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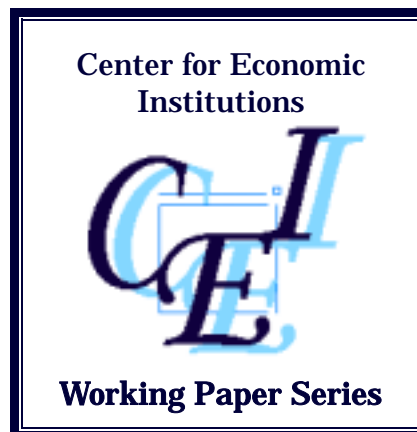# Working Paper Series

Capital Structure and Investment Behaviour of Malaysian Firms in the 1990s -- A Study of Corporate Governance before the Crisis --

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Capital Structure and Investment Behaviour of Malaysian Firms in the 1990s
-- A Study of Corporate Governance before the Crisis --

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ABSTRACT

This is an empirical study analyzing the corporate finance and governance structure in Malaysia before and after the financial crisis of 1997, utilizing the agency cost approach. The contribution of this paper is to link the corporate governance mechanism with the role of banks and corporate ownership structure taking into account the institutional framework and historical background of the Malaysian financial system.

Based on data for 375 non-financial KLSE (Kuala Lumpur Stock Exchange) listed companies during fiscal years 1995-99, our analysis is organized into three parts. Section 2 outlines characteristics of corporate finance in Malaysia in the 1990s using aggregated time-series data. Section 3 examines determinants of capital structure via cross-sectional regressions in terms of dependency on banks, availability of internal funds, ownership concentration, ethnic ownership structure, industry effects, etc. And in section 4, we estimate simple investment functions with panel data in order to examine the effects of debt financing on corporate investments before the crisis.

Empirical results show that the commitment of banks to finance corporate debt as well as lending obviously increased debt ratios. Ownership concentration mitigates conflict between managers and owners. Foreign ownership also contributed to a reduction in the agency costs of equity financing. However, increasing ownership by native Malays (Bumiputera), both the direct and indirect holding of corporate shares, played no significant role in disciplining corporate management. Finally, high dependency on debt led to excessive corporate investment before the crisis. These results imply that the concentration of risks on the banking sector and social policy advocating the dispersion of corporate ownership weakened the corporate governance mechanism, thereby exacerbating the distress of Malaysia's corporate sector during the financial crisis.

CONTENTS

1. Introduction

Southeast Asian countries experienced an unprecedented economic upsurge and downfall in the 1990s. Since the financial crisis of 1997, many economists have pointed to the insufficiency or malfunctioning of the corporate governance mechanism as one of the major factors responsible for causing the situation or at least accelerating the deterioration, which reflects the high degree of dependence of firms on banking institutions for financing in the region as well as concentration of corporate ownership on families.

Because of this incomplete separation of ownership from company groups or owner families, the monitoring ability of banking institutions as outside fund suppliers is thus brought into question. Although the capital markets expanded dramatically in the early 1990s, arbitrary control by insiders seemed to continue as before because of inadequate corporate disclosure, absence of an independent external auditing system, the weak legal protection afforded small shareholders, underdeveloped institutional investments, etc. As a consequence, agency conflict between corporate insiders and outsiders is seemingly more serious than in the US or the UK, where ownership is more diffused and information asymmetry less marked.

The above is a harsh caricature of Asian corporate governance structure before the crisis. Obviously, improved corporate governance is essential for Asian countries to enable them to restructure not only their financial systems but also economic systems. However, in fact, the situation differs significantly from country to country and it is over simplistic to think that a prescription for restructuring corporate governance could be applied from a Western viewpoint.

To discuss corporate governance in Asia, it is necessary to accumulate empirical analyses with respect to individual countries. Agency problems should be discussed, but in the context of the historical and political background to the corporate system as well as financial system. La Porta, Lopez-de Siliances, Schleifer and Vishny (1997), and Schleifer and Vishny (1997) emphasize the institutional constraints on external finance, for example, legal protection for lenders and individual investors with different historical backgrounds. And Roe (1994) emphasizes political aspects of ownership structure in the US. However, because of different institutional framework and historical background we should be cautious in analyzing the corporate governance mechanism in Asian firms.

The purpose of this study is to investigate the financing behavior and governance structure of Malaysian firms before and after the financial crisis in 1997 utilizing the agency cost approach. Our analysis is organized as follows.

In section 2, we explain some aspects of Malaysian corporate finance in the 1990s and the historical background from the viewpoint of agency theory. The key role of banks in the financial system and also social policy in terms of the dispersion of

corporate ownership are especially important in Malaysia when considering the agency costs of corporate finance. Section 3 examines the determinants of capital structure through cross-sectional regressions during fiscal years 1995-99 in terms of dependency on banks, the availability of internal funds, ownership structure, ownership concentration, and industry effects.

Section 4 focuses on the relation between investment behavior and the corporate governance structure before and after the crisis. Firstly, by decomposing the data into two panel data sets (1995-96 and 1998-99), we illustrate the differences in capital structure determinants during the two periods through panel regression. Secondly, we estimate simple investment functions for the period before the crisis in order to examine the effects of debt financing on corporate investments. Section 5 makes concluding remarks and presents some policy implications for the future development of corporate governance in Malaysia.

Some remarkable findings were obtained from the empirical results. The high debt ratio of listed companies was obviously related to dependency on banking institutions, not only in terms of loans but also commitment to other debt financing. As far as ownership structure is concerned, foreign ownership and concentration of ownership contributed to reducing the agency costs of equity financing, but ownership by ethnic Malays, who hold more than 30% of corporate shares both directly and indirectly, played no significant role in disciplining corporate management. Finally, we see high dependency on debt being responsible for excessive corporate investments before the crisis. These results imply that increasing dependency on debt financing supported by the banking sector and ownership dispersion because of social policy weakened the corporate governance mechanism resulting in internal momentum toward economic distress.

2. Agency Problems and Corporate Governance in Malaysia
2.1 Agency Approach to Corporate Governance
2.1.1 Balancing Approach

There are two basic approaches to explain the capital structure of firms in incomplete financial markets. One is the so called 'balancing approach' to corporate finance, which drives firms to search for an optimal capital structure in a trade-off between the advantages and costs of different financing measures. In fact, some legal and institutional factors might be critical in the choice, for example, the tax advantage of debt related to interest payments and the non-tax advantage related to depreciation, and fees and procedures required for the issuance of securities in the markets. But, there might be a limit to debt ratio because it is accepted as a signal of the possibility of financial distress. Also, the legal responsibilities of corporate managers to lenders

and shareholders might be different. All of the above are related to the costs of different forms of financing.

From a static viewpoint, empirical analyses based on this approach have been dominated by studies seeking an optimal capital structure or optimal mix of financing vehicles. However, an optimal capital structure will change in adjusting to the imbalance between real investment opportunities and availability of funds. From a dynamic viewpoint, managers have to choose financing vehicles ranging from lower to higher cost in order. This sort of financing behavior is termed the 'pecking-order hypothesis', and Shyam-Sunder and Myer (1999) insist it is more applicable for the balancing approach.

2.1.2 Agency Cost Approach to External Financing

The other basic approach to capital structure focuses on the conflict of interest in information asymmetry among different types of stakeholders of the firm, which Jensen and Mechling (1976) examined. If there is information asymmetry between major stakeholders, corporate managers (and/or owner managers) and external fund suppliers such as lenders and investors, outsiders tend to underestimate the value of the firm because of possible losses caused by moral hazard attaching to corporate managers. Thus, this sort of conflict of interest increases the financing cost of external funds for managers, which is termed the 'agency cost approach' to corporate finance.

According to the agency cost approach, managers tend to prefer internal funds to external funds in order to avoid agency conflict. However, as the availability of internal funds is limited, they have to choose external funds paying agency costs. Sometimes they make efforts to reduce agency costs by mitigating conflict with fund suppliers by providing information, enhancing communication, agreeing to monitoring by large lenders, etc.

In general, managers prefer to raise internal funds to the extent possible permitted by liquidity constraints. Then they look to raise external funds where the involvement of outsiders is the minimum. Among external fund options, they generally tend to prefer debt financing to equity capital issuance, and then borrowings to debt securities. This is the 'pecking order hypothesis' based on the agency cost approach.

