysian firms' capital structure are similar with those cited in the literature. These overall findings support the earlier claims that most leverage-related factors identified in the developed economy also apply to other countries as well, despite the differing economic orientations (Booth et. al., 2001; Wald, 1999; Rajan & Zingales, 1995).

CHAPTER 7

ANALYSIS (2)
TESTING THE STATIC TRADE-OFF AND THE PECKING ORDER MODELS

7.1 INTRODUCTION

This chapter examines the relevance of the static trade-off and the pecking order models in providing plausible explanation of firms' financing behaviour. Earlier empirical literature on the coexistence of both theories in firms' capital structure decisions (see Claggett Jr., 1991; Vogt, 1994; Ghosh & Cai, 1999; Shyam-Sunder & Myers, 1999) further encourages this investigation. Although implicitly firms' financing seems to suggest convergence to some targets, we could not rule out the evidence of financing hierarchy. In fact, the pecking order evidence seems to surpass the static trade-off view in some of the studies (Shyam-Sunder & Myers, 1999; Ghosh & Cai, 1999, Claggett Jr., 1991). We however, reserve discussing this issue until the next chapter. This chapter focuses on seeking whether the description of both capital structure theories exist in Malaysian corporate financing decisions.

As highlighted in the Malaysian literature survey (refer to Section 3.7 of Chapter 3), a study that investigates the relevance of the capital structure theory in Malaysian firms' financing decisions is the study of Kester and Mansor (1994). Kester and Mansor survey chief executive officers' views on their preferred means of financing, and draw conclusions from the responses received. However, unlike Kester and Mansor, investigating the financing preferences in our study

would not be survey-based, but through assessment of firms' reported financial data. In implementing the task, we adapt the models of Shyam-Sunder and Myers (1999) since we feel that the specifications introduced in their models manage to reasonably justify the descriptions of the two competing capital structure hypotheses.

The discussion of this chapter begins with a review of the Shyam-Sunder and Myers' (1999) model specifications, and any revisions or adjustments made on the models to fit our investigation. The analysis gets underway by testing the target-adjustment and the pecking order specifications independently. To capture the appropriate prediction of profitability on the pecking order model, the developed model includes lagged-profitability variable (i.e. past profitability) in the equation. In response to Chirinko and Singha's (2000) comment on the strict assumption of the pecking order model of Shyam-Sunder and Myers (1999), we have revised the underlying assumption behind our developed pecking order model. In the final test, we combine both target-adjustment and pecking order mechanisms in the same equation as a way to check the consistency of the model specifications. In essence, all tests performed in this chapter seek to investigate whether the static trade-off (via target-adjustment model) or the pecking order, or both theories, are able to generally explain the corporate financing behaviour of Malaysian firms.

7.2 MODEL DEVELOPMENT

This section describes the development of the models for the analysis. As stated earlier, we refer to the model specifications of Shyam-Sunder and Myers (1999) in developing our models. To adapt to the Malaysian market environment, we

amend the original models wherever necessary. As mentioned, the pecking order specification in this analysis takes into account the criticism of Chirinko and Singha (2000). We change the underlying strong form assumption of the original pecking order model of Shyam-Sunder & Myers (1999) to a semi-strong assumption, in which firms will eventually issue equity when they have exhausted their debt capacity.

7.2.1 THE TARGET-ADJUSTMENT MODEL

The basic idea behind the static trade-off or target adjustment model is that firms following this financing rule attempt to preserve their capital structures if they are optimal or to correct them if there is a deviation. The target-adjustment model from Shyam-Sunder and Myers (1999) is as follows:

$$\Delta LD_{it} = \alpha + \beta_{TA}(LD^*_{it} - LD_{it-1}) + \varepsilon_{it} \qquad (7.1)$$

where β_{TA} denotes the target-adjustment coefficient, LD^*_{it} denotes the target or optimal long-term debt level for firm, and ε_{it} is an error term. In the economic interpretation, firms adjust their debt level in an inverse proportion to adjustment cost, and β_{TA} constitutes firms' debt adjustment. If there is no adjustment cost, then β_{TA} equals one, implying that firms would immediately adjust their current debt ratio to the target level. However, firms would not adjust their debt level ($\beta_{TA} = 0$) if the adjustment cost were high. The intermediate situation, $0 < \beta_{TA} < 1$ would indicate some partial adjustment. The related hypothesis for the target-adjustment model in Equation **(7.1)** is:

H_1: $\beta_{TA} > 0$

There is some adjustment of debt ratio from the current level to the target level if the static trade-off theory were able to explain the financing behaviour.

However, the key issue is to fairly estimate the accurate target debt level (***LD****) since the true level is unobservable. There are a few specifications suggested by the literature in determining this target level. One suggestion is to take the rolling or moving average target using historical information of each firm such as in Jalilvand and Harris (1984) who report the use of three-year moving average as the target level. Whereas, others have submitted to using the industry mean as a benchmark for target ratio (see Claggett Jr., 1991; Ariff & Lau, 1996). Meanwhile, Shyam–Sunder and Myers use several ways of measuring target ratio. One way is to take the historical mean of debt ratio for each firm, multiplied by the total capital to obtain the estimated level. Another possible way is to take a firm's optimal debt ratio as a function of firm characteristics. Both measures allow the targets to vary year by year. For this analysis, we follow the same path as Shyam-Sunder and Myers in determining the target.

I. **<u>Target based on sample mean debt ratios for each firm</u>**

$$LD^*_{it} = \frac{\sum_{t=1}^{n} d_t}{n} \times TA_{it} \qquad (7.2)$$

where d_t is the debt ratio and TA_{it} is the total asset of firm i at time t. We reach the estimated target debt level of firm i for the current year by taking the historical mean of the debt ratio in the sample period multiplied by the total assets of the

firm in the current year. Each year's target debt level fluctuates in response to the year's reported total assets

II. Target based on firm characteristics

Risk, asset type, tax status, and profitability predict a firm's optimal debt ratio in the static trade-off model. The following expression defines the prediction.

$$d^*_{it} = \alpha + \beta_1 ASSET_t + \beta_2 PRFT_t + \beta_3 TAX_t + \beta_4 RISK_t \quad (7.3)$$

Shyam-Sunder and Myers (1999) use the base year's debt ratio as the seed value to generate coefficients for the target. To replicate their study, this analysis uses the coefficients for predicting book debt ratio for 1990 (i.e. our base year) to generate the targeted debt ratio series for subsequent years. In addition, to incorporate the idea of prescribing industry average as a benchmark for target level, we segregate the coefficient for book-debt ratio predictors according to industry membership. As a result, each industry will have its own unique coefficients for predicting optimal debt ratio. The following equation calculates the changes in each firm's annual targets throughout the time series.

$$\Delta d_{it} = \beta_1 \Delta(ASSET_t) + \beta_2 \Delta(PRFT_t) + \beta_3 \Delta(TAX_t) + \beta_4 \Delta(RISK_t) \quad (7.4)$$

Having reached the year's target debt ratio (d^*_{it}), the same method applies in determining LD^*_{it} that is by multiplying d^*_{it} to the year's total asset (TA_{it}).

Shyam-Sunder and Myers (1999), while using this specification, have stated that the mechanism they developed to generate coefficients for debt ratio predictors does not correspond to any empirical study thus far. On our part, we adopt their specifications along with the attempt to adjust for industry benchmark as part of the efforts to explore plausible ways of establishing the target level, which are nonetheless subjective.

7.2.2 THE PECKING ORDER MODEL

Shyam-Sunder and Myers (1999) define the fund flow deficit (***DEF***) as the extent of inadequate internal cash inflows after taking into account real investment and dividend commitment. Their version of the pecking order hypothesis is

$$\Delta LD_{it} = a + b_{PO}\,(DEF_{it}) + e_{it} \qquad \textbf{(7.5)}$$

If DEF_{it} is positive, then firm issues additional debt (ΔLD). However, firm repays debt if DEF_{it} is negative.

This analysis redefines deficit (DEF_t) as the net of fund flow deficit after deducting the interest (INT_t) and dividend (DIV_t) payments. The equation below reiterates Equation **(4.3)** in Chapter 4, but with deficit (***DEF***) replacing the externally generated fund (***EGF***)[19].

$$DEF_t = INT_t + DIV_t - FCF_t \qquad \textbf{(7.6)}$$

---

[19] ***DEF*** and ***EGF*** carry the same weight as we generate ***EGF*** from the amount of ***DEF*** calculated. A positive ***DEF*** means a requirement for some externally generated fund (EGF), which in this case will be accommodated through issuing debt.

As noted earlier, Chirinko and Singha (2000) have criticised Shyam-Sunder and Myers' test on the pecking order hypothesis. They comment that: (1) the model assumes a specific financing hierarchy consistent with pecking order, but equity issues constitute a more substantial percentage of external financing. (2) There are situations of convoluted finance hierarchy (e.g. if equity issues occur in the middle of financing). (3) There are situations where firms always issue debt and equity in a fixed proportion. As this strong-form pecking order view is too restricted in terms of practicality, our analysis amends Shyam-Sunder and Myers' pecking order version. Our revised model will take on the assumption of the semi-strong form of pecking order as defined by Chirinko and Singha, which allows for the possible issuance of equity in firms' financing hierarchy.

In addition, the two competing schools of thought on capital structure under asymmetric information pose some conflicting theoretical predictions on leverage and profitability. Shenoy and Koch (1996) have raised the issue of contradicting theoretical implications between firms' leverage and cash flow. They indicate that the signalling theory of Ross (1977) implies a positive relation between leverage and cash flow, while the pecking order behaviour suggests the opposite. Shenoy and Koch reconcile these contrasting predictions by stating that the pecking order view describes the simultaneous relationship between leverage and cash flow, while the signalling implication captures the dynamic aspect between current leverage and future cash flow. In line with this view, this analysis attempts to resolve the related issue regarding leverage and profitability.

This analysis rests on the notion that firms' profitability ratio is one measure of the firms' cash flow capacity. The pecking order view predicts negative relationship between leverage and past profitability (see Wiwattanakantang, 1999; Chiarella et. al., 1992; Titman & Wessels, 1988). The theory implies that a firm with high past profits reported would exhaust its internally generated fund before resorting to external funding through debt. Alternatively, Jensen's (1986) free cash flow theory has different prediction. Jensen argues that if having a high amount of free cash flow means giving managers the tendency to misuse the wealth, then firms should be encouraged to use debt. Therefore, a strong cash flow firm should utilise relatively higher debt, hence implying a positive relationship between leverage and past profitability. These two opposing predictions raise question on which motive dominates firms' debt financing decisions. To capture the appropriate prediction for profitability, the developed pecking order model incorporates a lagged value of profitability (i.e. an average value) in some early years ($PRFT_{it-n}$) as the proxy for past profitability. The calculation of this lagged value is as follows:

$$PRFT_{it-n} = \frac{\sum_{n=1}^{t-n} PBIT_i / TA_i}{t-1} \qquad (7.7)$$

The following expression reflects the inclusion of the lagged-profitability variable in the pecking order model.

$$\Delta LD_{it} = \alpha_1 + \beta_{PO}\,(DEF_{it}) + \beta_{PRFT}\; PRFT_{it-n} + \varepsilon_{1it} \qquad (7.8)$$

Equation (**7.8**) explains that if deficits call for debt issuance, then β_{PO} is positive, and additional debt issues should relate negatively to past profitability (β_{PRFT} <1). However, the equation above appears to imply strict pecking order behaviour. A test on equity issues as in Equation (**7.9**) is essential to check on the assumption behind the pecking order model.

$$\Delta CP_{it} = \alpha_2 + \beta_{SS}\,(DEF_{it}) + \varepsilon_{2it} \qquad (7.9)$$

The strong form of pecking order implies β_{PO} equals to one (β_{PO} =1) since the debt issues (repayments) would cover the total amount of financing deficit (surplus). However, the semi-strong assumption implies β_{PO} to be greater than zero but less than one (0 < β_{PO} <1) as debt issues only cover part of the deficit. This assumption stipulates firms' incentive to move down the pecking order and issue additional equity to cover the remaining deficits. Ideally, the semi-strong coefficient (β_{SS}) should hold a positive sign with β_{SS} equals to 1-β_{PO} (β_{SS} = 1-β_{PO}). The relationship works in reverse as well, as firms would pay off debt when there is a surplus. If this surplus continues after debt repayment, then firms might also be able to repurchase shares. However, if β_{SS} equals zero, then the assumption reverts to the strict pecking order view, in which equity is never utilised. To reiterate, the testable hypotheses are as follows:

H_2: $\beta_{PO} > 0$

Firms that utilise debt in response to current deficit level explain the pecking order behaviour, i.e. there is a positive relation between the change in debt level and the level of deficit.

H_3: $\beta_{PRFT} < 0$

Firms that generate substantial past profits tend to exhaust internal funds for investment and use less debt, i.e. there is a negative relation between past profitability and debt.

H_4: $\beta_{SS} > 0$

Firms seek to raise external equity if the additional debt could not fully support the current deficit level, i.e. this type of financing portrays the semi-strong assumption of pecking order.

7.3 DISCUSSION OF THE ANALYSIS AND RESULTS

We present the results from the regression analysis on both models using several estimations. These estimations are (1) the pooled ordinary least squares (Pooled OLS) test, (2) the fixed-effects (FE) estimation, and (3) the random-effects (RE) estimation. This section describes the process and the outcomes from all three estimations.

(1) The target-adjustment model: Estimated target debt level

Determining the target level based on historical mean of debt ratio is straightforward. The discussion in this section only describes the steps in estimating the target debt level using firm characteristics and industry benchmark. The first step is to generate the based-year coefficients (i.e. the coefficient for 1990 debt ratio predictors) by sorting the firms according to industry sectors. For each industry, we regress the 1990 book-debt ratio against asset tangibility (***ASSET***), profitability (***PRFT***), tax status (***TAX***), and operating risk (***RISK***) predictors. The following **Table 7.1** lists the coefficient value of each 1990 book-debt ratio predictor by industry.

TABLE 7.1 FIRM'S COEFFICIENTS SEED VALUE BASED ON 1990 BOOK DEBT RATIO AND INDUSTRY BENCHMARK

Coefficients	INDUSTRY				
	Tech/Consumer Products	Industrial Products	Construction/ Properties	Trading/ Services/ Hotels	Others
β_1	0.170	0.206	0.10	0.042	0.022
β_2	0.004	-0.196	0.206	-0.003	0.143
β_3	-0.002	-0.003	0.018	-0.226	-0.031
β_4	0.003	-0.058	-0.106	-0.229	0.016

Based on Equation **(7.4)** and the estimated coefficients in **Table 7.1**, we generate the subsequent values of debt ratio series as follows:

Tech/Consumer : $\Delta d_{it} = 0.17\Delta(ASSET_t) + 0.004\Delta(PRFT_t) - 0.002\Delta(TAX_t) + 0.003\ \Delta(RISK_t)$

Industrial : $\Delta d_{it} = 0.206\Delta(ASSET_t) - 0.196\Delta(PRFT_t) - 0.003\Delta(TAX_t) - 0.058\ \Delta(RISK_t)$

Const/Properties : $\Delta d_{it} = 0.10\Delta(ASSET_t) + 0.206\Delta(PRFT_t) + 0.018\Delta(TAX_t) - 0.106\ \Delta(RISK_t)$

Trading/Services /Hotel : $\Delta d_{it} = 0.042\Delta(ASSET_t) - 0.003\Delta(PRFT_t) - 0.226\Delta(TAX_t) - 0.229\ \Delta(RISK_t)$

Others : $\Delta d_{it} = 0.022\Delta(ASSET_t) + 0.143\Delta(PRFT_t) - 0.031\Delta(TAX_t) + 0.016\Delta(RISK_t)$

We then calculate each year's target debt ratio (d^*_{it}) as $d^*_{it-1} + \Delta d_{it}$. The target debt ratio is identical among firms within the same industry but different between firms across industries.

Exhibit 7.1 summarises the results from the tests on the target-adjustment model. Results from the pooled OLS are in column 1, while results from the FE and RE are in column 2 and 3 respectively. Panel A produces results when historical debt

ratio mean over 1990-2000 is used to calculate the target debt level, while Panel B presents the target level as the function of firm characteristics and industry benchmark.

EXHIBIT 7.1 RESULTS OF THE TARGET-ADJUSTMENT MODEL USING POOLED OLS, FE, AND RE ESTIMATIONS

$\Delta LD_{it} = \alpha + \beta_{TA}(LD^*_{it} - LD_{it-1}) + \varepsilon_{it}$: The target-adjustment predicts gradual adjustment to target level (LD^*_{it}), where each firm's target is measured by its historical debt ratio mean over 1990-2000 (PANEL A) and firm characteristics and industry benchmark (PANEL B). The sign * denotes that the coefficients are significant at 1% level and standard errors are reported in parentheses.

	(1) POOLED LEAST SQUARES	(2) FIXED EFFECTS MODEL	(3) RANDOM EFFECTS MODEL
PANEL A:			
Constant (α)	45.04 * (11.09)	--------	44.99 * (10.03)
Target-adjustment Coefficient (β_{TA})	0.67 * (0.030)	0.59 * (0.017)	0.67 * (0.030)
Adjusted R^2	0.19	0.38	0.17
PANEL B:			
Constant (α)	50.39 * (12.353)	-------	50.46 * (12.671)
Target-adjustment Coefficient (β_{TA})	0.03 * (0.014)	0.05 * (0.005)	0.04 * (0.014)
Adjusted R^2	0.002	0.04	0.010

The findings indicate that all constants are significant at 1-percent level. In the pooled OLS (column 1), we find significant adjustment coefficients of $\beta_{TA} = 0.67$ (Panel A) and $\beta_{TA} = 0.03$ (Panel B). The fixed-effects results (column 2) show significant positive adjustment coefficients of $\beta_{TA} = 0.59$ (Panel A) and $\beta_{TA} = 0.05$ (Panel B). Meanwhile, the random-effects test (column 3) produces positive adjustment coefficients of $\beta_{TA} = 0.67$ (Panel A) and $\beta_{TA} = 0.04$ (Panel B). When we use historical mean of debt ratio to represent the target in Panel A, the adjusted-R^2 values are 0.19 (column 1), 0.38 (column 2) and 0.17 (column 3). However, when the target is based on firm characteristics and industry benchmark

(Panel B), the adjustment coefficient values (β_{TA}) drop drastically, yet able to maintain their positive significance at the 1-percent level. The adjusted-R^2 for all estimations yields similar decline. The findings imply that the measurement of target based on firm characteristics and industry benchmark have only slight ability to predict the change in firms' debt level compared to using historical mean of debt ratio as a measure of target.

To check, we recast the target level based on firm characteristics (without the inclusion of industry benchmark) as in Shyam-Sunder and Myers. When debt ratio is regressed against the four predictors using the 1990 data, we generate the coefficients as follows:

$$\Delta d_{it} = 0.06\Delta(ASSET_t) - 0.024\Delta(PRFT_t) - 0.005\Delta(TAX_t) - 0.03\ \Delta(RISK_t) \qquad (7.10)$$

The following **Exhibit 7.2** summarises the results when the target level adopts this function as proxy.

EXHIBIT 7.2 RESULTS OF TARGET-ADJUSTMENT MODEL USING FIRM CHARACTERISTICS AS A FUNCTION FOR THE TARGET LEVEL

$\Delta LD_{it} = \alpha + \beta_{TA}(LD^*_{it} - LD_{it-1}) + \varepsilon_{it}$: The sign * denotes that the coefficients are significant at 1% level and standard errors are reported in parentheses.

	(1) POOLED LEAST SQUARES	(2) FIXED EFFECTS MODEL	(3) RANDOM EFFECTS MODEL
Constant (α)	50.84 (12.527)	--------	49.83 (12.104)
Target-adjustment Coefficient (β_{TA})	0.018 (0.020)	0.20 * (0.013)	0.008 (0.19)
Adjusted R^2	0.000	0.08	0.000

The results above show that two out of the three estimations (see column 1 and 3) fail to indicate positive significant adjustment coefficients (β_{TA}), and produce zero adjusted-R^2. Only fixed-effects estimation (column 2) indicates a positive significant adjustment coefficient of $\beta_{TA} = 0.20$, yet the adjusted-R^2 of 0.08 is still too small to justify the explanatory power of the specifications. Despite Shyam-Sunder and Myers' (1999) submission to using firm characteristic as one measure of target, our Malaysian data is unable to support the idea brought forward. This finding implies that firm characteristics may not be a good measure of target debt ratio for firms in Malaysia. Nevertheless, we report the test results from all target functions to explore the dependability of the mentioned measures.

(2) The pecking order model: Unanticipated and anticipated financing deficit

In refining the pecking order model, we develop several definitions of financing deficit as in Shyam-Sunder and Myers (1999). In the actual context, Equation (**7.6**) corresponds to Shyam-Sunder and Myers' definition of contemporaneous deficit, as deficit at the end of year *t* is estimated when there are some unexpected elements in the cash inflows and outflows that add up to the deficit amount. These cash flows could be incurring in the middle or end of the year. Deficit of this type is 'unanticipated' deficit as the financing arrangement '*has more to do with short-term adjustment than planned financing*' (Shyam-Sunder & Myers, 1999).

However, as highlighted by Shyam-Sunder and Myers, we can also divide the deficit element into two components consisting of (1) expected deficit at *t-1*, and (2) unexpected funds at *t*. By doing so, we assume a 'more' anticipated deficit. As a rule, firms normally plan the interest and dividend amount well in advance, prior

to executing any cash disbursements on them. In defining the first component, the expected deficit at *t-1* represents these lagged values of interest and dividend. We confine the second component to the amount of free cash flow that requires some short-term financial adjustments. The expression of this anticipated deficit is as follows:

$$\textit{Anticipated } DEF_t = INT_{t-1} + DIV_{t-1} - FCF_t \qquad (7.11)$$

Exhibit 7.3 below summarises the results from our revised pecking order model. Panel A presents the results based on unanticipated deficit and Panel B on the anticipated deficit.

EXHIBIT 7.3 RESULTS OF THE PECKING ORDER MODEL USING POOLED OLS, FE AND RE ESTIMATIONS

$\Delta LD_{it} = \alpha + \beta_{PO}\,(DEF_{it}) + \beta_{PRFT}\,PRFT_{j,t-i} + \varepsilon_{it}$: The pecking order predicts firm issues debt to accommodate the deficit level (DEF_{it}) , where each firm's deficit is based on unanticipated deficit (PANEL A) and anticipated deficit (PANEL B). The sign * denotes that the coefficients are significant at 1% level and standard errors are reported parentheses.

	POOLED LEAST SQUARES		**FIXED EFFECTS MODEL**		**RANDOM EFFECTS MODEL**	
PANEL A:	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Constant (α)	1.59 (6.342)	4.02 (5.90)	----	-----	-6.85 * (1.630)	4.29 (6.156)
Pecking-order Coefficient (β_{PO})	0.73 * (0.009)	0.60 * (0.011)	0.84 * (0.006)	0.68 * (0.007)	0.86 * (0.007)	0.60 * (0.010)
Lagged profitability Coefficient (β_{PRFT})		-14.67 (46.58)		-13.64 * (4.192)		-16.85 (47.981)
Adjusted R^2	0.74	0.63	0.90	0.85	0.67	0.64
PANEL B:						
Constant (α)	4.26 (8.062)	14.0 (6.799)	----	----	-4.21 (1.847)	-5.62 (0.881)
Pecking-order Coefficient (β_{PO})	0.70 * (0.012)	0.39 * (0.013)	0.74 * (0.009)	0.44 * (0.011)	0.88 * (0.007)	0.88 * (0.007)
Lagged profitability Coefficient (β_{PRFT})		-21.42 (57.593)		-34.92 * (7.607)		18.79 (21.377)
Adjusted R^2	0.69	0.41	0.82	0.61	0.65	0.65

In the above exhibit, the odd-numbered columns highlight the results of the strict pecking order model, while the even-numbered columns include lagged-profitability term in the equation. As shown in the results, most of the constant terms fail to produce their significant results, thus inferring zero coefficients. Perusing into the odd-numbered columns, the results reveal that the positively significant pecking order coefficient remains relatively high for both deficit measures. The pooled OLS produces pecking order coefficients of β_{PO} = 0.73 (Panel A) and β_{PO} = 0.70 (Panel B). The fixed-effects estimation indicates pecking order coefficients of β_{PO} = 0.84 (Panel A) and β_{PO} = 0.74 (Panel B). Meanwhile, the corresponding pecking order coefficients for the random-effects estimation are β_{PO} = 0.86 (Panel A) and β_{PO} = 0.88 (Panel B). The adjusted-R^2 value for all estimations ranges from 0.65 to 0.90. This range between 0.65 and 0.90 implies strong explanatory power of this model. It appears that the high coefficient value of the pecking order specifications is in the right scale to explain the variations in firms' debt level. This positive pecking order coefficient of less than one ($0<\beta_{PO}<1.0$) however, weakens the assumption of the strong-form pecking order model.

Further, the results show that the positive value of pecking order coefficient (β_{PO}) decreases with an added lagged-profitability variable in the equation (see the even-numbered column), but are still able to sustain its significance to qualify the prediction. The lagged-profitability coefficient (β_{PRFT}) shows a negatively significant value in the fixed-effects test with β_{PRFT} = -13.64 in Panel A, and β_{PRFT} = -34.92 in Panel B. Although not significant, the results from the pooled OLS

(both Panel A and B) and the random-effects (Panel A) also indicate a negative relation between lagged-profitability and changes in the debt level. This negative relation concurs with the pecking order prediction. It indicates that firms with substantially high past profits tend exhaust internal funds, thus limiting the use of debt financing.

To test the semi-strong assumption of the pecking order model, embracing the comment made by Chirinko and Singha's (2000), we add another expression to the pecking order model by running a regression between equity issues and firms' financing deficit as in Equation **(7.9). Exhibit 7.4** below summarises the results from this test.