2.1.3 Monitoring by Banks

Regarding debt instruments, managers have different preferences. Leland and Pyle (1977) and Diamond (1984) focus on the role of banks as information suppliers, which work to mitigate agency conflict between lenders and corporate managers due to information asymmetry. Examining the Japanese case, Hoshi et al. (1990) insist that firms are given incentives to maintain relationships with banks and to submit to

monitoring in order to reduce the agency cost of borrowings. Ikeo and Hirota (1992) also present evidence to show that Japan's main bank system has worked to reduce the agency costs of debt in general.

2.1.4 Ownership Structure and Agency Costs of Equity Capital

Agency problems relating to equity capital have three aspects, the conflict of interest between managers and owners, between owners and lenders, and between inside owners and outside owners or investors. Theoretically, ownership by managers is the best solution to solve the first agency problem. It is a typical incentive compatible solution. Lenders having shareholdings in the firm is one possible solution to the second problem. The third problem, conflict between inside owners and outside owners, can be solved by increasing institutional ownership. Let us consider institutional investment.

The concentration of ownership on large outside shareholders might contribute to solving the free-rider problem attaching to small shareholders who do not actively commit to corporate management. The dispersion of ownership possibly depresses corporate governance in the equity market, increasing information asymmetry problems between insiders and outsiders.

Long-term institutional investors, especially pension funds and their trustee bodies, have been increasingly required to fulfil fiduciary responsibility and behave as agents of their customers. Thus, they are expected to contribute to the benefits of their customers or beneficiaries via a direct commitment to the management of companies they invest in, as well as through trading activities in the markets, both of which discipline corporate management and increase corporate value if properly effected.

2.2 Historical Background to Corporate Finance in Malaysia
2.2.1 Corporate Finance in the 1970s and 1980s

Malaysia is a multiracial and Islam-dominated nation. Malays, known as Bumiputera (children of the land), and who account for 60% of the population, were economically and socially disadvantaged in the initial stage of economic development following independence in 1957, and rectification of this has been the top priority of national policy since the eradication of poverty was made a national goal in Malaysia's Second Five-year Plan in 1971.

Malaysia's uniqueness is considered to lie in the fact that it set out to build a financial system from an early stage in the 1960s, in order to establish the basis of savings for economic growth and to realize the equalization of income and dispersion of ownership in the interest of social stability. Domestic banks and social security funds have been two pillars of the financial system, and with the securities market have been

designed to achieve policy purposes. [1]

Both the mechanism to mobilize spontaneous savings by development of a nationwide banking network and that to mobilize compulsory savings based on social welfare funds were successful in achieving high saving rates and in shifting savings to the private and public corporate sector until the mid-1980s. Until the late 1980s, private savings flowed to private growth sectors through banking institutions according to the government's lending guidelines, and to the government sector by obliging social security funds be invested in, and deposit institutions hold, Malaysian government bonds as reserves. Securities investment through collective investment schemes, such as the Employees Provident Fund (EPF) and national unit trusts, contributed to increasing the shareholdings of indigenous Malays. Preferential treatment to encourage Malays to participate in financial transactions was implemented.

This series of policies characterized Malaysian corporate finance in the 1970s and 1980s in terms of financing method and ownership structure. Table 1 shows sources of external funds of the corporate sector for 1970-89, during which time the Malaysian economy as a whole suffered a shortage of funds, except in the late 1970s. According to the table, the financing of Malaysian firms was heavily concentrated on external funds, especially borrowings from banking institutions. Equity issuance steadily increased in the 1980s but a large portion comprised initial public offerings for listing on stock exchanges or the privatization of state enterprises.[2] In addition, a corporate debt securities market did not exist until the end of the 1980s. Following introduction of a mortgage bond market in 1987 as the first private debt market in Malaysia, the government has implemented policies to develop the private debt market. Corporate debt issuance has been encouraged by the government as a way of raising external funds in the market since then. [3]

2.2.2 Corporate Finance in the 1990s

One of the most notable changes in Malaysian corporate finance in the 1990s was the high growth of new corporate debt securities issuance (Table 2) which, following borrowings and equity issuance, appeared as the third important financing instrument of Malaysian firms before the crisis of 1997. Indeed, since 1993, debt issuance has continued to account for more than 10% of external funds, although

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[1] The historical development of the Malaysian financial system and its characteristics is discussed in detail in Suto (1998).
[2] Following a drop in the latter 1970s from 262 in 1973, the number of listed companies on the Kuala Lumpur Stock Exchange increased from 250 to 305 during 1980-89,
[3] Suto (2001) discusses development of the corporate debt securities market in Malaysia.

borrowings from banking institutions were the major source of external funds until 1998. Then, can we understand that this trend in the 1990s meant steady growth of the corporate debt securities market?   To answer this, we should look at some biases in the development of the corporate debt securities market typically observed before the crisis of 1997.   Three points are worth mentioning. [4]

Firstly, corporate bond issuance was preferred to private placement but not public offering.   The lack of public issuance in the Malaysian corporate debt securities market was one of the most serious impediments to an active secondary market. According to a report by the Rating Agency of Malaysia (RAM), as of July 1995 public issuance accounted for only 13.3% of total issue amount, 21.9 billion ringgits and for only 22 out of 166 issuances.[5]

Secondly, a large amount of corporate bonds were with bank guarantees.   As of 1995, more than 80% of corporate bonds issued by the manufacturing industry came with bank guarantees.[6]

Thirdly, there were no secondary markets.   The holding of corporate debt securities was concentrated on social security funds and financial institutions including banking institutions.   Lin (1996) estimated that 81.1% of private debt securities was held by these institutions in 1995.[7]

The above suggests that most corporate debt securities were digested in the form of private placement to financial institutions, i.e. the primary market was by-passed and such securities did not come up for sale on the secondary market.   The second and third points are especially significant.   There is high possibility that firms with strong relationships with banking institutions can issue debt securities more easily than other firms in terms of acquiring guarantees and private placement, i.e., the issuance cost of debt instruments is smaller.   Hence, a large portion of corporate bonds is akin to disguised bank loans.

2.3 Corporate Finance and Agency Conflict in Malaysia
2.3.1 Monitoring by Domestic Lenders and Owners

The series of government policies aimed at accumulating funds mentioned above seem to have affected agency conflict in corporate finance in the following ways.

Firstly, debt financing might be related to deepening dependency on banking institutions, which mitigated agency conflict between debt holders and other

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[4]   Distortions in the corporate debt securities market in Malaysia are analyzed in Suto (2001).

[5] Figures obtained from *RAM FOCUS*, No. 2, December 1995, Rating Agency of Malaysia It is also reported that as of October 1997, 62 % of total long-term bond issues, 17,613 out of 28,390 billion ringgit, comprised bonds with warrants which were privately placed. (*RAM FOCUS*, No. 8, January 1998, Rating Agency of Malaysia).

[6] *RAM FOCUS*, No. 2, December 1995, Rating Agency of Malaysia.

stakeholders. Learning from the Japanese main bank system, the Malaysian government encouraged firms to enter relationships with banking institutions, which, driven toward multi-relationships with their corporate customers, not only lent but also gave commitments with respect to corporate bond issuance, in terms of bond holdings and giving guarantees.

Thus, aiming to maintain high economic growth, it is very possible that government support for the banking sector diluted the monitoring ability of banks in responding to the expansion of corporate demand for external funds. If so, the government protection of the domestic banking sector accelerated the increase in debt financing of their corporate customers. The agency cost of debt appeared to be reduced for the managers, although information asymmetry between managers and lenders did not decrease in reality. Consequently, the continuing expansion of the flow of funds through the banking sector to the corporate sector obviously resulted in the concentration of risks on banking institutions.

Secondly, socio-economic policy directed at ownership dispersion to enhance the social and economic status of native Malays (Bumiputera) seems to have resulted in producing free-rider problems in equity markets. In 1996, the direct and indirect shareholdings of Bumiputera accounted for 36.7% of listed companies (Table 3). Most shareholdings were indirect through institutional investors. Institutional shareholdings were 47.8%, as high as in developed economies, but shareholdings of individuals only 13.5%.[8] Major institutional investors include government agencies and social security funds, including the Employees Provident Fund and national unit trusts, both of which are state-backed institutions. Since the 1980s, the government has used these agencies as strategic vehicles to hold equity issues arising from the privatization of government enterprises and to support equity financing of growth sectors. The issues were apportioned to these institutions at favorable low prices. However, it is notable that collective investment schemes obviously contributed to dispersion of ownership in Malay society.