EXHIBIT 7.4 RESULTS OF THE SEMI-STRONG ASSUMPTION OF THE PECKING ORDER MODEL (AS SUGGESTED BY CHIRINKO & SINGHA (2000)) USING POOLED OLS, FE, AND RE ESTIMATIONS

$\Delta CP_{it} = \alpha + \beta_{SS}\,(DEF_{it}) + \varepsilon_{it}$: The semi-strong assumption of pecking order predicts firm issues equity in the event when the debt issues cannot fully accommodate the deficit level. PANEL A measures deficit in terms of the unanticipated deficit, while PANEL B measures deficit in term of the anticipated deficit. The sign * denotes that the coefficients are significant at 1% level and standard errors are reported in parentheses.

	(1) POOLED LEAST SQUARES	(2) FIXED EFFECTS MODEL	(3) RANDOM EFFECTS MODEL
PANEL A:			
Constant (α)	-0.45 (5.712)	--------	6.94 * (1.629)
Semi-strong assumption Coefficient (β_{SS})	0.27 * (0.009)	0.17 * (0.006)	0.15 * (0.007)
Adjusted R^2	0.28	0.24	0.11
PANEL B:			
Constant (α)	-2.89 (7.924)	-------	7.063 * (1.847)
Semi-strong assumption Coefficient (β_{SS})	0.31 * (0.012)	0.19 * (0.008)	0.15 * (0.007)
Adjusted R^2	0.31	0.27	0.10

Based on the results, we observe that all the semi-strong coefficients (β_{SS}) produce positively significant signs to changes in equity (ΔCP_{it}), thus, consistent with the results of the predicted assumption. The test indicates that in addition to issuing debt, firms may also find issuing external equity necessary to cover part of the deficit. Chirinko and Singha's (2000) suggested semi-strong form of pecking order is shown to be workable in describing Malaysian firms' financing behaviour.

In view of these findings, one might suggest that the positive coefficient for both debt and equity issues are possibly the results of either (1) firms seeking equity issues in events when debt cannot fully cover the total financing deficit, inferring the semi-strong pecking order behaviour (as in our findings in **Exhibit 7.4**), or (2) firms issuing debt and equity proportionately in complying with the target-adjustment financing view (as assumed by our target-adjustment results in **Exhibit 7.1**). The issue lies on how to discriminate between the two underlying motives when both debt and equity issues surface in firms' financing stream. In our opinion, if the motive for issuing both debt and equity is to follow the target adjustment view, then the values for the semi-strong coefficient (β_{SS}) and pecking order coefficient (β_{PO}) should be comparable. However, in the semi-strong form of pecking order, the value of β_{PO} should always be greater than β_{SS}, as firms always seek for additional debt issues first. In the pecking order model, utilising equity financing is secondary, and only to be raised when debt could not fully cover the deficits.

Our findings show that the positive coefficient of β_{PO} is always greater than β_{SS} for all results, indicating that debt financing dominates equity financing. For example, our pecking order results produce a β_{PO} value of 0.73 (see first column in Panel A of **Exhibit 7.3**) and the corresponding β_{SS} of 0.27 (see first column in Panel A **Exhibit 7.4**). Submitting to this idea, the inference is inclined towards the semi-strong pecking order behaviour. Nonetheless, we still could not rule out the target adjustment motive completely.

(3) The target-adjustment and the pecking order in the same equation

The final test combines both the target-adjustment and the pecking order specifications in the same equation. **Exhibit 7.5** below presents summary of the results.

EXHIBIT 7.5 REGRESSION RESULTS WHEN BOTH THE TARGET-ADJUSTMENT AND THE PECKING ORDER MODELS ARE INCLUDED IN THE SAME EQUATION

$\Delta LD_{it} = \alpha + \beta_{TA}(LD^*_{it} - LD_{it-1}) + \beta_{PO}(DEF_{it}) + \varepsilon_{it}$: Regression based on Pooled Least Squares. The sign * denotes that the coefficients are significant at 1% level and standard errors are reported in parentheses.

(1) LD^*_{it} is based on historical sample mean and DEF_{it} is based on the unanticipated deficit

(2) LD^*_{it} is based on historical sample mean and DEF_{it} is based on the anticipated deficit

(3) LD^*_{it} is based on firm characteristics and industry benchmark and DEF_{it} is based on the unanticipated deficit

(4) LD^*_{it} is based on firm characteristics and industry benchmark and DEF_{it} is based on the anticipated deficit

	(1)	(2)	(3)	(4)
Constant (α)	3.19 (6.167)	4.08 (7.802)	2.09 (6.348)	4.74 (8.063)
Target-adjustment Coefficient (β_{TA})	0.20 * (0.018)	0.24 * (0.023)	0.011 (0.007)	0.014 (0.008)
Pecking-order Coefficient (β_{PO})	0.69 * (0.010)	0.65 * (0.012)	0.73 * (0.010)	0.70 * (0.012)
Adjusted R^2	0.75	0.71	0.74	0.69

When the target level is based on historical mean of debt ratio (column 1 and 2), the adjustment coefficients (β_{TA} = 0.20 and 0.24 respectively) drop almost two-thirds from the value when tested independently in the equation (refer to column 1 in Panel A of **Exhibit 7.1**). This outcome is similar to the finding of Shyam-Sunder and Myers (1999). The results however, do not invalidate the target adjustment hypothesis, as its positive coefficients are still significant at 1-percent level. As anticipated, the target based on firm characteristics and industry benchmark produces positively low and insignificant target adjustment coefficients (see column 3 and 4). Meanwhile, the range of positive pecking order coefficients remain significantly high for all provisions (β_{PO} = 0.69 (column 1), β_{PO} = 0.65 (column 2), β_{PO} = 0.73 (column 3), β_{PO} = 0.70 (column 4)). The adjusted-R^2 remains high as well. This implies that the joint target-adjustment and pecking order specifications introduced in the model do have the ability to predict changes in the debt level.

In obtaining robust estimates, we revise the standard errors for all results from the pooled OLS estimation using White's heteroskedasticity-consistent standard errors as in **Exhibit 7.6** below. In the exhibit, column 1 presents the results from the target-adjustment test, column 2 and 3 summarise the results for the pecking order test (column 3 includes the lagged-profitability term in the specification), and column 4 shows the results of both target-adjustment and pecking order specifications when integrated in the same equation.

EXHIBIT 7.6 REGRESSION RESULTS AFTER CORRECTING THE STANDARD ERRORS USING WHITE HETEROSKEDASTICITY-CONSISTENT STANDARD ERRORS

Regression based on Pooled Least Squares. The sign * denotes that the coefficients are significant at 1% level and ** at the 5% level. The corrected standard errors are reported in parentheses.

(1) The target adjustment model (target, LD^* , is based on the historical mean of debt ratios)

(2) The pecking order model (*DEF* is the unanticipated financing deficit)

(3) The pecking order model with inclusion of lagged profitability (*DEF* is the unanticipated financing deficit)

(4) When both models are included in the same equation

	(1)	**(2)**	**(3)**	**(4)**
Constant (α)	45.04 * (9.904)	1.59 (11.548)	4.02 (10.491)	3.19 (11.639)
Target-adjustment Coefficient (β_{TA})	0.67 ** (0.310)			0.20 ** (0.105)
Pecking-order Coefficient (β_{PO})		0.73 * (0.183)	0.60* (0.207)	0.69 ** (0.192)
Lagged profitability Coefficient (β_{PRFT})			-14.67 (19.155)	
Adjusted R^2	0.19	0.74	0.63	0.75

We observe that after correcting the standard errors, both positive target-adjustment and pecking order coefficients are statistically significant in predicting the variation in the debt level. Lagged-profitability variable indicates a negative relation, but the coefficient fails to show its significance to the produced relation. The low adjusted-R^2 of the target-adjustment model compared to the pecking order model is due to the unresolved issue of what constitutes a good representation for target debt level. However, our findings do not nullify the target-adjustment hypothesis. Meanwhile, the positive pecking order coefficient remains significantly high whether we test the specifications independently or jointly, with the target-adjustment specifications in the same equation.

7.4 SUMMARY AND CONCLUSIONS

The chapter concentrates on seeking the relevance of the capital structure theories of static trade-off and pecking order in describing the variations in the debt level of Malaysian firms. The tests on the static trade-off theory deal with the target-adjustment model that predicts firms will gradually adjust their debt to achieve the target. The alternative pecking order model however, implies that firms follow some sort of funding hierarchy, and debt is the first source of external funding. Before performing the analysis, we resolve several issues such as determining the appropriate target measures and the elements of financing deficits. Both capital structure theories are capable to explain the financing behaviour of Malaysian firm if the associated coefficients yield the predicted signs.

The empirical findings can be concluded as follows: (1) The static trade-off theory (via target-adjustment model) has the ability to predict changes in firms' debt level, especially when the target debt level is set at a value equal to the historical mean of debt ratio. (2) The pecking order model too is found significant to provide plausible explanation on the variations in firms' debt level, regardless whether the deficit amount is anticipated or unanticipated. (3) Although inconclusive, past profitability indicates a negative relation to changes in debt level in most of the tests performed, thus confirming with the pecking order prediction (4) Firms also raise additional equity in response to deficits, however, the associated positive coefficient value is low. This low equity financing, compared to debt financing, is in accordance with the descriptions of the suggested semi-strong pecking order model of Chirinko and Singha (2000). (5) When both model specifications are combined and tested jointly, the positive

target-adjustment coefficient deteriorates, whereas the pecking order coefficient barely alters. Nonetheless, both models are still significant in predicting changes in firms' debt level.

In sum, the empirical evidence offered in this chapter embraces both the static trade-off theory and the pecking order model in providing plausible explanation of firms' financing behaviour. The specifications tested are in the right magnitude to explain the variations in firms' debt level. In fact, we find that both theories coexist in Malaysian corporate leverage practice, hence supporting the claim on the coexistence of both capital structure theories in firms' financing decisions (Claggett Jr., 1991; Vogt, 1994; Ghosh & Cai, 1999; Shyam-Sunder & Myers, 1999). Moreover, the empirical findings are also consistent with the preliminary impression inferred in Chapter 5 of this thesis. Earlier, we have descriptively asserted that the financing patterns identified among Malaysian firms mostly fit the description of both the static trade-off and the pecking order theories. To complement this assertion, our findings about the coexistence of both theories suggest that the theoretical descriptions of static trade-off and pecking order are relevant in explaining Malaysian firms' financing behaviour. Overall, we conclude that the capital structure practice in Malaysia appears to be fundamentally consistent with the long-established traditional capital structure theories.

CHAPTER 8

ANALYSIS (3)
WHICH IS THE BETTER MODEL?

8.1 INTRODUCTION

The descriptive and empirical evidence presented in the earlier chapters of this thesis have demonstrated that the static trade-off and the pecking order theories are able to provide plausible explanation of Malaysian firms' financing behaviour. Despite corroborating with the evidence, Shyam-Sunder and Myers (1999) have some additional views about the models. They argue that the pecking order model offers a better first-order descriptor of corporate financing behaviour when compared to the competing target-adjustment model. In essence, they draw this conclusion when they find that the pecking order model has correctly described its own pecking order financing series and rejected the alternative target-adjustment financing series. Whereas, the target-adjustment model have falsely accepted the alternative pecking order series just as well as fitting its own series. A model lacks statistical power if it fails to accept the true and/or reject the false. Based on this notion, this chapter will take another look at the claim that the pecking order specification tests tend to outperform the target-adjustment model when judged on explanatory power.

To seek assurance, the analysis performed in this chapter follows similar procedure of Shyam-Sunder and Myers' (1999) statistical power tests on hypothetical data. However, our simulation experiments differ slightly from those of Shyam-Sunder and Myers. In our power tests, we revise the treatment of the

hypothetical financing series and the underlying assumption of the pecking order model. Instead of placing a numerical figure to the coefficients in the equations, the simulation experiment generates the hypothetical financing series as though they are following the financing rules based on some subjective financing decision framework. In addition, we simulate the hypothetical pecking order financing series based on the semi-strong assumption of the pecking order model, as previously addressed by Chirinko and Singha (2000), in contrast to the strict pecking order model of Shyam-Sunder and Myers.

The discussion in this chapter centres on the procedures for generating the simulated series, the fitted tests on the model specifications, and the outcomes from the simulation experiments. The first two tests fit each model specifications independently to the financing series, while the final test combines both models and fits them jointly to each financing series. In general, this chapter seeks to examine the reliability of the developed models' statistical explanatory power. Having a strong and reliable explanatory power means that the model must be able to correctly describe the financing behaviour of its own series (rejecting H_o when it is false (1-β)), and rejecting the alternative series (accepting H_o when it is true (1-α)).

8.2 GENERATING HYPOTHETICAL TIME-SERIES FINANCING

In these statistical power tests, we initially generate the simulated financing series of debt issues or repayments based on actual operating cash flows. The simulated

series also maintain the actual annual dividend and interest amount[20]. For each model, we generate the hypothetical series for all 225 firms in the sample, each spanning 10 years from 1991 to 2000. Shyam-Sunder and Myers (1999) have pointed out that there are no requirements to assign any numerical values for the coefficients in the specification, although their version generates the series in this particular manner. Therefore, the hypothetical financing series generated for this experiment differ from those of Shyam-Sunder and Myers in the absence of any specified coefficients in the models' specifications. The following subsections discuss the procedure in generating our version of the simulated financing series of target-adjustment and pecking order.

8.2.1 TARGET-ADJUSTMENT SIMULATED TIME SERIES

The target-adjustment financing rule assumes that firms exhibit a tendency to converge towards their target. The hypothetical series start with the information on the debt ratio in 1990, as this ratio will be the starting point in generating the debt ratio flow. We determine the corresponding target ratio for this series by (1) the actual historical mean of book debt ratio as in Equation (**7.2**), and (2) the firms' cross-sectional characteristics and industry benchmark in Equation (**7.4**). We estimate the annual debt ratio from 1991 to 2000 based on the idea that firms consistently adjust their debt ratio towards the target level when there is a deviation away from it, as interpreted by the target-adjustment model in Equation (**7.1**). In this hypothetical series, we have arbitrarily set the range of five percent[21]

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[20] We are aware that the assumption of maintaining the actual dividend and interest seems unrealistic in the real world. Ideally, a hypothetical additional financing should require recalculation of dividend and interest.

[21] Since this is a subjective financing framework, firms could set any range from target for their financing adjustment. In our case, we arbitrarily pick five percent as the range.

from the target for any change in financing decision rule. To begin with, the following **Table 8.1** summarises the financing decision framework of our simulated target-adjustment financing series.

TABLE 8.1 THE TARGET-ADJUSTMENT FINANCING DECISION FRAMEWORK

If $d < (d^* - 0.05)$	Issue additional debt *(Repurchases equity)*
If $d > (d^* + 0.05)$	Issue additional equity *(Repay debt)*
If $(d^* - 0.05) \leq d \leq (d^* + 0.05)$	Issue proportionate debt and equity *(Proportionate repayment of debt and equity)*

** Treatment of surpluses in parentheses*

The beginning book-debt ratio[22] triggers the decision rule for this target-adjustment series. The stipulated rules assume that firms would issue additional debt if the beginning debt ratio (d) is below five percent from the target ratio (d^*), and issue additional equity if the ratio (d) is well above five percent from the target (d^*). If the beginning debt ratio (d) is within five percent from the target ratio (d^*), then firms would issue a mix of debt and equity in equal proportion. In the event of surpluses (or negative deficits), the same rules apply. Firms repurchase equity if d is below five percent from d^*, pay off debt if d above five percent from d^*, and proportionately pay off debt and repurchase equity if d is within five percent from d^*. **Table 8.2a** and the discussion that follows illustrate an example on the procedure to generate the simulated target-adjustment series.

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[22] We assume the beginning book-debt ratio for the current year as the prior year's debt-to-total asset ratio.

TABLE 8.2a GENERATING THE HYPOTHETICAL TARGET-ADJUSTMENT SERIES: AN EXAMPLE

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Deficit (surplus)		**62.25**	**41.89**	**(5.04)**	**1.67**	**33.64**	**4.71**	**3,318**	**(2,393)**	**4,324**	**1,159**
Target ratio (d)*	*0.09*	*0.09*	*0.09*	*0.09*	*0.09*	*0.09*	*0.09*	*0.09*	*0.09*	*0.09*	*0.09*
Long term debt (LD)	**1.09**	**63.34**	**84.28**	**81.76**	**83.43**	**117.07**	**121.78**	**3,440.40**	**1,046.90**	**3,209.15**	**3,209.15**
Total Assets (TA)	369.03	697.41	965.75	2,930.	4,589	5,816	8,763	12,874	14,327	15,264	18,603
Debt ratio (d)	0.00	0.09	0.09	0.03	0.02	0.02	0.01	0.27	0.07	0.21	0.17
External Finance:											
Issue (Repurchase) Share Capital	0	20.94	(2.52)	0	0	0	0	0	2,162	1,159	
Issue (Repay) loans	62.25	20.94	(2.52)	1.67	33.64	4.71	3,318	(2,393)	2,162	0	

In this example, we initially assume that the firm estimates the target debt ratio (d^*) based on the historical mean of debt ratio. This explains the constant value of d^* at 9-percent throughout the period. To generate the series, we assume that this firm gradually making efforts to converge its debt ratio to this 9-percent target ratio following the financing decision framework outlined in **Table 8.1.** We refer to the zero-percent debt ratio in 1990 as the starting point for this simulation example. The series begins by deciding on the financing sources between debt and equity to fund the deficit amount of RM62.25 million in 1991. However, since the zero-percent debt ratio (d) is below the 5-percent range from the target (d^* is set at 9 percent), the firm issues only debt to cover this needed amount. This additional debt issue changes the debt ratio in 1991. The year-end long-term debt level (LD) in 1991 also increases by the amount of this additional debt. In the following year, the firm has another deficit of RM41.89 million. Since the generated d has now increased to 9-percent, which is within 5-percent range from d^*, the firm issues equity and debt proportionately (RM41.89mil /2 = RM20.94 million) in 1992. In 1993, when there is a surplus of RM5.04 million, the firm repays both debt and equity in equal proportion as the beginning debt ratio (d) is

within 5-percent from d^*. Based on the target-adjustment financing framework, we generate the target-adjustment series by continuously adjusting the subsequent years' annual debt ratio (d) and long-term debt level (LD).

To test the power of the models, we then fit the target-adjustment and the pecking order specifications independently to the generated target-adjustment series. If these models are true, the fitted target-adjustment specification should have the power to reject the null of non-significant statistical result to this series (1-β), while the fitted pecking order model should fail to reject the null of this statistical inference (1-α).

8.2.2 PECKING ORDER SIMULATED TIME SERIES

In the pecking order financing, we assume that firms issue debt if the deficit amount is positive and repay debt if negative. However, since the financing behaviour must reflect the semi-strong form of the pecking order model, we add another provision in the financing decision. We allow firms to issue additional equity if the beginning debt ratio (d) exceeds a certain arbitrarily determined cut-off point.

Our descriptive statistics in Chapter 5 of this thesis have shown that the annual mean of debt ratios (both book and market ratios) during the sample period has ranged from 20 percent to 70 percent (refer to **Table 5.3**). In view of this range, we attempt to simulate the pecking order financing series by setting several debt ratio benchmarks for issuing equity. Based on this range, we arbitrarily set the cut-off point at 30 percent, 40 percent and 50 percent as the benchmark before

issuing equity, although the pecking order model has no well-defined maximum debt level. In essence, we are actually generating three sets of hypothetical pecking order financing series with different assumed cut-off points. Similar to generating the former series, the initial point of reference for this series is the beginning debt ratio in 1991, which is the 1990 year-end book-debt ratio. We estimate the following years' annual debt ratios based on the actual fund flow, dividends, interest, and total assets for the year. In our pecking order financing series, we assume that firm issues only debt in the current year if the beginning debt ratio is below the assumed cut-off point. In other words, only when the beginning debt ratio exceeds this point, firm starts to issue equity to fund deficit. Firms would again issue debt if the beginning debt ratio slips below the assumed level. The process continues to generate the hypothetical annual book-debt ratios and external financing for each firm from 1991 to 2000. The following **Table 8.2b** illustrates the procedure for generating this hypothetical pecking order series by continuing with the example presented in **Table 8.2a** earlier. Similarly, the explanation on the example follows after.

TABLE 8.2b GENERATING THE HYPOTHETICAL PECKING ORDER SERIES: THE EXAMPLE CONTINUES

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Deficit (surplus)		**62.25**	**41.89**	**(5.04)**	**1.67**	**33.64**	**4.71**	**3,318.62**	**(2,393.50)**	**4,324.51**	**1,159.62**
Pecking Order at 30% cut-off point											
Long term debt (LD)	1.09	63.34	105.23	100.19	101.86	135.49	140.20	3,458.83	1,065.32	5,389.83	5,389.83
Total Assets (TA)	369.03	697.41	965.75	2,930	4,589	5,816	8,763	12,874	14,327	15,264	18,603
Debt ratio (d)	0.00	0.09	0.11	0.03	0.02	0.02	0.02	0.27	0.07	0.35	0.29
External Finance:											
Issue (Repurchase) Share Capital		0	0	0	0	0	0	0	0	0	1,159.62
Issue (Repay) loans		62.25	41.89	(5.04)	1.67	33.64	4.71	3,318.62	(2,393.50)	4,324.51	0

In **Table 8.2b**, we illustrate an example of the semi-strong pecking order hypothetical series with the assumption that the firm only begins issuing equity when the beginning debt ratio (*d*) exceeds the cut-off point of 30-percent (one of arbitrarily assumed debt ratio benchmark for issuing equity). Therefore, in order to finance the RM62.25 million deficits in 1991, the firm issues additional debt as the beginning debt ratio (*d*) is 0-percent. Throughout the period until 1999, the firm only issues (repays) debt to cover the deficit (surplus) as the generated *d* is less than the assumed 30-percent cut-off point. However, we observe *d* reaching 35-percent in 1999, a level exceeding 30-percent. Reacting to this increase, the firm resorts to issuing equity in 2000 as a way to halt *d* from exceeding the maximum debt level assumed.

To perform the power tests, we fit both the target–adjustment and the pecking order models independently to this simulated pecking order series. Again, if these models are true, we anticipate the pecking order specification to be able to demonstrate the power of this statistical inference test (1-β), while the target-adjustment model should fail to reject the null of no significance to this pecking order series (1-α).

8.3 DISCUSSION OF THE ANALYSIS AND RESULTS

Ideally, the target-adjustment model should correctly reject the cases in which the financing follows the pecking order rule, and only generate significant statistical results to its own financing rule. The same justification applies to the pecking order specification; only significant to its own simulated financing but not significant to the alternative series. If we find a model unable to reject the null for

its own series (β) or incorrectly showing significance to the alternative series (α), then we can infer that this model is suffering from the lack of statistical explanatory power. For this experiment, we perform all tests using pooled OLS regressions. In the tests, we adjust to account for first-order serial correlation by adding the first-order autoregressive (*AR (1)*) expression in the equations. Moreover, in obtaining robust estimates, we have adjusted the standard errors using White's heteroskedasticity-consistent standard errors.

8.3.1 TESTING THE TARGET-ADJUSTMENT AND THE PECKING ORDER MODELS INDEPENDENTLY

This subsection describes the results from the independent tests. The test starts by fitting the models to the target-adjustment series, and subsequently to the pecking order series. We discuss the inferences from both independent tests at the end of the section.

(1) Target-adjustment Hypothetical Financing Time Series

Exhibit 8.1 summarises the outcomes from the simulated target-adjustment series. Panel A presents the results from fitting the series to the target-adjustment model, and Panel B shows the results from the fitted pecking order model. Column 1 highlights the series when we calculate the target based on historical mean of debt ratio, while the function of firm characteristics and industry benchmark is the target specification in column 2.

EXHIBIT 8.1 REGRESSION RESULTS FROM FITTING THE TARGET-ADJUSTMENT AND THE PECKING ORDER MODELS INDEPENDENTLY TO THE SIMULATED TARGET-ADJUSTMENT FINANCING SERIES

Regression based on Pooled Least Squares. The sign * denotes that the coefficients are significant at 1% level and standard errors are reported in parentheses.
(1) Target-adjustment financing series when target is based on historical mean of debt ratio.
(2) Target-adjustment financing series when target is based on firm characteristics and industry benchmark

	Target-adjustment Series 1 **(1)**	**Target-adjustment Series 2** **(2)**
PANEL A:		
TARGET-ADJUSTMENT MODEL		
Constant (α)	22.35 * (4.457)	23.32 * (4.359)
Target-adjustment Coefficient (β_{TA})	0.76 * (0.163)	0.07 (0.061)
Adjusted R^2	0.42	0.12
PANEL B:		
PECKING ORDER MODEL		
Constant (α)	0.39 (1.653)	-6.48 * (1.605)
Pecking-order Coefficient (β_{PO})	0.53 * (0.022)	0.49 * (0.011)
Adjusted R^2	0.92	0.92

The results indicate that the coefficient in column 1 of Panel A is statistically significant with an adjustment coefficient of $\beta_{TA} = 0.76$ and adjusted-R^2 value of 0.42. However, column 2 (Panel A) reports both very low and insignificant coefficient of $\beta_{TA} = 0.07$ and adjusted-R^2 value of 0.12. This low adjusted-R^2 value reinforces the earlier finding in Chapter 7, which suggests that firm characteristics and industry benchmark may not be a good predictor of target debt ratio for Malaysian firms. Meanwhile, when we fit the pecking order specifications to the same series (Panel B), the pecking order coefficients (β_{PO}) also present significant results. The coefficients reported are statistically

significant with $\beta_{PO} = 0.53$ (column 1) and $\beta_{PO} = 0.49$ (column 2). Both adjusted-R^2 values are high at 0.92.

Based on these results, we can infer that the target-adjustment model has correctly produced a significant statistical result to its own financing series. The setback is the finding in Panel B. The pecking order also seems to describe the change in debt levels even when the simulated series follows the target-adjustment financing rule. At this point, we opt to defer any inferences from these results until after testing both specifications in the alternative series.

(2) Pecking order Hypothetical Financing Time Series

In the second experiment, we fit both the target-adjustment and the pecking order models to the simulated pecking order financing series. To reflect the semi-strong assumption of the pecking order model, we have generated three simulated pecking order financing series with different benchmarks of debt ratio (i.e. 30 percent, 40 percent and 50 percent), as discussed earlier in this chapter.

Exhibit 8.2 presents the results from fitting both model specifications to each of these financing series. Column 1 summarises the results when fitting the model to the pecking order series at the debt-ratio cut-off point of 30-percent, while column 2 and 3 highlight the results when the cut-off point is 40-percent and 50-percent respectively.