There might be two opposite views on the effects of the shareholdings of government agencies and social security funds on corporate governance in Malaysia. One view is that an increase in institutional investments is expected to mitigate the conflict of interest between managers and shareholders if they behave as active shareholders on behalf of their customers. Another view is that they have less incentive to monitor the firms they invest in, because they can escape fiduciary responsibility because of government intervention to fund management.

If the latter view is realistic in Malaysia, information asymmetry problems must

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[7] Lin (1996), Tables 4a and 4b.
[8] Taken from various issues of *Investing in the Stock Market in Malaysia*, Kuala Lumpur Stock Exchange.

be more serious for firms held by institutions than others, which means the emergence of a free-rider problem but not any reduction in agency costs.   Although the regulation of fund management has been gradually slackened since the 1990s, as part of financial liberalization, it is difficult for large state-backed institutional investors to manage funds independently from government policy.

In addition, we refer to another possible view related to the signalling approach, and it is that high ownership of state-backed institutions might infer the low probability of bankruptcy for investors in general.   In this case, the cost of equity issuance must be reduced for firms held by these institutional investors, for they are favorably evaluated in the market.   Then, there must remain information asymmetry between managers and shareholders as ever.

2.3.2 Financial Liberalization and Monitoring by Foreign Investors

In the early 1970s, the priority of industrialization policies turned from import substitution to export acceleration.   Since the mid-1980s, the government has become more active in attracting foreign direct investment, effecting financial liberalization policy carefully and gradually. In the early 1990s, the liberalization of capital inflows, including securities investments, was almost completed and until the mid-1990s there was a remarkable increase in portfolio investments as well as expansion of borrowings from abroad.

How did extension of foreign ownership affect corporate valuation?   It is widely recognized that foreign companies and joint ventures are more concerned about disclosure, IR activities, and accounting information from a global viewpoint than local companies in Asia.   In addition, they have greater incentive to raise funds from international investors in the capital markets and/or offshore banking markets.   As a consequence of financial liberalization, entry of foreign investors to Malaysian capital markets rapidly accelerated dramatically expanding securities transactions in the early 1990s.   In 1994, the central bank introduced a series of administrative measures to manage short-term capital inflows, but which were lifted once financial stability was restored.

How did foreign investors influence corporate governance in Malaysia before the crisis?   When they behaved as long-term investors and were properly concerned about management as shareholders, increased foreign investment contributed to mitigating agency conflict by reducing information asymmetry between managers and shareholders.   And, when the market saw the higher level of foreign ownership as a sign of a better company it enabled foreign-owned companies to issue equities in the market more easily and at less cost.

On the other hand, when foreign investors were speculative and myopic, foreign ownership did not contribute to reducing agency costs and likely disrupted the disciplinary function of shareholders.   Nevertheless, it is still possible that the

market wrongly interpreted foreign ownership as a sign of a good company.   In this case, increasing foreign ownership could have confused the evaluation of corporate value and induced excessive investment or non-productive investment as a result of the easy issuance of equity capital.

3 Determinants of Capital Structure: Cross-sectional Analysis
3.1 Effect of Dependency on Banks
3.1.1 Hypotheses

To examine the determinants of corporate finance in Malaysia in the late 1990s, we test some hypotheses with respect to the relation between capital structure and agency costs.   The basic hypothesis to be tested in this section is that dependency on banks contributes to a reduction in the agency cost of debt in general.

As proxies for capital structure we use debt assets ratios (debt ratios) for both book value and market value.   In order to exclude the effect of the availability of internal funds on external fund raising, we should introduce a suitable proxy.   Hence, we chose proxies for dependency on banks and the availability of internal funds, and five control variables: tax-shields, collateral, firm size, business risk, and industrial dummies.[9]

(1) Dependency on Banks

For Malaysian firms, the strong relationship with banking institutions might have been critical not only for securing bank loans but also for reducing agency conflict with respect to corporate debt securities issuance as mentioned above.   With banking institutions monitoring corporate management as lenders, dependency on them likely has a positive influence on debt ratio because such higher dependency reduces the agency cost of other debt.   We thus chose bank loans and advances/debt as a proxy for a firm's dependency on banks.

(2) Availability of Internal Funds

According to the pecking order hypothesis of agency costs theory, corporate managers prefer internal funds to external funds because of the absence of agency conflict between insiders and the outside suppliers of funds.   Among external funds, they prefer debt to shares because of less agency conflict.   A company confronted with limited internal funds is eager to raise debt.   This hypothesis seems to explain the corporate finance situation of Malaysian firms when abundant investment opportunities were available before 1997.

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[9] In selecting proxy variables, Titman and Wessels (1988) and Wiwattanakantang (1999) are very useful.

Thus, the availability of internal funds is likely negatively related to debt ratio. We chose net income/total assets as a proxy for the availability of internal funds. Thus, it is assumed that a firm with greater net cash flow faces fewer internal fund constraints.

(3) Non-debt Tax Shield

The tax system of each individual country significantly affects the choice of financing vehicles in various ways.　According to the Modigliani-Miller theory, the tax exemption of interest payments is an important tax shield for debt financing. Depreciation is another major tax shield.　In the real world there are some other taxes, which affect capital structure, such as income tax on investors and shareholders and various tax concessions on investment. Such non-debt tax shields might be significant but are not considered in this analysis.

We use only depreciation and amortization/total assets, as a proxy for the non-debt tax shield that is thought to be negatively related to debt ratio.

(4) Collateral Value

In general, firms with more tangible fixed assets find it easier to issue bonds or borrow money, since collateral reduces default risk for lenders. We thus use tangible fixed assets/total assets as a proxy for collateral value.

It is thought that collateral value might be positively related to debt ratio. However, in Malaysia, it is very common for shareholdings to be used as collateral for bank loans.　Hence, it is more desirable to use some other proxy including corporate shareholdings if we specify collateral value for each firm. Unfortunately, no such sort of micro data is available.　Thus, we cannot definitely determine the expected effect of scaled tangible assets on debt ratio in advance.

(5) Corporate Size

A number of studies provide evidence of the positive effect of corporate size on debt ratio.　The major reasons are economies of scale in issuing long-term debt, stronger negotiating power vis-à-vis lenders, market confidence reflecting the smaller possibility of bankruptcy, more diversified business, etc.

In general, corporate size is positively related to debt ratio in the developing economies where default information is relatively less available than in developed economies.　We use the natural logarithm of asset size as a proxy for corporate size.

(6) Business Risk

Business risk is another important control variable.　A company with higher business risk has more necessity to diversify risk in the equity market.　Thus, earnings volatility is to be negatively related to debt ratio. We use the standard

deviation of pre-tax total asset profit rate as a proxy for business risk as observed over five years. It is assumed that the business risk of individual companies does not change during the period. Other proxies such as corporate ratings might be more desirable but are not available.

(7) Industry Effects

The choice of financing vehicle might be different according to industry, as demand for both liquidity and fixed investments is generally different from industry to industry. Thus, it is necessary to control industry effects on capital structure, and so we introduced four major industrial dummies among non-manufacturing industries (according to KLSE industry codes[10]) to measure the effects: dummies are equal to 1.0 for construction, plantation, property, and trading and services, and zero for 'other'.

3.1.2 Data and Regression Model

Data sources used for variables are *PRIMARK Company Analysis* (2000/October) and *KLSE Annual Companies Handbook* (Kuala Lumpur Stock Exchange, 1998). The observed period is for five fiscal years from 1995 through 1999 (April 1995 – March 2000). Samples are 375 non-financial firms listed on KLSE[11] for which basic data are available for the observed period. While it might be better to cover the early 1990s if we desire to analyze the effect of financial liberalization and relaxation of controls on capital inflows on corporate governance comprehensively, data availability is unfortunately limited. The basic statistics of all proxy variables including debt ratios are presented in Table 4.

In this section, we show cross-sectional regressions. In section 3, we extend our study to comparative analysis between before and after the crisis using panel regressions. The basic model for cross-sectional regressions is as follows:

$$LEV\ I = a + bBD\ i + cIF\ i + dNDTS\ i + eCV\ i + fCS\ i + g\ BR\ i + U\ i \qquad (1)$$

LEV i: Debt/ Total assets of firm i

BD i :   Bank loans and advances/Total debt

IF i :   Net Income /Total assets

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[10] According to KLSE, non-financial industries are classified into 13 groups: building materials, construction, consumer products, foods and beverages, gaming, hotels, infrastructure, mining, industry products, plantations, property, trading and services. In advance, we estimated regressions for each of these 13 industry dummies and finally selected four.

[11] Number of listed companies on KLSE: 757 in 1999 (474 on the main board and 283 on the second board).

NDTS i: Depreciation and amortization /Total assets
CV i: Fixed tangible assets/ Total assets
CS i: Natural logarithm of total assets
BR i: Business risk
Ui :   Disturbance

3.1.3 Estimation Results

The results of the basic model estimated with OLS are summarized in Table 5. The figures in the table are estimates and their t-values.   As expected, the coefficients of bank dependency are significantly positive on debt ratio with respect to both book value and market value for all observed years.   This is completely consistent with our hypothesis that firms more dependent on bank loans tend to be better able to reduce agency conflict stemming from debt financing. With regard to internal fund constraints, the estimated coefficients are significantly negative for both debt ratio and for all years, which suggests that firms with more abundant liquidity are less dependent on debt. This result is not inconsistent with the pecking order hypothesis regarding choice between internal and external funds.

As for non-debt tax shields, most of the estimated coefficients are, as expected, negative, with only two cases statistically significant.   As the results are not robust, it is understood that the effects of debt tax shields and non-debt tax shields are unstable due to uncertainty regarding economic circumstances surrounding the corporate sector in the late 1990s.   Rather, a better understanding might be that tax shields were not a critical factor in the choice of financing vehicles for Malaysian firms during the observed period when the economy was on an upsurge.

Corporate size is considered a key factor increasing debt financing.   The results show that corporate size is positively related to debt ratio except for two cases of book value after the crisis.   This illustrates that corporate size is accepted as default risk information, i.e., larger firms can more easily issue debt, especially in the market. Meanwhile, collateral value does not seem to affect debt financing.   Indeed we only obtained significantly positive estimates for 1998, with estimates for other cases being neither stable nor significant which might suggest tangible fixed assets are an inappropriate proxy for collateral in Malaysia or that it is due to various industry effects.

Lastly, the business risk result, calculated by standard deviation of pre-tax profits rates, is interesting.   In most cases, estimate signs are positive.   With regard to debt ratio of book value, they are statistically significant for three years. It is noteworthy that business risk is positively related to market value debt ratio as well as book value in 1996, when the stock market was booming. This fact suggests that firms with higher business risk are more dependent on debt.   If the stock market had worked well, those firms could have dispersed business risk widely in the market. Nevertheless, in

Malaysia, it seems that risk attaching to corporate activities concentrated on lenders, especially banking institutions, even during the period when the stock market was enjoying an unprecedented boom.

3.1.4 Industry Effects

We introduced four non-manufacturing industry dummies into the basic model: construction, plantations, property, and trading and services (1.0 for the industries and 0 for 'other').   Thus, manufacturing industries are given 0 for all four dummies. Table 6 shows the results.

The most notable difference in Table 6 is that collateral value coefficients are more significant. Not only are all estimates positive as expected but also half are statistically significant.   Excluding the industry effect of industry dummies, collateral value might be one of the key determinants of debt financing.

Now we give a rough description of industry effects. The construction and trading and services industries seem to be more dependent on debt than manufacturing industries while plantations and property seem to be less dependent. However, most estimates for the construction industry are not statistically significant. The three industries other than plantations were classified as typical growth sectors in the 1990s. The construction and trading and services industries increased fund raising in the corporate bond market before the crisis[12] and the property sector increased equity issuance during the boom of the real estate market. On the other hand, the traditional plantation sector did not demand external funds as actively as growth industries.

3.2 Concentration of Ownership and Ethnic Structure
3.2.1 Hypotheses

Next, we examine effects of the concentration of ownership and structure of ownership on corporate finance. The top and top ten ownership shareholdings are used as proxies of concentration. As far as the ethnic structure of ownership is concerned, we distinguish three ethnic shareholder groups: Bumiputera, non-Bumiputera Malays (Chinese, Indians, and other citizens), and foreigners.

The following three hypotheses are tested, by adding ownership-related variables to the basic regression model.[13]

(1) Concentration of Ownership

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[12] Suto (2001) describes changes in corporate finance by sector in the 1990s.
[13] It is desirable to introduce institutional ownership. However, the only available data are corporate shareholdings (business corporations and financial institutions).   It is not only very difficult to understand the effects of total corporate shareholdings on corporate finance, but also misleading.

Higher concentration on large shareholders is expected to mitigate agency conflict between insiders and outsiders. Thus, shares of top shareholders are to be negatively related to debt ratio.

(2) Ethnic Structure of Ownership
Government policy aimed at the social dispersion of ownership in Malay society might have increased the free-rider problem in corporate control. Only if such policy were accompanied by enhancing the consciousness of Bumiputera as shareholders and/or an improvement in fund management efficiency at institutions that are their agents, would Bumiputera shareholdings have contributed to reducing the agency cost of equity financing. If not, the estimated coefficients of Bumiputera shareholdings are to be positively related to debt ratio.

Thus, Bumiputera shareholdings are considered neutral or positively related to debt ratio. In other words, they are not concerned about corporate management or rather they misjudge corporate valuation.

(3) Ownership by Foreigners
Foreign ownership is thought to contribute to disciplining corporate management if international investors are more concerned about corporate value and demand more information than local investors. If so, the estimated coefficients of foreign shareholdings are to be negatively related to debt ratio.

However, it is possible short-run foreign investment could adversely influence corporate value from a long-term viewpoint. In this case, increasing foreign investments might rather increase agency conflict.

3.2.2 Data and Regression Model
Ownership data are collected from *KLSE Annual Companies Handbook* 1998. As comparable data for individual companies are incomplete, we have to reduce the sample size for estimation. Some 352 samples are available including ownership concentration and 326 including ownership structure by ethnic group. In Table 7, basic statistics of ownership proxies are summarized. We use 1998 figures for cross-sectional analyses for each of five fiscal years. Annual data are desirable but we do not have them.

Concentration of ownership is remarkably high. The mean of the top share is about 30%, and of the top ten, 65%. With regard to ethnic ownership, the mean of Bumiputera shareholdings is 32% and that of foreigners, 19%. The remaining 49% is for Malaysian citizens other than Bumiputera.

Using regression models we added ownership concentration and ethnic structure separately to the basic model (1).

3.2.3 Estimation Results

Firstly, we discuss the effects of ownership concentration. According to regression results, both the top and top ten shareholdings are negatively related to debt ratio. In addition, all estimates are statistically significant. Only the results for the top ten are summarized in Table 8, since those for the top share are more robust. This suggests that ownership dispersion is accompanied by free-rider problems at small shareholders and leads to the high cost of equity issuance. Here it should be mentioned that it seems against the policy of the World Bank to recommend dispersion of the ownership of family businesses or large shareholdings in order to improve corporate management in Asia.[14]

Next, let us look at the results of regression including ethnic ownership presented in Table 9. Bumiputera shareholdings, including direct holdings of individuals and indirect holdings through institutions, are not significantly related to debt ratio. We understand that increasing ownership by Bumiputera has no significant effect on choice of corporate financing. In other words, Bumiputera shareholders have not played any significant role in disciplining the corporate management of the firms they invest in. As long as the government continues its social policy to increase Bumiputera ownership on a preferential basis, it might keep producing silent shareholders so that free-rider problems become more serious.

With regard to foreign ownership, on the other hand, we recognize that in most cases the estimates show a negative relation with debt ratio. Thus, this suggests that increasing foreign ownership contributes to disciplining corporate management, or that foreign ownership is accepted as a sign indicating high profitability or high growth of such firms in the market. Focusing on market value debt ratio, estimates of foreign ownership are systematically negative both before and after the crisis of 1997. Therefore, it is believed foreign investors played a certain role in disciplining corporate management as shareholders.

4   Corporate Finance and Investment Behavior before the Crisis: Panel Analysis
4.1 Corporate Finance Before and After the Crisis

The results of cross-sectional analyses presented in section 3 are robust and consistent with our hypotheses on the effects of bank dependency and ownership structure during the observed period. In this section, we move on to panel analysis in order to consider changes in corporate finance via time series. There is no doubt big structural changes in the financial system as well as the economy were seen after the crisis. Introducing structural change explicitly, we compiled two sets of panel data by dividing basic data into two years before and two years after the crisis, 1995-96 and 1998-99, respectively. Then, we estimated panel regressions for each of the periods.