EXHIBIT 8.2 REGRESSION RESULTS FROM FITTING THE TARGET-ADJUSTMENT AND THE PECKING ORDER MODELS INDEPENDENTLY TO THE SIMULATED PECKING ORDER FINANCING SERIES

Regression based on Pooled Least Squares. The sign * denotes that the coefficients are significant at 1% level and standard errors are reported in parentheses.

(1) Pecking order financing series reflects a semi-strong assumption with a cut-off debt ratio of 30%.
(2) Pecking order financing series reflects a semi-strong assumption with a cut-off debt ratio of 40%.
(3) Pecking order financing series reflects a semi-strong assumption with a cut-off debt ratio of 50%.

	Simulated Pecking Order Series 1 (1)	**Simulated Pecking Order Series 2 (2)**	**Simulated Pecking Order Series 3 (3)**
PANEL A: **TARGET-ADJUSTMENT MODEL**			
Constant (α)	49.67 * (16.090)	138.22 (74.34)	196.27 (121.248)
Target-adjustment Coefficient (β_{TA})	0.51 (0.300)	1.14 * (0.412)	1.16 * (0.399)
Adjusted R^2	0.20	0.26	0.24
PANEL B: **PECKING ORDER MODEL**			
Constant (α)	-14.99 * (3.341)	-7.63 * (1.899)	-3.41 * (1.001)
Pecking-order Coefficient (β_{PO})	0.90 * (0.061)	0.97 * (0.020)	0.99 * (0.005)
Adjusted R^2	0.90	0.97	0.99

In column 1, the results show that the adjustment coefficient (β_{TA}) in Panel A is not statistically significant at $\beta_{TA} = 0.51$ to explain the pecking order series. This test has correctly failed to reject the null of no significance to this pecking order series. As anticipated, the pecking order specification in Panel B has the power to reject the null of no significance to this series. The fitted pecking order specifications have produced both the coefficient (β_{PO}) and the adjusted-R^2 values equal to 0.90.

The next two columns illustrate the results when we increase the cut-off point from 30-percent to 40-percent (column 2) and 50-percent (column 3), the results of the target-adjustment specifications have differed markedly. The target-adjustment coefficient (β_{TA}) in both columns produces a very high and significant coefficient value of 1.14 (column 2 in Panel A) and 1.16 (column 3 in Panel A) respectively, in contrast to the lower value and non-significant coefficient produced earlier when the cut-off point is 30-percent. Likewise, the pecking order specifications in column 2 and 3 of Panel B also show a highly significant pecking order coefficient (β_{PO}) equal to 0.97 (column 2) and 0.99 (column 3). It appears that when we increase this cut-off point, the values of the adjustment and pecking order coefficients have risen to values close to or greater than one. These coefficient values however, are not empirically plausible. Therefore, we only take into account the empirical results produced by the fitted specifications in column 1, which is when the debt ratio benchmark for issuing equity is 30-percent.

At this 30-percent benchmark, both models seem to have comparable statistical explanatory power when fitted to this hypothetical pecking order series. The target-adjustment model has correctly failed to reject the null of non-significant statistical result to this pecking order financing series (1-α). Meanwhile, the alternative pecking order model has demonstrated its power of this statistical inference test by correctly rejecting the null of no significance (1-β), thus fitting its own series well.

Thus far, the findings from the fitted tests above can be summarised as follows:

TABLE 8.3 SUMMARIES OF THE FINDINGS FROM FITTING THE TARGET-ADJUSTMENT AND THE PECKING ORDER MODELS TO DIFFERENT HYPOTHETICAL FINANCING SERIES

	Target-adjustment series	Pecking order series
Target-adjustment Model	**(1-β)**	**(1-α)**
Pecking Order Model	***Type I error*** **(α)**	**(1-β)**

The results indicate that the target-adjustment model is able to demonstrate its statistical explanatory power by accepting its own financing series (1-β) and rejecting the alternative pecking order series (1-α). On the other hand, the pecking order specifications have indicated its significance to both financing rules. The model has accepted its own pecking order series (1-β), however, failed to reject the alternative target-adjustment series. It seems that the pecking order model in our fitted test lacks statistical power, as the model has incorrectly rejected the null when the null is true, hence statistically committing a *Type 1* error (α). Our findings from the power tests above fail to support the work of Shyam-Sunder and Myers (1999), which claims a stronger performance of the pecking order model than the target-adjustment model, when judged on explanatory power.

In seeking for some explanation, we attempt to duplicate Shyam-Sunder and Myers' version of the simulated series by assigning numerical value to the coefficients in both specifications. We generate these new hypothetical financing series based on the following assumptions:

(1) The newly generated target-adjustment series use an adjustment coefficient of β_{TA} = 0.6 (a figure arbitrarily taken based on the empirical results of the adjustment coefficient in **Exhibit 7.1**, which range from 0.59 to 0.67).

(2) This hypothetical pecking order financing series assign a pecking order coefficient of β_{PO} =0.8 (a mid-point value based on **Exhibit 7.3** that present the empirical results of pecking order coefficient ranging from 0.73 to 0.86).

The following **Exhibit 8.3** shows the results from the fitted tests[23].

EXHIBIT 8.3 REGRESSION RESULTS FROM FITTING THE TARGET-ADJUSTMENT AND THE PECKING ORDER MODELS TO THE SIMULATED SERIES WHEN NUMERICAL VALUES ARE ASSIGNED TO GENERATE THE SERIES

Regression based on Pooled Least Squares. The sign * denotes that the coefficients are significant at 1% level and standard errors are reported in parentheses.

(1) Pecking order financing series using an pecking order coefficient of β_{PO} = 0.8
(2) Target-adjustment financing series using an adjustment coefficient of β_{TA} = 0.6

	(1) Pecking order simulated series	**(2) Target-adjustment simulated series**
PANEL A: **TARGET-ADJUSTMENT MODEL**		
Constant (α)	6.92 (4.444)	
Target-adjustment Coefficient (β_{TA})	0.96 * (0.160)	
Adjusted R^2	0.24	
PANEL B: **PECKING ORDER MODEL**		
Constant (α)		19.35 * (4.607)
Pecking-order Coefficient (β_{PO})		0.02 (0.012)
Adjusted R^2		0.55

[23] We leave column 2 in Panel A and column 1 in Panel B empty as the specifications in these columns are essentially fitting into the data generated by the same equation.

In the above exhibit, Panel A summarises the results when the target-adjustment model is fitted to the newly generated hypothetical pecking order financing series (column 1), while Panel B indicates the results from fitting the pecking order model to the newly generated target-adjustment financing series (column 2). The results produce a statistically significant target-adjustment coefficient of β_{TA} = 0.96 (Panel A) and adjusted-R^2 value of 0.24. Meanwhile, Panel B reports a non-significant pecking order coefficient of β_{PO} = 0.02 and an adjusted-R^2 of 0.55. Our findings for this part suggest that the pecking order model has demonstrated its statistical power by correctly failing to show any significant statistical result when financing follows target-adjustment series (see column 2 in Panel B). Whereas, the result of the target-adjustment model has incorrectly produced a significant coefficient when fitted to the pecking order series (see column 1 in Panel A). It seems that the explanatory power of the pecking order model only becomes evident when the generated series use specific numerical coefficients. Our fitted test on this newly generated financing series fails to show the explanatory power of the target-adjustment model.

In view of this finding, we may possibly conclude that the greater support for the pecking order model than in the target-adjustment model, as claimed by Shyam-Sunder and Myer, could only be observed when the models' coefficient is specified. Since there is no indication to believe that firms will always set specific coefficient values in their financing formula, the experiment on this statistical power continues using the financing decision framework set earlier.

8.3.2 TESTING THE TARGET-ADJUSTMENT AND THE PECKING ORDER MODELS JOINTLY

In this final test, we fit both specifications jointly to each simulated series. **Exhibit 8.4** summarises the results from this joint specification test. Column 1 shows the results from fitting this joint specification to the simulated pecking order series, while column 2 highlights the results from the target-adjustment series.

EXHIBIT 8.4 REGRESSION RESULTS FROM FITTING BOTH THE TARGET-ADJUSTMENT AND THE PECKING ORDER MODELS JOINTLY TO THE SIMULATED SERIES

Regression based on Pooled Least Squares. The sign * denotes that the coefficients are significant at 1% level and standard errors are reported in parentheses.

(1) The semi-strong form of pecking order series at cut-off debt ratio of 30%

(2) Target-adjustment financing series when target is based on historical mean of debt ratio.

	(1) **Pecking order simulated series**	**(2)** **Target-adjustment simulated series**
COMBINED MODEL:		
Constant (α)	-14.45 * (3.938)	0.56 (1.673)
Pecking-order Coefficient (β_{PO})	0.90 * (0.063)	0.49 * (0.018)
Target-adjustment Coefficient (β_{TA})	0.02 (0.053)	0.16 * (0.047)
Adjusted R^2	0.90	0.93

Although indicating a lower pecking order coefficient value of β_{PO} = 0.49 in the target-adjustment series (column 2) compared to the coefficient value of β_{PO} = 0.90 in its own pecking order series (column 1), the results still show that the pecking order specifications fit significantly well to both series. On the contrary, the target-adjustment specification has fitted its own simulated series (β_{TA} = 0.16 in column 2), and has failed to reject the null of non-significant statistical result for the simulated data based on the pecking-order specification (column 1).

In the joint test above, the interpreted results also fail to produce the alleged greater confidence of the pecking order model as suggested by Shyam-Sunder and Myers. The findings indicate that the pecking order specifications fit the simulated target-adjustment series just as well as its own series. This finding apparently generates a false fit. However, the target-adjustment model has demonstrated the power of the statistical inference test by rejecting the null of no significance to its own series (1-β), and correctly failed to reject the null hypothesis when fitted to the alternative pecking order series (1-α). Our overall findings reveal no support to suggest a stronger explanatory power of the pecking order model than in the target-adjustment model. On the other hand, it seems that the target-adjustment model developed for this fitted test appears to have power.

Why do our statistical power tests suggest contradictory outcomes to those claimed by Shyam-Sunder and Myers? We suppose the possible explanations are as follows:

a. Different procedure in generating the hypothetical series

In our simulation experiment, we have altered the procedure for generating the hypothetical financing series of target-adjustment and pecking order. Instead of assigning some numerical values to the coefficients following the procedure of Shyam-Sunder and Myers, we generate the series based on the financing decision framework outlined and discussed earlier in the chapter. The subjective financing decision framework that we employed in generating the simulated financing series has shown to change the results of the statistical power tests.

b. Different underlying assumption of the pecking order

The predetermined financing decision framework, together with the semi-strong assumption of the pecking order further intensifies this contradictory outcome. Shyam-Sunder and Myers' claim on the strong performance of the pecking order model is based on a strict pecking order assumption, in which firms never issue equity. However, our developed model assumes the semi-strong form of pecking order model by Chirinko & Singha (2000), which suggests issuing additional equity when firms have exhausted their debt capacity. Likewise, the target-adjustment behaviour also utilises financing through equity in preserving the optimal capital structure. By definition, there is a fine line in the underlying motives behind the pecking order and the target-adjustment behaviours. However, we find it difficult to accurately distinguish between the two financing behaviours when equity issues appear in firms' financing stream.

c. No single unique proxy for each leverage predictor

There is no single unique representation for the unobservable attributes when using proxy (Titman & Wessels, 1988). We could use several proxies to represent the leverage predictors. For instance, both net profit margin and return on assets can represent firm's profitability measure. In addition, one proxy may also represent several attributes. One example is asset tangibility, as it could represent firm's collateral value as well as firm's potential growth. Depending on which proxy to use and how we interpret it, the results may vary subjectively. Therefore, even when the target ratio specifications are similar, the proxies representing the predictors may differ, thus, affecting the target-adjustment outcome.

d. Different economic setting

Shyam-Sunder and Myers have sampled mature firms in the stable United States economy. However, the sample for this research consists of a mix of mature and growing firms from an emerging market economy. In addition, we have found earlier that the financing behaviour of Malaysian firms is closely linked to the economic events experienced by the country during the period of the study, especially when all these firms have been badly affected by the economic turmoil in 1997-98. In view of the difference in economic orientation between our sample and the sample from Shyam-Sunder and Myers, we need to anticipate the contradicting outcomes of the tests.

8.4 SUMMARY AND CONCLUSIONS

This chapter reassesses the statistical explanatory power of both the target-adjustment and the pecking order models when tested in a different economy. Shyam-Sunder and Myers (1999) originally introduce this power test using a sample of mature firms in a well-developed economy. In their paper, they have demonstrated that the pecking order model has greater explanatory power than in the target-adjustment model. This analysis adopts similar power tests in an attempt to seek some reliability as to whether the pecking order model would also perform well if tested on firms from other economic background. If the results are consistent to those of Shyam-Sunder and Myers, then the strong performance of the pecking order model with regards to explanatory power can be generalised. As highlighted in the discussion of this chapter, the two deviations from Shyam-Sunder and Myers' power tests are in the decision rules for generating the

simulated financing series, and the underlying assumption of the pecking order model.