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[14] See Claessens, Djankov, and Lang (2000).

Explanatory variables are five proxies except industry dummies and business risk which are common to all observed years. We also have to exclude ownership-related variables from panel regressions for the same reason.

Table 10 summarizes the results. We use both plain OLS and a fixed effect model according to chi squares of the Housman test. The OLS results were consistent with those of cross-sectional regression. On the other hand, regarding the results of fixed effect model, we see an interesting difference between before and after the crisis. The coefficient of bank dependency turns negative with debt ratio after the crisis, although it is positively related before.

Thus, there seems to be a tendency for the less bank-dependent to have suffered more seriously from excess debt and a deteriorating balance sheet after the crisis. This is in sharp contrast to more bank-dependent firms being able to more easily raise funds by debt financing before the crisis.

4.2 Estimation of Investment Function

Finally, let us examine the relationship between the debt ratio and corporate investment. Our hypothesis is that highly-leveraged firms were inclined to implement excess investment before the crisis. We estimated the following simple investment function to test this hypothesis.[15]

$$I_{it} = a + b\, ROA_{it} + c\, Log\, K_{it-1} + LEV_{it} + u_{it} \qquad (2)$$

$$I_{it} = LOG\, K_t / K_{t-1} \text{ of firm } i \text{ at fiscal year } t$$
$$K_t : \quad \text{Tangible fixed assets at } t$$
$$ROA_{it} : \quad \text{Expected return on Investment at } t$$
$$K_{it-1} : \quad \text{Size of capital at beginning of } t$$
$$LEV_{it} : \quad \text{Debt ratio}$$
$$u_{it} : \quad \text{Error at } t$$

We use the increase rate in fixed tangible assets as a proxy for corporate investment. With regard to a proxy for expected return on investment or the marginal efficiency of capital, we use the pre-tax total assets profit rate at t. In this formulation, it is assumed that choice of financing measure is completely reflected in the debt ratio. It is also assumed that expected return on investment is realized and marginal return equals average return. We conducted both cross-sectional regressions and panel regressions.

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[15] Hanazaki (2000) used leverage (debt-net worth) as a proxy for financial risk and estimated an investment function. However, debt ratio is a proxy for type of corporate finance in this study.

4.3 Corporate Investment Estimation Results

Results of data before the crisis are summarized in Table 11, and those after the crisis in Table 12. Panel regressions are effected both by plain OLS and by the fixed effect model. As Table 11 shows, results are consistent for all cases. Debt ratios are positively related to investment, as expected. With regard to the effect of size of capital equipment, firms with less tangible fixed assets tend to increase investment more actively. Coefficients of current return on assets are negatively related to investment. This means an increasing rate of return on future investment in the boom before the crisis. In other words, the lower the current rate of return on assets, the higher the return on investment, so that firms with a lower current rate of return invest more actively. Considering the appropriateness of the chosen proxy variable for return on investment, we also used ROA_{t-1} instead of ROA_t, but the sign remained negative.

Next, let us look at investment behavior after the crisis. According to the results shown in Table 12, there is a sharp contrast with the period before the crisis. Firstly, debt ratios are negative to investment except that for market value in 1998, just after the crisis. With regard to panel regression, debt ratio coefficients for market value are negative but not statistically significant because of the instability seen in the period just after the crisis. However, we can understand that firms with a high debt ratio suffered more during the period of economic distress after the crisis. Secondly, coefficients of return to investment are positive except results for the fixed effect model. Roughly, this translates into a negative expectation on the part of firms regarding future return. Thus, firms were generally passive to investment after the crisis.

In sum, we understand that increasing dependency on debt financing caused excess investment before the crisis, which is definitely a key domestic factor accelerating economic distress in 1997 and caused instability in the Malaysian economy. Before the crisis, the information ability of banks to screen borrowers seems to have been overestimated, or rather could not be properly estimated given government protection of the domestic banking sector. This weakened the corporate governance function of lenders. In addition, domestic shareholders, who accounted for a large portion of corporate ownership, seemingly could not compensate for the weakened monitoring of firms on the part of banking institutions.

5 Concluding Remarks and Policy Implications

It is misleading to analyze developing economies empirically without properly considering the particular institutional framework and historical background. The contribution of this paper is to link the corporate governance mechanism with features of corporate finance in Malaysia, in other words, the commitment of banking

institutions to the debt financing of corporate customers and the peculiar corporate ownership structure as a result of implementation of the Bumiputera policy. This study finds some interesting facts concerning corporate governance in Malaysia.

The deepening debt ratio of listed companies was obviously related to dependency on banking institutions before the crisis. As far as ownership structure is concerned, increasing ownership by Bumiputera played no significant role in disciplining corporate management. These facts imply that corporate risk was concentrated on banking institutions and that their ability to monitor corporate customers weakened. Thus, increasing debt financing supported by banking institutions worked to accelerate excessive corporate investments before the crisis. On the other hand, foreign ownership contributed to reducing the agency cost of equity financing by disciplining corporate management. Firms with concentrated ownership, which is typically observed in family businesses, also seem to be better disciplined than firms whose ownership is dispersed through the observed period.

The restructuring of corporate governance is a primary agenda for future growth of the Malaysian economy. In 2001, the government strengthened its Bumiputera corporate ownership policy by making 30% ownership the minimum target. The policy for development of the corporate debt securities market in the Financial Sector Master Plan, published in April 2001, emphasizes deregulation of the corporate debt securities market, aiming to expand issuance by lowering issue costs and abolishing the rating obligation. Contrary to these policies, empirical results suggest that the following three points are important for an improvement in corporate governance on the part of both lenders and owners.

Firstly, it is necessary to lower the concentration of risk in the banking sector and to enhance the monitoring ability of lenders by reducing disguised bank loans with a high commitment to bond issuance and other debt financing. Unquestionably, it is also necessary to increase transparency in lending by disclosure on the part of banking institutions and legal provisions related to lenders' rights.

Secondly, major domestic institutional investors, namely social security funds and investment funds, have to behave as agents of their customers. Their behavior as investors or shareholders will mitigate the free-rider problem found in Bumiputera corporate ownership. Then, fund management has to be independent from government interference. However, it is highly questionable whether this aim can be achieved if Bumiputera corporate ownership policy is strengthened.

Thirdly, long-term foreign investors will be important players in the capital market in terms of disciplining Malaysian firms. Transparency of both corporate management and securities markets, including improvement of disclosure, rating, and audit systems, is most important to attract long-term investors, who are concerned about corporate value from a long-term viewpoint.

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Table 1   External Finance by Corporate Sector (1970-1989)

(RM mil, %)

Year	Borrowings from			New Issues of Corporate Securities			Total External Financing	% of Corporate Securities
	Commercial Banks	Finance Companies	Total	Shares	Debt Securities	Total		
1970	362	56	418	76	-	76	494	15.4
1975	853	311	1164	76	-	76	1240	6.1
1980	5648	684	6332	137	-	137	6469	2.1
1985	5653	2261	7914	645	-	645	8559	7.5
1989	10304	4064	14368	2508	671	3179	17547	18.1

Note: 1) Debt securities exclude mortgage bonds and include debenture loan stocks.

Source: Bank Negara Malaysia, *Money and Banking Malaysia,* 1994.

Table 2   External Finance by Corporate Sector (1990-1998)

(RM mil, %)

Year	Borrowings from			New Issues of Corporate Securities			Total External Financing	% of Borrowing	% of Shares	% of Debts Securities
	Commerci Banks	Finance Companies	Total	Shares	Debt Securities	Total				
1990	13161	7154	20315	9464	2203	11667	31982	63.5	29.6	6.7
1991	16448	7103	23551	3160	2146	5306	28857	81.6	11.0	7.4
1992	8523	4105	12628	9546	2269	11815	24443	51.7	39.1	9.3
1993	11507	5545	17052	3441	3364	6805	23857	71.5	14.4	14.1
1994	16915	6311	23226	8229	5506	13735	36961	62.9	22.3	14.9
1995	40856	12665	53521	13058	9201	22259	75780	70.6	17.2	12.1
1996	72813	19745	92558	14958	12384	27342	119900	77.2	12.5	10.3
1997	61517	22603	84120	17523	15471	32994	117114	71.8	15.0	13.2
1998	8560	6405	14965	1662	10832	12494	27459	54.5	0.6	39.4
1999	-5462	-11272	-16734	6467	22133	28600	11866	-141	54.5	186.5

Note: 1) Borrowings are increase in loans and advances

     2) Debt securities include all straight bonds, bonds with warrants, convertible and Islamic bonds,

     but excludes bonds issued by banking institutions.

Source: Bank Negara Malaysia *Monthly Bulletin,* various issues.

Table 3   Ownership Structure of Listed Companies

(%)

Ethnic Structure

	Bumiputera	Non-Bumi	Foregners	Total
1990.0	28.6	46.2	25.2	100.0
1996.0	36.7	44.1	19.2	100.0

Type of Investors

	Individuals	Institutions	Nominees	Others	Total
1990.0	16.0	43.6	38.1	2.3	100.0
1996.0	13.5	47.8	36.1	2.6	100.0

Note: 1) Nominees were prohibited and transactions of listed securities

     were obliged in the securities exchange in September 1998.

     2) Non-Bumi are Malaysian citizens except Bumiputera.

Source: Kuala Lumpur Stock Exchange, *Investing the Stock Market in Malaysia,* 1991-1997.

Table 4 Statistics of Basic Proxy Variables

	1995	1996	1997	1998	1999
Debts/ Assets (book value)					
Mean	0.217	0.242	0.287	0.373	0.364
Median	0.205	0.240	0.273	0.301	0.264
Minimum	0.000	0.000	0.000	0.000	0.000
Maximum	0.846	0.832	2.869	5.922	5.143
Standard Deviation	0.185	0.188	0.261	0.497	0.492
Debts/ Assets(market value)					
Mean	0.123	0.133	0.262	0.311	0.255
Median	0.096	0.109	0.246	0.306	0.216
Minimum	0.000	0.000	0.000	0.000	0.000
Maximum	0.661	0.660	0.892	0.865	0.823
Standard Deviation	0.120	0.121	0.214	0.231	0.210
Bank Loans/Debts					
Mean	0.446	0.435	0.434	0.453	0.442
Median	0.365	0.349	0.365	0.411	0.397
Minimum	0.000	0.000	0.000	0.000	0.000
Maximum	1.000	1.000	1.000	1.000	1.000
Standard Deviation	0.391	0.388	0.380	0.372	0.379
Net Income/Assets					
Mean	0.069	0.056	0.005	-0.112	-0.018
Median	0.064	0.051	0.030	0.007	0.018
Minimum	-0.294	-0.962	-4.088	-4.288	-1.891
Maximum	0.412	0.680	0.544	0.687	0.781
Standard Deviation	0.073	0.103	0.249	0.463	0.212
Depreciation/Assets					
Mean	0.018	0.022	0.024	0.028	0.028
Median	0.011	0.018	0.019	0.021	0.022
Minimum	-0.008	-0.003	-0.007	0.000	0.000
Maximum	0.098	0.183	0.218	0.596	0.226
Standard Deviation	0.019	0.021	0.026	0.039	0.028
Fixed Tangible Assets/Assets					
Mean	0.406	0.412	0.412	0.442	0.444
Median	0.383	0.394	0.399	0.430	0.437
Minimum	0.001	0.001	0.001	0.000	0.001
Maximum	0.930	0.948	0.953	0.975	0.966
Standard Deviation	0.219	0.224	0.221	0.224	0.230
Total Assets(1000RM)					
Mean	717774	936866	1218265	1267644	1305513.54
Median	246634	326365	389105	350535	353022
Minimum	7549	7218	7538	11404	7312
Maximum	26004300	32488000	38716400	43736200	48782400
Standard Deviation	1953807	2471005	3143291	3441708	3695947.95
Business Risk					
Mean	0.116	0.116	0.116	0.116	0.116
Median	0.059	0.059	0.059	0.059	0.059
Minimum	0.002	0.002	0.002	0.002	0.002
Maximum	2.001	2.001	2.001	2.001	2.001
Standard Deviation	0.202	0.202	0.202	0.202	0.202
	N=375	N=375	N=375	N=375	N=375

Table 5   **Basic Regression Model**

Debt Ratio (Book Value)	1995	1996	1997	1998	1999
Constant	0.033	0.008	-0.578	0.162	0.058
	0.394	0.087	-0.616	0.928	0.304
Bank Dependency	0.071 ***	0.054 **	0.065 ***	0.033	0.111 **
	3.348	2.368	2.642	0.656	2.248
Internal Fund	-1.175 ***	-0.726 ***	-0.738 ***	-0.876 ***	-0.688 ***
	-10.03	-8.322	-17.164	-8.677	-6.542
Non-debt Tax Shield	-0.012	-0.157 ***	-0.437	-0.231	0.638
	-0.026	-3.567	-1.063	-0.483	0.891
Collateral Value	0.005	-0.001	0.017	0.130 *	-0.026
	0.118	-0.017	0.402	1.664	-0.313
Corporate Size	0.018 ***	0.019 ***	0.024 ***	0.005	-0.008
	2.922	2.915	3.509	0.421	0.571
Business Risk	0.052	0.126 ***	0.121 **	-1.189	1.184 ***
	1.233	2.844	2.422	-0.814	10.884
Adjusted R-square	0.266	0.218	0.537	0.545	0.483
F-statistics	23.6	18.4	73.3	75.7	59.2

Debt Ratio (Market Value)					
Constant	-0.165 ***	-0.250 ***	-0.137	-0.286 ***	-0.198 **
	-2.956	-4.345	-1.288	-2.592	-2.025
Bank Dependency	0.035 **	0.009	0.058 **	0.084 ***	0.076 ***
	2.417	0.635	2.094	2.806	3.015
Internal Fund	-0.616 ***	-0.323 ***	-0.233 ***	-0.212 ***	-0.450 ***
	-7.833	-5.720	-4.770	-3.326	-8.317
Non-debt Tax Shield	0.132	-0.219	-1.011 **	-0.136	0.044
	0.448	-0.768	-2.169	-0.452	0.120
Collateral Value	-0.015	0.001	0.054	0.114 **	0.047
	-0.567	0.035	1.109	2.315	1.098
Corporate Size	0.026 ***	0.031 ***	0.028 ***	0.039 ***	0.030 ***
	6.148	7.343	3.685	4.890	4.256
Business Risk	-0.004	0.080 ***	0.066	-0.102	0.010
	-0.147	2.672	1.172	0.701	0.173
Adjusted R-square	0.212	0.212	0.112	0.161	0.247
F-statistics	17.8	17.8	8.9	12.9	21.4

Significance Level: *** 1%   ** 5%   * 10%

Table6   **Regression Model Including Industrial Dummies**

N=375

Debt ratio(Book Value	1995	1996	1997	1998	1999
Constant	0.038	0.018	-0.430	0.153	0.077
	0.458	0.205	-0.481	0.883	0.406
Bank Dependency	0.066 ***	0.050 **	0.052 **	0.018	0.095 *
	3.123	2.258	2.188	0.381	1.924
Internal Fund	-1.117 ***	-0.683 ***	-0.749 ***	-0.875 ***	-0.643 ***
	-9.492	-7.925	-18.008	-8.743	-6.063
Non-debt Tax Shield	-0.514	-0.802 *	-1.115 ***	-0.583	0.246
	-1.118	-1.724	-2.688	-1.215	0.324
Collateral Value	0.031	0.049	0.077 *	0.197 **	0.064
	0.781	1.189	1.797	2.449	0.738
Corporate Size	0.018 ***	0.018 ***	0.024 ***	0.006	0.005
	2.936	2.818	3.587	0.501	0.333
Business Risk	0.050	0.124 ***	0.112 **	-0.202	1.187 ***
	1.196	2.838	2.354	-0.882	10.966
Construction	-0.013	0.039	0.041	0.102	0.162 **
	-0.430	1.276	1.263	1.587	2.367
Plantation	-0.102 ***	-0.113 ***	-0.156 ***	-0.184 ***	-0.122 *
	-3.287	-3.441	-4.714	-2.918	-1.783
Property	-0.031	-0.048 *	-0.086 ***	-0.109 **	-0.043
	-1.185	-1.749	-2.990	-2.016	-0.723
Trading and Service	-0.037	0.039	0.046 *	0.057	0.025
	1.466	1.500	1.668	1.082	0.442
Adjusted R-squared	0.288	0.250	0.575	0.562	0.492
F-statistics	16.1	13.5	51.7	49.0	37.2

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Debt Ratio (Market Value)