The main empirical results can be summarised as follows: (1) The strong performance of the pecking order model, as suggested by Shyam-Sunder and Myers, only become evident when we assign specific numerical value to the coefficients in the specifications to generate the hypothetical financing series. (2) However, when we change the procedure in generating the hypothetical series from assigning numerical value to using subjective decision rules based on a predetermined financing framework, our findings indicate otherwise. In addition to fitting its own series, the pecking order specifications have incorrectly produced significant statistical results when fitted to the alternative target-adjustment financing series. (3) Building on similar procedure, we find that the target-adjustment model has performed well when tested both independently and jointly to each financing series. (4) Finally, our tests have demonstrated the power of the target-adjustment model and unable to prove the alleged stronger performance of the pecking order model.

In sum, we find that the results from our simulation experiments are inconsistent with the Shyam-Sunder and Myers' (1999) claim on the greater confidence of the pecking order model than in the target-adjustment model, when judged on explanatory power. In fact, our findings show that the target-adjustment model has outperformed the pecking order model when fitted to our version of hypothetical financing series. The procedure in generating the series, the underlying assumption of the pecking order model, the subjective proxies for

leverage predictors, and the difference in our firms' profiles may be amongst the plausible factors contributing to the results of these power tests. The findings from our simulated experiments in this chapter suggest that the issue of what constitutes an accurate model that fit the descriptions of corporate financing behaviour remains inconclusive.

PART 5

CONCLUSIONS

CHAPTER 9

CAPITAL STRUCTURE IN MALAYSIA: THE CONCLUSIONS

9.1 INTRODUCTION

The thesis examines the relevance of different capital structure theories in explaining capital structure choice of Malaysian firms. Based on descriptive exploration and panel data study, the thesis concludes that both the static trade-off and the pecking order theories do provide plausible explanation of Malaysian firms' financing behaviour.

The conclusions for this thesis are split into four parts: Section 9.2 presents Malaysian firms' financing background. In essence, this section describes how financing patterns relate to economic events and the capital structure theoretical predictions. Section 9.3 provides evidence on the consistency between the proposed Malaysian factors and the factors cited in the empirical capital structure literature. Section 9.4 offers empirical evidence on the relevance of the static trade-off theory (via target-adjustment model) and the semi-strong form of the pecking order model in explaining Malaysian firms' financing behaviour. The findings indicate that both theories coexist in explaining most corporate financing strategy. Section 9.5 however, fails to conclusively determine the better model that fit the description of firms' financing behaviour. Finally, Section 9.6 provides summaries of the general conclusions, and the subsections discuss the limitations of the thesis, the practical implications of the research, and the suggested recommendations for future research.

9.2 DESCRIPTIVE ANALYSIS OF THE FINANCING BACKGROUND

The first part of the thesis describes Malaysian firms' financing profiles during the period from 1991 to 2000. The firms' financing patterns that emerged from our exploration range from no-leverage to all-leverage financing. We find that Malaysian firms' financing patterns change in response to the economic events experienced by the country during the period of the study. For example, during the recent Asian crisis, we observe that firms' financing in all financing categories (i.e. equity, debt and mixed financing) had slowed. Equity financing began to pick up as the crisis ended, while debt and mixed financing indicated varying trend after the crisis. Further, the inclination for firms in some industries to follow specific type of financing infers some industry-specific financing trend. Through an inductive examination on the patterns, we find that most of the firms' financing behaviour fit the static trade-off and the pecking order descriptions. Despite differences in the financial system as compared to the west, the initial inference on this part of the thesis has been able to link Malaysian firms' financing patterns to the traditional theoretical predictions. Finally, a preliminary look on the prediction of several proposed Malaysian firm-specific factors suggests some consistency with regards to the effect of size and profitability on firms' leverage.

The conclusion of this part of the thesis on the relevance of economic events, industry, and capital structure theory in explaining firms' financing behaviour are only preliminary impressions at the initial stage of the investigation. Nevertheless, this background analysis of the data facilitates in rationalising the empirical findings of the thesis.

9.3 CAPITAL STRUCTURE THEORIES AND DETERMINANTS

This part of the thesis concludes that the proposed firm-specific factors in Malaysian capital structure are similar to those cited in the literature. The empirical results conclude that a firm's industry membership plays an important role in determining the firm's leverage, despite the possibilities of some conflicting industry findings due to varying views of how the concept of industry groupings and leverage should be characterised (Bowen et. al., 1982). The relation of the theory-related capital structure factors of asset tangibility, profitability, and tax status in Malaysian financing decisions are also consistent with the relation documented in most capital structure work (e.g. Rajan & Zingales, 1995; Graham, 1996; Wiwattanakantang, 1999; Pandey, 2001). Further, the negative relation between past profitability and debt embraces the underlying motive of the western capital structure arguments (e.g. bankruptcy cost, asset substitution effect, and asymmetric information).

The conclusion of this part of the thesis reiterates the claim of earlier work on comparative capital structure evidence such as in Booth et. al. (2001), Wald (1999), Bartholdy et. al. (1997), and Rajan and Zingales (1995). Our findings about the significant relation of several well-cited factors in determining Malaysian firms' capital structure decisions substantiate the claim that the leverage–related factors identified in the developed economy can be applied to other countries as well, regardless of different economic orientation.

9.4 RELEVANCE OF THE CAPITAL STRUCTURE MODELS

This part of the thesis concludes that the static trade-off and the pecking order models are able to provide plausible explanation of Malaysian firms' financing behaviour. The results from the analysis carried out show that the description of both the target-adjustment and the pecking order models are consistent with firms' financing decision. Although the performance the target-adjustment model degrades when tested jointly, the results are still significant in predicting the variations in debt level. Both the static trade-off and the pecking order models seem to be able to operate simultaneously to describe firms' financing behaviour.

Based on our developed models adapted from the models of Shyam-Sunder and Myers (1999) and the criticisms of Chirinko and Singha (2000), the results in this part suggest that both the static trade-off and the pecking order theories coexist in explaining the financing behaviour of most firms in Malaysia. This finding reinforces the initial impression generated in the early part of this thesis on the relevance of the theoretical description in explaining Malaysian firms' financing patterns. Our overall findings on the coexistence of both capital structure theories in firms' financing decisions also support the earlier work by Claggett Jr. (1991), Vogt (1994), Ghosh and Cai (1999), and Shyam-Sunder and Myers (1999). This part of the thesis claims that the western capital structure theories are capable of describing Malaysian capital structure.

9.5 EXPLANATORY POWER OF THE CAPITAL STRUCTURE SPECIFICATIONS

This part of the thesis fails to support the claim by Shyam-Sunder and Myers (1999) on the stronger performance of the pecking order model than in the target-

adjustment model, when judged on explanatory power. The statistical power tests on both capital structure model specifications produce inconsistent results when the models are fitted, independently and jointly, to several hypothetical financing series. The pecking order model has generated a false fit (α), when it incorrectly fits the alternative target-adjustment series just as well as its own series. However, the results from the fitted tests lend some evidence on the power of the target-adjustment model by accepting its own financing series ($1-\beta$) and rejecting the alternative pecking order series ($1-\alpha$). The procedure in generating the hypothetical series, the revised underlying assumption of the model, the subjective proxies for leverage predictors, and the different sample background are amongst the plausible contributory factors for the improved statistical explanatory power of the target-adjustment model and the declined performance of the pecking order model.

This part of the thesis has not been able to replicate the claim of Shyam-Sunder and Myers (1999) and the earlier writers (Gosh & Cai, 1999; Claggett Jr.,1991; Baskin, 1989) on the power of the pecking order model. Based on the findings in this part, it seems that the stronger performance of the pecking order model than in the target adjustment model is a limited view and cannot be generalised. For that reason, this concluding part is unable to justify an answer to the question on which model can generally provide better explanation of firms' financing behaviour.

9.6 GENERAL CONCLUSIONS OF THE THESIS

To recapitulate, the general conclusions of this thesis are as follows: (1) Firms' financing trend changes with economic cycle. (2) Malaysian firms' financing pattern varies across industries. (3) Most leverage-related factors proposed by studies in the developed economies are also applicable in Malaysia, regardless of different institutional background. (4) The specifications in the traditional capital structure models of static trade-off and pecking order are relevant in explaining Malaysian firms' financing behaviour. (5) However, there is no conclusive indication as to which capital structure model can better describe the firms' financing behaviour.

9.6.1 LIMITATIONS OF THE RESEARCH

A research of this nature must assume some implicit rules that a firm must follow in deciding its financing means. Firms normally plan their financing resources in advance, based on some set objectives, such as minimising costs, maintaining some target ratios and preserving financial flexibilities. No firms simply choose their financing resources arbitrarily without considering the outcome of the choice made. However, in this thesis, we assume that the main motivation for firms to opt specific financing behaviour is to follow fixed financing rules of either maintaining some optimality or following some form of financing hierarchy.

Furthermore, different firms may have adopted different accounting standards, a typical problem when using accounting variables. Examples of such problems are the inventory costing of LIFO and FIFO, the depreciation methods, and the cash versus accrual basis. Therefore, the approach of using proxies to represent the

unobservable theoretical attributes may pose a number of problems (Titman & Wessels, 1988). Titman and Wessels specify problems such as: (1) there is no single unique representation of the attributes measured. (2) It is difficult to find measures of particular attributes than are unrelated to other attributes. (3) Since these observed variables are imperfect representation, their use in regression analysis introduces an error-in-variable problem. (4) The measurement errors in proxy variables may relate to the measurement errors in the dependent variables, creating false correlation. Therefore, to deal with these problems, Titman and Wessels employ a factor-analytic technique that mitigates the measurement problems encountered when working with proxy variables. We are aware of the problem, however we do not venture into the factor-analytic technique for this research. Nonetheless, accounting data is the closest element that a researcher can embrace to represent the unobservable attributes.

As highlighted by Pandey (2001), data availability is the major limitation in capital structure studies in emerging market economies. Due to inadequate compilation of firms' database by the KLSE, the manual data collection procedure employed in this research may subject to possible human error. Further, the construction of simplified fund flow statement in exploring firms' financing pattern may not be the only way to reconcile the inconsistent cash flow reporting of the firms. Given the limited database and time constraint, this was the best alternative that transpired during the analysis stage.

Finally, the models developed in this thesis are simple models, adapted from the model of Shyam-Sunder and Myers (1999) and the subsequent comments by

Chirinko and Singha (2000) on the pecking order model's assumptions. Even after revising the underlying assumptions and including some subjective financing decision framework to the models' specifications, the models still need some improvements if they were to represent firms' actual financing scenarios. Inevitably, in seeking for precise descriptions of the realistic facet of the corporate financing decision, richer specifications, possibly with scenario analysis, to capture some specific situations are in order.

9.6.2 PRACTICAL IMPLICATIONS OF THIS RESEARCH

Since MM (1958), much has been learnt about capital structure and its effects on firms' value. Each study thereafter brings an increased understanding of the forces influencing firms' financing decisions. Nonetheless, we are unlikely to be able to provide explanation of the financing behaviour with certainty. Whenever consensus seems to emerge, we find that financial changes and innovations in the real business world appear. However, this is not to suggest that we cannot offer practical advice to policy makers, financial managers and investors. In view of different economic and financial orientations, our plausible recommendations to these respective parties in Malaysia are as follows:

A. Policy makers

In the efforts to further transform Malaysian PDS market into a more active secondary market, policy makers should devise ways and means to encourage participations in this market. Market participants normally want some assurance that their investments in the market will provide maximum return at minimum possible risk. The outcome of any policy changes should tailor toward having an

increased liquidity in the market, and tax is one mechanism. Our findings about the significance of tax in firms' financial decisions (Chapter 6 of this thesis) suggest that policy makers should design a taxation regime that would not only maximise the tax benefit of debt to debt-seekers but to debt-providers as well. On the investors' side, Malaysia's current tax system seeks to fully offset the tax incentive of corporate debt by giving investors a tax credit on dividends received since Malaysian shareholders do not pay additional taxes on dividend income. In order to have an increased participation from these market lenders, policy makers could also implement a tax incentive scheme for bondholders as well. Perhaps, an incentive in the form of tax exemption on some portion of interest income from securities purchased from the PDS market. To boost market confidence, policy makers could introduce a more tightened financial reporting system as to reduce the adverse selection problem. A further idea is to encourage the use of equivalent restrictive covenants on traded bonds to reduce moral hazard.

B. Financial managers

As far as financial managers are concerned, they want to ensure that their firms are financed at the lowest possible cost. Any financial decisions must be able to create value for the firms. As discussed in the literature (Chapter 3 of this thesis), there is no clear evidence that managers only pursue an optimal capital structure, as pecking order appears to be a common financing practice. In support, our findings about the relevance of traditional capital structure theories in explaining firms' financing behaviour (Chapter 7 of this thesis) suggest that both capital structure theories of static trade-off and pecking order coexist in Malaysia, and there is tax benefit to debt. Based on these findings, managers could be missing

opportunities to enhance value if they don't utilise debt. Therefore, to gain the most from both capital structure practices, financial managers should exhibit a preference toward internal funds over funds generated externally. In acquiring funds externally, financial managers should tailor decisions towards taking full advantage of the tax benefit of debt. However, if bankruptcy costs were very high, then setting a low target capital structure would be appropriate.