Constant	-0.163 ***	-0.240 ***	-0.110	-0.275	-0.177
	-2.943	-4.193	-1.068	-2.572	-1.830
Bank Dependency	0.031 **	0.007	0.045 *	0.074 **	0.070 ***
	2.186	0.502	1.659	2.537	2.748
Internal Fund	-0.585 ***	-0.297 ***	-0.232 ***	-0.214 ***	-0.429 ***
	-7.373	-5.280	-4.880	-3.449	-7.902
Non-debt Tax Shield	-0.178	-0.506 *	-1.530 ***	-0.400	-0.285
	-0.573	-1.665	-3.223	-1.347	-0.734
Collateral Value	0.001	0.026	0.111 **	0.151 ***	0.083 *
	0.039	0.953	2.245	3.042	1.862
Corporate Size	0.026 ***	0.030 ***	0.026 ***	0.038 ***	0.029 ***
	6.187	7.091	3.461	4.915	4.079
Business Risk	-0.006	0.077 ***	0.063	-0.118	0.012
	-0.214	2.688	1.155	-0.834	0.218
Construction	-0.009	0.021	0.063 *	0.049	0.030
	-0.432	1.019	1.671	1.242	0.846
Plantation	-0.059 ***	-0.063 ***	-0.160 ***	-0.178 ***	-0.121 ***
	-2.823	-2.962	-4.240	-4.567	-3.474
Property	-0.024	-0.009	-0.032	-0.034	-0.017
	-1.367	-0.520	-0.982	-1.020	-0.558
Trading and Service	0.020	0.022	0.071 **	0.070 **	0.021
	1.194	1.292	2.282	2.135	0.732
Adjusted R-squared	0.229	0.232	0.173	0.220	0.268
F-statistics	12.1	12.3	8.8	11.6	14.7

Significance Level: *** 1%   ** 5%   * 10%

Table 7		Ownership Structure (1998)		
Share of Top 1		Bumiputera Ownership		
Mean	0.307	Mean	0.318	
Median	0.288	Median	0.275	
Minimum	0.008	Minimum	0.002	
Maximum	0.936	Maximum	0.965	
St. Dev.	0.165	St. Dev.	0.219	
Share of Top 10		Foreigners		
Mean	0.648	Mean	0.192	
Median	0.667	Median	0.109	
Minimum	0.174	Minimum	0.001	
Maximum	0.995	Maximum	0.858	
St. Dev.	0.168	St. Dev.	0.203	
	N=352		N=326	

Table 8	Regressions Including Ownership Concentration				
					N=352
Debt Ratio (Book Value)	1995	1996	1997	1998	1999
Constant	0.108	0.075	-0.005	0.231	0.045
	1.233	0.802	0.050	1.596	0.226
Bank Dependency	0.068 ***	0.059 **	0.060 **	0.092 **	0.120 **
	3.185	2.570	2.487	2.249	2.371
Internal Fund	-1.224 ***	-0.603 ***	-0.984 ***	-0.697 ***	-0.573 ***
	-9.621	-6.393	-12.713	-8.331	-5.126
Non-debt Tax Shield	0.268	0.165	-0.035	0.118	0.935
	0.596	0.367	-0.086	0.314	1.274
Collateral Value	-0.118	-0.016	0.009	0.073	-0.021
	-0.301	-0.385	0.218	1.177	-0.246
Corporate Size	0.018 ***	0.021 ***	0.030 ***	0.013	0.012
	2.939	3.257	4.474	1.310	0.835
Business Risk	0.004	0.084 *	0.043	-0.191	1.302 ***
	0.099	1.800	0.867	-1.013	11.243
TOP10	-0.111 **	-0.163 ***	-0.203 ***	-0.274 ***	-0.094
	-2.135	-2.894	-3.592	-3.237	-0.805
Adjusted R-squared	0.282	0.211	0.418	0.552	0.492
F-statistics	20.7	14.4	37.1	62.9	49.5

Debt Ratio (Market Value)					
Constant	-0.082	-0.192 ***	-0.034	-0.096	-0.121
	-1.400	-3.200	-0.317	-0.853	-1.184
Bank Dependency	0.032 **	0.132	0.043 *	0.093 ***	0.088 ***
	2.202	0.890	1.633	3.165	3.405
Internal Fund	-0.589 ***	-0.249 ***	-0.591 ***	-0.167 **	-0.364 ***
	-6.906	-4.096	-6.888	-2.556	-6.412
Non-debt Tax Shield	0.374	0.023	-0.360	-0.088	0.273
	1.241	0.079	-0.804	-0.300	0.733
Collateral Value	-0.026	-0.015	0.041	0.101 **	0.039
	-1.008	-0.590	0.881	2.088	0.907
Corporate Size	0.026 ***	0.032 ***	0.037 ***	0.044 ***	0.036 ***
	6.230	7.640	4.922	5.712	5.016
Business Risk	-0.040	0.053 *	-0.030	-0.117	0.023
	-1.346	1.782	-0.548	-0.792	0.398
TOP10	-0.134 ***	-0.122 ***	-0.294 ***	-0.396 ***	-0.245 ***
	-3.871	-3.360	-4.695	-6.000	-4.029
Adjusted R-squared	0.240	0.227	0.237	0.217	0.272
F-statistics	16.9	15.8	16.5	14.9	19.8
Significance Level:	*** 1%	** 5%	* 10%		

Table 9	Regression Including Ethnic Ownership				
					N=352
Debt Ratio (Book Value)	1995	1996	1997	1998	1999
Constant	0.021	-0.112	-0.191 **	0.012	-0.034
	0.241	-1.194	-2.068	0.083	-0.165
Bank Dependency	0.074 ***	0.059 **	0.061 **	0.092 **	0.126 **
	3.403	2.475	2.528	2.330	2.369
Internal Fund	-1.247 ***	-0.624 ***	-1.025 ***	-0.676 ***	-0.559 ***
	-10.025	-6.760	-12.974	-7.824	-5.018
Non-debt Tax Shield	0.159	0.151	0.051	0.096	0.651
	0.348	0.326	0.127	0.249	0.772
Collateral Value	-0.041	-0.031	-0.036	0.027	-0.034
	-1.048	-0.758	-0.838	0.419	-0.379
Corporate Size	0.021 ***	0.029 ***	0.039 ***	0.019 *	0.014
	3.214	4.094	5.603	1.776	0.944
Business Risk	0.016	0.108 **	0.071	-0.094	1.346 ***
	0.375	2.350	1.480	-0.481	11.313
Bumiputra Shareholding	0.006	0.028	-0.050	-0.048	-0.038
	0.153	0.610	-1.096	-0.654	-0.380
Foreigners Shareholding	-0.053 ***	-0.125 ***	-0.167 ***	-0.104	-0.028
	-1.127	-2.412	-3.284	-1.281	-0.222
Adjusted R-squared	0.298	0.220	0.434	0.554	0.495
F-statistics	18.2	12.8	32.1	51.4	40.8

Debt Ratio(Market Value)					
Constant	-0.164 ***	-0.289 ***	-0.275 ***	-0.374 ***	-0.295 ***
	-2.871	-4.751	-2.680	-3.328	-2.936
Bank Dependency	0.032 **	0.011	0.036	0.082 ***	0.078 ***
	2.176	0.734	1.345	2.646	2.997
Internal Fund	-0.602 ***	-0.261 ***	-0.671 ***	-0.152	-0.345 ***
	-7.188	-4.353	-7.628	-0.251	-7.033
Non-debt Tax Shield	0.254	-0.076	-0.295	-0.120	0.037
	0.823	-0.253	-0.663	-0.400	0.089
Collateral Value	-0.047 *	-0.033	-0.016	0.039	0.013
	-1.762	-1.240	-0.344	0.769	0.304
Corporate Size	0.029 ***	0.035 ***	0.047 ***	0.052 ***	0.041 ***
	6.484	7.700	6.025	6.155	5.526
Business Risk	-0.021	0.070 **	0.016	-0.004	0.080
	0.678	2.356	0.309	-0.026	1.367
Bumiputra Shareholding	-0.029	0.017	-0.075	-0.043	-0.039
	-1.017	0.570	-1.148	-0.758	-0.787
Foreigners Shareholding	-0.100 ***	-0.096 ***	-0.232 ***	-0.239 ***	-0.177 ***
	-3.165	-2.852	-4.100	-3.768	-3.238
Adjusted R-squared	0.241	0.230	0.251	0.184	0.269
F-statistics	13.9	13.5	14.6	10.2	15.9
Significance Level:	*** 1%	** 5%	* 10%		