C. Investors

As far as investors are concerned, they want to constantly ensure that their investments in the financial market can provide maximum return at minimum risk. Our overall findings in this thesis about the implications of different corporate financing strategies could provide better access for investors to make sensible investment decisions. Even when the current tax system impliedly suggests that investors would be better off taking advantage of dividend tax incentive by investing in equity, investors should aware of the risks associated with stock price volatility in the equity market. Therefore, investors should appreciate the contribution that corporate bonds can make to their portfolio, potentially providing greater security of income than investing in equities, especially to Malaysian pension providers.

9.6.3 FUTURE RESEARCH RECOMMENDATIONS

Future research could involve looking at similar firms in two divided sub-periods; (1) the pre-economic crisis period (1991-1996), and (2) the post-economic crisis period (1999-present), and see whether there are changes in the perceived financing trend. By separating these periods, we can check whether there are

significant differences in firms' financing patterns before and after the crisis of 1997-98. Since after the crisis, the banking system has been restructured to restore the banking sectors. In addition, the latest announcement on the depegging of Malaysian ringgit suggests stability of the country's financial system, hoping to boost confidence in the market. Inevitably, with the encouraging economic situation, improved PDS market, along with the revitalised banking system, it would seem reasonable to expect firms to raise more financing through debt in this latter period. With this inclination, will firms still insist on keeping optimality in their capital structure or choose financing based on ease and flexibility? Bringing this issue to light, the period of the crisis would be the transition point in examining which capital structure theory dominates in two states of economy: (1) pre-crisis and (2) post-crisis. Perhaps, one of the capital structure models would outdo the alternative in each period comparatively as the economic circumstances change.

As more data becomes available in the future, one could explore additional variables that may have significant influence on Malaysian corporate debt policy. Additional research could engage in developing higher-order models that define firms' financing behaviour without having to impose strict assumptions on the models. A more practical capital structure choice that is able to explain the 'real' financing behaviour could emerge from this newly developed model. In relation, we would recommend developing a 'hybrid' capital structure model that possesses both the static trade-off and the pecking order attributes since both models' descriptions are commonly detected in firms' financing. In addition, we cannot draw a conclusive description between the static trade-off and the semi-strong

pecking order model with certainty when equity issues appear in firms' financing stream. Therefore, establishing this 'hybrid' capital structure model may be one solution in search for the accurate descriptor of corporate financing strategy in an economy.

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APPENDIX I

Appendix I **explains how the fund flow statement is read. The financing pattern observed is based on the shaded rows of NEW EQUITY and NEW DEBT throughout the period.** ***(For these two rows, a positive sign denotes cash coming in while the negative sign denotes cash going out)***

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Internal Financing:										
Operating Profit before Interest and Tax	189.613	193.141	253.203	287.418	466.566	649.526	855.131	-418.521	-247.956	-42.841
Depreciation	-45.713	-46.644	-61.913	-68.094	-96.545	-208.584	-202.802	-235.669	-319.493	-328.427
Tax	-58.233	-45.725	-50.374	-53.529	-58.809	-66.541	-106.95	-3.394	61.579	-62.108
Change in NWC	-67.107	240.013	-88.904	105	267	842	-38	-1252.883	5137.883	914
Capital Expenditures	-125.011	-436.409	-186.867	-696.467	-1013.82	-2014.112	-1229.743	4716.314	-5997.109	261.833
Free Cash(1)	-15.025	-2.336	-11.029	-289.484	-242.518	-380.543	-316.76	3277.185	-726.11	1399.311
Dividends	-16.816	-26.728	-16.039	-29.622	-33.269	-35.371	-44.1	-44.1	-2.267	-0.5
Interest	-53.296	-79.581	-116.833	-110.685	-186.757	-337.985	-443.181	-725.085	-686.623	-619.051
Net Fund Flow (2)	-85.137	-108.645	-143.901	-429.791	-462.544	-753.899	-804.041	2508	-1415	779.76
External Financing:										
Shareholders:										
Issue/Repurchase of Share Capital- **NEW EQUITY (3)**	0.475	0.036	102.967	4.775	1.281	314.899	0.041	0	0	0.24
Lenders:										
Issue/Repayment of loans-**NEW DEBT (4)**	84.662	108.609	40.934	425.016	461.263	439	804	-2508	1415	-780
Externally Generated Fund (5)	85.137	108.645	143.901	429.791	462.544	753.899	804.041	-2508	1415	-779.76

(1) Free cash is the annual operating cash flows, a positive value denotes an excess and a negative value denotes a shorfall.
(2) Net fund flow is the amount of free cash flow net of interest and dividend payment, a positive value denotes a surplus and a negative value denotes a deficit. This amount is matched by the Externally Generated Fund **(5)**.
(3) This shaded row is the external equity issued/repurchase (**NEW EQUITY**), a positive amount is a cash inflow (an issuance amount) and a negative amount is a cash outflow (a repurchase amount)
(4) This shaded row is the debt issues/ repayment (**NEW DEBT**), a positive amount is a cash inflow (an additional debt raised) and a negative value is a cash outflow (a debt repayment)
(5) A positive sign denotes a cash inflow from issuing external financing, while a negative amount denotes a cash outflow from paying off the external financing.

** This sample firm raised its financing mostly by simultaneous debt and equity issues from 1991 to 1997 when it experienced net fund flow deficit for each of those years.*
In 1998, the firm repaid debt when it had a surplus in the fund flow, while another deficit in 1999 was met through issuing debt.
In 2000, although the firm was able to generate a cash surplus, a new equity was raised as some of the debt was again repaid.

*** The firm in this example utilised all three types of financing, i.e. simultaneous debt/equity issues in 1991 to 1997, debt-only issues in 1999 and equity-only issues in 2000, hence falls in TYPE IV pattern.*

APPENDIX II

Appendix II **illustrates examples of firms that correspond to each type of financing pattern.**

TYPE I FIRMS : ALL EQUITY-ONLY ISSUES

I-BERHAD

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Internal Financing:										
Operating Profit before Interest and Tax	9.73	10.892	6.574	-0.069	1.431	3.507	2.705	-4.648	-5.541	5.249
Depreciation	-2.622	-2.898	-2.607	-3.219	-3.454	-3.391	-3.325	-3.587	-2.842	-2.537
Tax	0	-0.005	-0.031	-0.227	-0.426	-0.72	-0.698	-0.268	0.069	-0.82
Change in NWC	-7.606	-9.579	-29.466	-5.854	0.221	-1.797	5.506	14.707	5.891	-12.967
Capital Expenditures	-1.622	-1.186	14.171	4.357	-2.256	-1.658	-8.399	-12.129	-2.029	6.208
Free Cash	3.124	3.02	-6.145	1.426	2.424	2.723	2.439	1.249	1.232	0.207
Dividends	-0.95	-1.188	-1.426	-1.426	-2.424	-2.424	-2.424	-1.212	-1.212	-0.202
Interest	-2.174	-1.832	-0.745	0	0	-0.299	-0.015	-0.037	-0.02	-0.005
Net fund flow	0	0	-8.316	0	0	0	0	0	0	0
External Financing:										
Shareholders:										
Issue/Repurchase of Share Capital	0	0	8.316	0	0	0	0	0	0	0
Lenders:										
Issue/Repayment of loans	0	0	0	0	0	0	0	0	0	0
Externally Generated Fund	0	0	8.316	0	0	0	0	0	0	0

APPENDIX II

TYPE II FIRMS : SIMULTANEOUS DEBT AND EQUITY ISSUES AND/0R EQUITY-ONLY ISSUES
(NO SINGLE YEAR WITH DEBT-ONLY ISSUES)

CYCLE & CARRIAGE BINTANG BERHAD

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Internal Financing:										
Operating Profit before Interest and Tax	65.102	25.851	26.307	68.006	117.015	171.153	200.505	24.926	70.531	94.187
Depreciation	-3.727	-5.089	-8.232	-7.038	-7.917	-8.834	-8.658	-8.428	-7.083	-6.367
Tax	-22.628	-5.242	-6.098	-19.485	-31.881	-49.312	-57.766	-22.689	-6.914	-27.85
Change in NWC	-1.772	8.351	15.074	-4.821	-46.514	-79.187	-100.695	77.295	-19.028	-39.075
Capital Expenditures	-31.113	-9.807	-26.133	-36.875	-28.783	-20.541	-19.344	-47.25	-44.992	-7.983
Free Cash	13.316	24.242	17.382	13.863	17.754	30.947	31.358	40.71	6.68	25.646
Dividends	-8.122	-10.54	-6.203	-7.785	-10.728	-18.935	-30.5	-34.6	-7	-25.9
Interest	-5.417	-13.715	-12.867	-6.853	-7.22	-10.778	-0.984	-6.11	-0.27	-0.055
Net fund flow	-0.223	-0.013	-1.688	-0.775	-0.194	1.234	-0.126	0	-0.59	-0.309
External Financing:										
Shareholders:										
Issue/Repurchase of Share Capital	0.223	0.013	0.129	0.78	0.174	0.34	0.126	0	0.483	0.368
Lenders:										
Issue/Repayment of loans	0	0	1.559	-0.005	0.02	-1.574	0	0	0.107	-0.059
Externally Generated Fund	0.223	0.013	1.688	0.775	0.194	-1.234	0.126	0	0.59	0.309

IGB CORPORATION BERHAD

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Internal Financing:										
Operating Profit before Interest and Tax	96.02	93.804	79.484	94.803	92.806	150.857	134.663	64.118	88.323	87.125
Depreciation	-6.901	-7.506	-5.931	-3.02	-1.985	-2.021	-1.26	-1.306	-1.251	-29.652
Tax	-20.682	-21.371	-20.466	-25.983	-21.813	-31.394	-25.583	-12.568	-11.453	-24.057
Change in NWC	-143.331	-26.053	-296.629	52.952	35.774	110.029	-17.494	165.251	-79.735	181.078
Capital Expenditures	105.405	217.867	64.955	-102.242	-73.098	-205.988	-172.344	-277.625	-138.117	-118.674
Free Cash	44.313	271.753	-166.725	22.55	35.654	25.525	-79.498	-59.518	-139.731	155.124
Dividends	-14.363	-14.363	-17.102	-15.084	-15.968	-16.485	-16.558	-16.847	-3.414	-5.928
Interest	-32.913	-26.608	-6.087	-10.9	-8.937	-3.014	-9.115	-45.66	-50.951	-41.506
Net fund flow	-2.963	230.782	-189.914	-3.434	10.749	6.026	-105.171	-122.025	-194.096	107.69
External Financing:										
Shareholders:										
Issue/Repurchase of Share Capital	0.001	0	6.965	2.483	5.121	1	0.584	0.001	59.28	0.58
Lenders:										
Issue/Repayment of loans	2.962	-230.782	182.949	0.951	-15.87	-7.026	104.587	122.024	134.816	-108.27
Externally Generated Fund	2.963	-230.782	189.914	3.434	-10.749	-6.026	105.171	122.025	194.096	-107.69

APPENDIX II

TYPE III FIRMS : SOMETIMES EQUITY-ONLY ISSUES AND SOMETIMES DEBT-ONLY ISSUES
(NO SINGLE YEAR WITH MIXTURE OF DEBT AND EQUITY SIMULTANEOUS ISSUES)

ASIATIC DEVELOPMENT BERHAD

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Internal Financing:										
Operating Profit before Interest and Tax	29.438	40.151	38.699	47.033	80.957	69.082	102.61	171.993	273.785	69.885
Depreciation	-5.026	-5.612	-6.272	-6.53	-7.939	-7.966	-8.536	-9.594	-10.033	-9.952
Tax	-7.244	-9.715	-7.255	-10.312	-21.184	-15.875	-26.191	-40.957	0.075	-15.378
Change in NWC	2.801	3.46	-5.934	31.756	-25.187	108.071	-48.11	-65.234	-245.74	-24.449
Capital Expenditures	-54.674	-25.463	-15.986	-61.91	-25.597	-149.606	-14.611	-47.091	-18.311	-16.421
Free Cash	-24.653	14.045	15.796	13.097	16.928	19.638	22.234	28.305	19.842	23.589
Dividends	-11.695	-14.193	-16.126	-16.586	-18.518	-20.109	-20.757	-21.128	-24.019	-26.688
Interest	-0.146	-0.337	-0.253	-0.538	-0.278	-0.034	-0.228	-6.989	-0.944	0
Net fund flow	-36.494	-0.485	-0.583	-4.027	-1.868	-0.505	1.249	0.188	-5.121	-3.099
External Financing:										
Shareholders:										
Issue/Repurchase of Share Capital	36.653	0.748	0.813	5.353	0	0	0	0	0	0
Lenders:										
Issue/Repayment of loans	-0.159	-0.263	-0.23	-1.326	1.868	0.505	-1.249	-0.188	5.121	3.099
Externally Generated Fund	36.494	0.485	0.583	4.027	1.868	0.505	-1.249	-0.188	5.121	3.099