Table 10   Panel Regression

(1) Plain OLS Model	1995-96		1998-99	
	Debt Ratio (Book Value)	Debt Ratio (Market Value)	Debt Ratio (Book Value)	Debt Ratio (Market Value)
Constant	0.040	-0.198 ***	0.408 ***	-0.243 ***
	0.660	-4.985	2.955	-3.322
Bank Dependency	0.066 ***	0.024 **	0.069 *	0.089 ***
	4.225	2.353	1.826	4.468
Ineternal Fund	-0.923 ***	-0.436 ***	-0.850 ***	-0.220 ***
	-13.566	-9.737	-21.497	-10.474
Non-debt Tax Shield	-0.146	-0.124	0.113	-0.029
	-0.471	-0.607	0.257	-0.126
Collateral Value	-0.009	-0.010	0.059	0.098 ***
	-0.309	-0.539	0.951	3.000
Corporate Size	0.018 ***	0.028 ***	-0.012	0.033 ***
	3.984	9.371	-1.185	6.218
Adjusted R-squared	0.231	0.200	0.407	0.178

(2)Fixed Effect Model				
Bank Dependency	0.030 *	0.027 **	-0.322 ***	-0.015
	1.775	2.366	-3.523	-0.483
Inernal Fund	-2.776 **	0.012	-0.163 ***	-0.064 ***
	-4.271	0.270	-4.168	-4.686
Non-debt Tax Shield	0.298	0.058	-0.471	-0.134
	0.852	0.243	-0.901	-0.731
Collateral Value	0.217 ***	0.166 ***	-0.113	0.027
	3.375	3.761	-0.600	0.413
Corporate Size	0.034 **	0.052 ***	-0.382 ***	-0.004
	2.597	5.934	-6.242	-0.209
Adjusted R-squared	0.814	0.791	0.783	0.868
P Value	0.000	0.000	0.000	0.000

Significance Level: *** 1%   ** 5%   * 10%

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Table 11   Investment Function (1995-1996)

(1) Leverage (Book Value)

	1995			1996			1995-1996	
							Plain OLS	Fixed Effects
Constant	0.490 ***	0.082 ***	0.470 ***	0.264 ***	0.091 ***	0.233 ***	0.038 ***	
	5.455	4.035	5.471	3.410	5.234	3.084	6.553	
Return on Assets(ROAt)	-0.003	0.001		-0.003 *	-0.002		-0.003 **	-0.006 **
	-0.751	0.366		-1.805	-1.390		-1.955	-2.161
Tangible Fixed Assets(Kt-1)	-0.037 ***		-0.036 ***	-0.015 **		-0.013 **	-0.030 ***	-0.344 ***
	-4.657		-4.614	-2.292		-1.981	-5.183	-19.105
Debt Ratio (LEVB t)	0.209 ***	0.199 ***	0.217 ***	0.107 *	0.097 *	0.115 **	0.157 ***	0.324 ***
	3.068	2.836	3.218	1.905	1.721	2.043	3.356	3.364
Adjusted R Squared	0.068	0.016	0.069	0.020	0.009	0.014	0.046	0.528
F Value	10.062	4.025	14.828	3.367	2.694	3.699		3.038
P Value							0.000	0.000
	N=375			N=375			N=750	

(2) Leverage in Market Value

	1995			1996			1995-1996	
							Plain OLS	Fixed Effects
Constant	0.532 ***	0.082 ***	0.412 ***	0.310 ***	0.086 ***	0.279 ***	0.431 ***	
	6.047	4.392	6.040	4.032	5.469	3.695	7.435	
Return on Assets(ROAt)	-0.003	0.001		-0.003 *	-0.002		-0.003 **	-0.006 ***
	-0.861	0.330		-1.945	-1.402		-2.131	-2.431
Tangible Fixed Assets(Kt-1)	-0.042 ***		-0.401 ***	-0.021 ***		-0.018 ***	-0.032 ***	-0.347 ***
	-5.224		-5.165	-2.976		-2.651	-6.091	-19.904
Debt Ratio (LEVM t)	0.436 ***	0.346 ***	0.445 ***	0.288 ***	0.215 **	0.290 ***	0.369 ***	0.789 ***
	4.151	3.224	4.246	3.230	2.248	3.236	5.358	5.810
Adjusted R Squared	0.087	0.022	0.087	0.038	0.017	0.030	0.066	0.554
F Value								3.185
P Value							0.000	0.000
	N=375			N=375			N=750	

Significance Level: *** 1%   ** 5%   * 10%

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Table 12   Investment Function (1998-1999)

(1) Leverage (Book Value)

	1998			1999			1998-1999	
							Plain OLS	Fixed Effect
Constant	0.138	0.429 **	0.192 *	0.194 **	0.025 *	0.242 ***	0.184 ***	
	1.376	2.531	1.852	2.449	1.807	2.965	2.872	
Return on Assets(ROAt)	0.002 ***	0.002 ***		0.009 ***	0.009 ***		0.002 ***	-0.002 ***
	5.500	5.619		5.537	5.770		6.740	-6.387
Tangible Fixed Assets(Kt-1)	-0.008		-0.012	-0.014 **		-0.180 ***	-0.013 ***	-0.462 ***
	-0.962		-1.444	-2.166		-2.663	-2.361	-25.07
Debt Ratio (LEVBt)	-0.064 ***	-0.628 **	-0.070 **	-0.073 ***	-0.068 ***	-0.083 ***	-0.072 ***	-0.117 ***
	-2.353	-2.300	-2.449	-3.205	-2.997	-3.546	-4.004	-3.773
Adjusted R Squared	0.087	0.087	0.015	0.112	0.103	0.041	0.082	0.645
F Value	12.86	18.82	3.856	16.75	22.55	9.072		4.162
P Value							0.000	0.000
	N=375			N=375			N=750	

(2) Leverage (Market Value)

	1998			1999			1998-1999	
Constant	0.101	0.013	0.153	0.143 *	0.028	0.185 **	0.138 **	
	1.013	0.568	1.482	1.831	1.570	2.288	2.173	
Return on Assets(ROAt)	0.002 ***	0.002		0.009 ***	0.009 **		0.002 ***	-0.002 ***
	5.530	0.567		5.618	5.753		6.821	-6.244
Tangible Fixed Assets(Kt-1)	-0.008		-0.012	-0.010		-0.013 *	-0.010 *	-0.460 ***
	-0.907		-1.400	-1.515		-1.909	-1.887	-24.47
Debt Ratio (LEVMt)	0.032	0.021	0.040	-0.092 *	-0.107 **	-0.117 **	-0.027	-0.025
	0.524	0.351	0.640	-1.708	-2.007	-2.074	-0.653	-0.256
Adjusted R Squared	0.074	0.074	0.0003	0.095	0.092	0.020	0.063	-0.632
F Value	10.95	16.02	1.049	14.04	19.84	4.877		4.077
P Value							0.000	0.000
	N=375			N=375			N=750	

Significance Level: *** 1%   ** 5%   * 10%

Appendix   Proxy Variables

Variables	Proxy variables
Capital Structure	
Debt Ratio(Book Value)	Debts/ Total Assets
Debt Ratio (Market Value)	Debts/(Total Assets-Shareholders' Equity+Share price*number)
Determinants of Capital Structure	
Bank Dependency	Bank Loans and Advances/Debts
Internal Funds	Net Income(After Tax Profit - After Tax Items)/ Total Assets
Non-debt Tax Shield	Depreciation and Amortization/Total Assets
Collateral Value	Tangible Fixed Assets/Total Assets
Corporate Size	Natural Logarithm of Total Assets
Business Risk	Standard Deviation of Before Tax Profit /Total Assets
	for 5 fiscal years, 1995-1999.
Concentration of Ownership	
Top 1	Top 1 shareholder's share in 1998 fiscal year.
Top 10	Top 10 shareholders' share in 1998 fiscal year.
Ownership Structure	
Bumiputera	Shareholding of Bumiputera in 1998 fiscal year.
Foreigners	Shareholding of Foreigners in 1998 fiscal year.
Industry Dummies	
Dummy 1	Construction
Dummy 2	Plantation
Dummy 3	Property
Dummy 4	Trading and Services
Capital Equipment	Fixed Tangible Assets at t
Investment Rate	Log Kt/Kt-1
Expected Return on Investment	BeforeTax Profit rate on Total Assets at t