AYER HITAM PLANTING

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Internal Financing:										
Operating Profit before Interest and Tax	-0.04	-0.06	0.115	-0.038	12.302	30.612	34.648	39.442	39.083	8.695
Depreciation	-0.076	-0.095	-0.099	-0.104	-0.147	-0.32	-0.419	-0.449	-0.482	-0.264
Tax	-0.009	-0.075	-0.119	-0.027	-3.865	-9.044	-8.873	-1.525	-1.66	-2.504
Change in NWC	0.249	-69.857	0.313	66.157	-6.154	-42.807	-19.445	-37.227	-67.033	18.399
Capital Expenditures	0.038	70.172	-22.821	-65.925	-3.271	15.191	-12.506	15.646	-19.857	-21.09
Free Cash	0.314	0.275	-22.413	0.271	-0.841	-5.728	-5.757	16.785	-48.985	3.764
Dividends	-0.258	-0.258	-0.262	-0.271	-0.279	-0.349	-0.873	-0.898	-0.898	-3.743
Interest	0	0	0	0	0	-0.29	-1.223	-0.587	0	0
Net fund flow	0.056	0.017	-22.675	0	-1.12	-6.367	-7.853	15.3	-49.883	0.021
External Financing:										
Shareholders:										
Issue/Repurchase of Share Capital	0	0	22.683	0	0	0	0	0	49.902	0
Lenders:										
Issue/Repayment of loans	-0.056	-0.017	-0.008	0	1.12	6.367	7.853	-15.3	-0.019	-0.021
Externally Generated Fund	-0.056	-0.017	22.675	0	1.12	6.367	7.853	-15.3	49.883	-0.021

APPENDIX II

TYPE IV FIRMS : ALL TYPES OF FINANCING AT DIFFERENT TIMES

ALUMINIUM COMPANY OF MALAYSIA BERHAD

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Internal Financing:										
Operating Profit before Interest and Tax	20.071	21.495	19.846	24.155	31.46	31.368	22.205	6.589	16.022	15.349
Depreciation	-6.336	-6.724	-6.948	-7.061	-9.046	-9.83	-13.566	-17.636	-16.62	-13.399
Tax	0	-0.151	-0.689	-0.391	-0.551	-0.487	-2.228	-1.109	-2.4	-2.4
Change in NWC	-3.53	-16.724	-8.301	10.649	-10.241	29.895	-6.907	16.283	-36.617	-14.074
Capital Expenditures	27.96	-9.274	-23.095	-38.719	-24.999	-74.015	-21.891	-13.248	9.66	-5.201
Free Cash	50.837	2.07	-5.291	2.755	4.715	-3.409	4.745	26.151	3.285	7.073
Dividends	0	0	0	-4.403	-6.348	-7.723	-9.552	-5.29	-5.29	-6.613
Interest	-5.393	-0.484	-0.057	-0.027	-0.022	-0.167	-1.049	-1.306	-0.952	-0.46
Net fund flow	45.444	1.586	-5.348	-1.675	-1.655	-11.299	-5.856	19.555	-2.957	0
External Financing:										
Shareholders:										
Issue/Repurchase of Share Capital	**40.783**	**0.682**	**2.774**	**0.944**	**1.168**	**4.349**	**0**	**0**	**0**	**0**
Lenders:										
Issue/Repayment of loans	**-86.227**	**-2.268**	**2.574**	**0.731**	**0.487**	**6.95**	**5.856**	**-19.555**	**2.957**	**0**
Externally Generated Fund	-45.444	-1.586	5.348	1.675	1.655	11.299	5.856	-19.555	2.957	0

ANCOM BERHAD

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Internal Financing:										
Operating Profit before Interest and Tax	1.831	2.168	5.648	8.21	22.179	26.269	29.297	20.257	23.494	18.958
Depreciation	-0.874	-1.107	-2.753	-3.63	-6.15	-5.849	-6.76	-4.374	-7.43	-30.995
Tax	-0.48	-0.731	-1.115	-1.443	-9.626	-5.011	-7.377	-6.3	0.384	-5.066
Change in NWC	4.067	1.235	-12.634	2.933	18.439	-97.92	0.864	39.613	8.061	-33.817
Capital Expenditures	-3.957	-1.569	-20.64	-36.905	-22.734	22.223	-21.49	-65.016	-21.089	-44.433
Free Cash	2.335	2.21	-25.988	-23.575	14.408	-48.59	8.054	-7.072	18.28	-33.363
Dividends	-2.016	-1.82	-1.82	-1.499	-1.544	-1.789	-3.831	-5.353	-2.543	-3.341
Interest	-0.272	-0.347	-1.232	-1.841	-5.09	-5.242	-4.045	-8.019	-7.441	-17.208
Net fund flow	0.047	0.043	-29.04	-26.915	7.774	-55.621	0.178	-20.444	8.296	-53.912
External Financing:										
Shareholders:										
Issue/Repurchase of Share Capital	**0**	**0**	**28.78**	**0**	**0**	**64.874**	**0**	**-3.916**	**-0.977**	**3.6**
Lenders:										
Issue/Repayment of loans	**-0.047**	**-0.043**	**0.26**	**26.915**	**-7.774**	**-9.253**	**-0.178**	**24.36**	**-7.319**	**50.312**
Externally Generated Fund	-0.047	-0.043	29.04	26.915	-7.774	55.621	-0.178	20.444	-8.296	53.912

APPENDIX II

TYPE V FIRMS : SIMULTANEOUS DEBT AND EQUITY ISSUES AND/OR DEBT-ONLY ISSUES
(NO SINGLE YEAR WITH EQUITY-ONLY ISSUES)

ADVANCE SYNERGY BERHAD

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Internal Financing:										
Operating Profit before Interest and Tax	1.008	4.643	5.735	7.909	69.6	150.666	106.064	-299.403	34.274	-23.217
Depreciation	-0.61	-0.633	-1.195	-1.327	-7.2	-14.978	-21.478	-27.632	-29.333	-17.156
Tax	-0.209	0.702	-2.484	-3.922	-16.456	-50.237	-41.015	-13.545	-1.008	-23.379
Change in NWC	24.77	1.53	-28.269	217.776	559.188	274	373	-337	-360	-1307.45
Capital Expenditures	-19.562	-0.801	-138.879	-222.791	-743.042	-491.21	-647.458	614.091	458.449	1383.149
Free Cash	6.617	6.707	-162.702	0.299	-123.51	-101.803	-187.931	-8.225	161.048	46.259
Dividends	0	0	0	0	0	-4.299	-4.729	0	0	0
Interest	-1.577	-1.242	-0.569	-0.235	-10.845	-22.817	-67.582	-123.309	-97.978	-38.992
Net fund flow	5.04	5.465	-163.271	0.064	-134.355	-128.919	-260.242	-131.534	63.07	7.267
External Financing:										
Shareholders:										
Issue/Repurchase of Share Capital	0	0	160.688	0	128.675	30.708	0	0	0	0
Lenders:										
Issue/Repayment of loans	-5.04	-5.465	2.583	-0.064	5.68	98.211	260.242	131.534	-63.07	-7.267
Externally Generated Fund	-5.04	-5.465	163.271	-0.064	134.355	128.919	260.242	131.534	-63.07	-7.267

AJINOMOTO (MALAYSIA) BERHAD

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Internal Financing:										
Operating Profit before Interest and Tax	6.191	6.571	6.739	6.898	6.433	7.509	7.937	7.683	8.239	17.372
Depreciation	-6.253	-8.001	-7.994	-7.47	-7.911	-8.689	-10.237	-11.062	-11.319	-12.88
Tax	0.463	0.395	-1.247	-1.253	-1.121	-0.19	-0.59	-1.295	-0.83	-5.65
Change in NWC	-6.204	4.02	-1.69	-4.76	-1.19	-2.056	-0.627	-5.354	-7.423	-15.949
Capital Expenditures	-4.13	-16.848	-9.559	-9.527	-8.412	-11.306	-15.089	-9.333	-9.092	-7.129
Free Cash	2.573	2.139	2.237	-1.172	3.621	2.646	1.868	2.763	2.213	1.524
Dividends	-2.004	-2.395	-2.432	-2.506	-2.837	-2.837	-3.121	-3.21	-3.21	-3.21
Interest	-0.026	-0.04	0	-0.011	0	0		0	0	0
Net fund flow	0.543	-0.296	-0.195	-3.689	0.784	-0.191	-1.253	-0.447	-0.997	-1.686
External Financing:										
Shareholders:										
Issue/Repurchase of Share Capital	0	0	0	3.684	0	0	0	0	0	0
Lenders:										
Issue/Repayment of loans	-0.543	0.296	0.195	0.005	-0.784	0.191	1.253	0.447	0.997	1.686
Externally Generated Fund	-0.543	0.296	0.195	3.689	-0.784	0.191	1.253	0.447	0.997	1.686

APPENDIX II

TYPE VI FIRMS : ALL DEBT-ONLY ISSUES (NO SINGLE YEAR WITH EQUITY ISSUES)

ABRAR CORPORATION

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Internal Financing:										
Operating Profit before Interest and Tax	7.784	6.372	6.334	0.492	-3.842	54.393	-101.487	-50.8	-29.834	-18.478
Depreciation	-5.579	-7.47	-7.002	-7.008	-8.617	-11.515	-4.55	-4.552	-3.932	-1.293
Tax	-3.728	-2.251	-1.791	-1.303	-0.994	-2.805	-1.733	0.206	0.048	-0.026
Change in NWC	-13.989	-2.274	64.213	-0.144	27.587	-71.039	84.335	98.067	22.478	21.876
Capital Expenditures	-9.311	-8.401	-66.442	2.914	-26.115	6.26	23.663	-40.747	16.336	1.717
Free Cash	-13.665	0.916	9.316	8.967	5.253	-1.676	9.328	11.278	12.96	6.382
Dividends	-2.08	-2.08	-1.056	-1.088	-0.672	0	0	0	0	0
Interest	-0.973	-3.044	-2.956	-2.002	-1.831	-0.724	-4.526	-9.52	-10.012	-6.233
Net fund flow	-16.718	-4.208	5.304	5.877	2.75	-2.4	4.802	1.758	2.948	0.149
External Financing:										
Shareholders:										
Issue/Repurchase of Share Capital	0	0	0	0	0	0	0	0	0	0
Lenders:										
Issue/Repayment of loans	16.718	4.208	-5.304	-5.877	-2.75	2.4	-4.802	-1.758	-2.948	-0.149
Externally Generated Fund	16.718	4.208	-5.304	-5.877	-2.75	2.4	-4.802	-1.758	-2.948	-0.149

AYER MOLEK RUBBER

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Internal Financing:										
Operating Profit before Interest and Tax	0.765	0.376	0.401	-2.743	-4.777	-2.467	-5.543	-5.884	-1.615	-2.151
Depreciation	-0.034	-0.032	-0.058	-0.321	-0.901	-0.358	-0.322	-0.246	-0.119	-0.103
Tax	-0.203	-0.104	-0.119	-0.088	-0.011	-0.096	-0.728	-0.113	0	0
Change in NWC	-0.167	-0.334	0.409	-0.382	-0.015	0.823	2.784	10.49	2.811	2.975
Capital Expenditures	-0.014	0.515	-0.482	2.568	-0.094	2.27	3.528	-14.467	-0.754	19.032
Free Cash	0.415	0.485	0.267	-0.324	-3.996	0.888	0.363	-9.728	0.561	19.959
Dividends	-0.41	-0.468	-0.293	-0.297	-0.098	0	0	0	0	0
Interest	0	0	0	0	0	-0.738	-1.69	-1.833	-1.518	-1.523
Net fund flow	0.005	0.017	-0.026	-0.621	-4.094	0.15	-1.327	-11.561	-0.957	18.436
External Financing:										
Shareholders:										
Issue/Repurchase of Share Capital	0	0	0	0	0	0	0	0	0	0
Lenders:										
Issue/Repayment of loans	-0.005	-0.017	0.026	0.621	4.094	-0.15	1.327	11.561	0.957	-18.436
Externally Generated Fund	-0.005	-0.017	0.026	0.621	4.094	-0.15	1.327	11.561	0.957	-18.436

APPENDIX III

Appendix III **plots a Stem-and-Leaf chart of the financing pattern and industry classification**

FINANCING PATTERN		*INDUSTRY CLASSIFICATION*
I	***Type I***	T
I 𝍸 𝍸𝍸	***Type II***	STPSP TSSIS SPSTO P
III 𝍸 𝍸𝍸	***Type III***	OIOSI TOOII IIISP IPO
𝍸 𝍸𝍸 𝍸 𝍸𝍸 𝍸 𝍸 𝍸 𝍸 𝍸𝍸 𝍸 𝍸𝍸 𝍸 𝍸𝍸 𝍸 𝍸𝍸 𝍸 𝍸𝍸	***Type IV***	IIIIP SIPPO PPSPI TIITI PITPS IPIIT PSOIO IISSI PIPPO PPSIT OOPIP IISSI TISOI SIPSI PSSTS SPSST TISSP PPPPI TPPTS PIPTS IPPPT SIOOS OSITP PIIIP
𝍸 𝍸 𝍸 𝍸𝍸 𝍸 𝍸𝍸	***Type V***	PITSO OOTPS SIOTP ITPOO ISITS OPSIO SIPIT SPPSO
III 𝍸𝍸 𝍸 𝍸𝍸	***Type VI***	POOII TIIIT TOTSO TOTPT OPOTI IIT

T = Technology and Consumer Products
I = Industrial Products
P = Construction and Properties
S = Trading/Services and Hotel
O = Others (Mining/Plantation etc.)