THE EFFECT OF RELIGION ON EARNINGS MANAGEMENT AND CAPITAL STRUCTURE: EVIDENCE FROM MUSLIM AND NON-MUSLIM MANAGED FIRMS IN MALAYSIA

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This research is dedicated to my family,

Wife **Rukhsana**,

And children **Husna**,

Hussamudin,

Haizumul,

and **Iman.**

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ABSTRACT

This study examines the effect of religion on the earnings management practices and capital structure of Malaysian firms. While prior studies have been useful in identifying economic factors affecting earnings management and capital structure decisions, the prior research has ignored cultural factors generally and religion specifically. My study attempts to augment this research by investigating whether religion, a non-economic motive, has any influence on management decisions related to earnings management and capital structure. In particular, I contrast the behaviour of Muslim and non-Muslim managers in Malaysia.

Because Islam discourages interest-bearing debts, I first hypothesise that Muslim managed firms use less interest-bearing debts and preference shares relative to straight equity than the non-Muslim managed firms. Using a sample of 1607 firm-year observations over the period 1987-1998 and a series of univariate and multivariate analyses, I find that the firms' capital structure decisions are not influenced by the religious orientation of their managers. This suggests that Muslim managers and non-Muslim managers behave alike when making capital financing decisions. While this is contrary to expectations, a possible reason for this finding is that Islamic debt instruments were only available after 1991, and Muslim managed firms that had already issued ordinary debt capital were not able to switch to Islamic debt within the timeframe covered by the study. Another possible reason is that Muslim managers do not adhere strictly to the teachings of Islam and are influenced by the Western economic system.

Second, I establish the argument that Islam prohibits earnings management practices and hypothesise that Muslim managed firms are less likely to manage earnings than their non-Muslim counterparts. I analyse the data from 170 Malaysian firms listed on the KLSE since 1980 using four common earnings management

detecting models, i.e., the Healy, DeAngelo, Jones, and Modified Jones models. The resultsof the univariate and multivariate analysis are mixed. Tests using the Healy model provide some support for the earnings management hypothesis while the others do not. However, on balance, I conclude that religion does not affect the earnings management practices of Malaysian firms.

CHAPTER 1
OVERVIEW OF THE STUDY

1.0 INTRODUCTION

Jensen and Meckling (1976) provide an analysis of the agency conflicts within a firm. They identify the differences in managerial incentives between the owner managed firm and part-owner managed firms where the firm is financed by equity and/or debt. They argue that potential investors would anticipate agency problems and would discount the purchase price of the issue when investing in new issues of equity or debt. Consequently, the manager has incentive to enter into monitoring or bonding agreement to reduce the discounting of the issue and minimise the agency costs.

Building on Jensen and Meckling (1976), Watts and Zimmerman (1978) develop a 'positive accounting theory' that explains and predicts accounting choices made by the firm. This theory has subsequently branched out into two perspectives, namely the efficient contracting perspective[1] and the opportunistic perspective. The efficient contracting perspective assumes that managers would choose the best accounting procedures that would resolve the agency problem *ex ante*. On the other hand, the opportunistic perspective assumes that managers are able to choose accounting procedures from among the accepted set *ex post* to satisfy their own objectives. There are trade-offs between efficient contracting and opportunism. Restricting managers' accounting choice too much may decrease firm value while allowing managers a free hand in their accounting decisions may lead to a redistribution of wealth among the various parties associated with the firm.

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1 For a critical review of the efficient contracting perspective, see Holthuasen (1990), Watts and Zimmerman (1990), Smith and Watts (1992), Gaver and Gaver (1993), and Skinner (1993).

Watts and Zimmerman (1978) attempt to explain and model a firm's decision to lobbying for or against proposed accounting standards. They study the opportunistic behaviour of managers by analysing responses to a proposed standard requiring General Price Level Adjustments. They find that managers would support or oppose the proposal depending upon the positive or negative effect of the standard on the manager's wealth.

Later studies have focused on the incentives managers have to manage reported earnings. These studies have focused on three main determinants of earnings management, namely management compensation plans, debt, and political costs.

However, previous studies examining earnings management have concentrated only on the economic motives for earnings management. In this study, I examine the influence of a non-economic motive, i.e., religion, on the earnings management practices. To test for the influence of religion, one can either (a) compare managers' behaviour in two different countries that have different religious backgrounds, or (b) compare managers' behaviour between two different religions in a single country. I choose the latter approach and compare the accounting decisions between Muslim and non-Muslim managers in Malaysia.

I define Islam and discuss relevant Islamic teachings. Muslims are required to fulfil five basic principles and to submit themselves to the will of God, named *Allah*. Islam does not separate religious deeds from politics, economics, or social affairs. Islam encourages individuals to be involved in business and has *Fiqh Muamalah* to guide its believers as to the permissible and forbidden business transactions and trades. Islam, too, requires its believers to uphold ethical business practices. Beekun (1997) has identified five key axioms implicated in the Islamic ethical system. Based on these axioms, I conclude that earnings management is not permissible in Islam.

Malaysia is selected as the sample country because Islam has been promulgated as the official religion of the country. Islam was brought to Malaysia in the thirteenth century. The influence of Islam over the Malaysian business is clearly visible in the banking, insurance, and the stock market sectors.

I draw on the prior research related to the determinants of earnings management to develop two testable hypotheses, i.e., the debt hypothesis and the earnings management hypothesis. The debt hypothesis predicts that Muslim managed firms use less interest-bearing debt and preference shares relative to straight equity than non-Muslim managed firms. This is based on the argument that Muslims are discouraged to borrow. The earnings management hypothesis predicts that Muslim managed firms are less likely to manage earnings than the non-Muslim managed firms. This is based on the argument that earnings management is inconsistent with Islamic teachings.

Using a sample of 170 firms listed on the Kuala Lumpur Stock Exchange since 1980, I test the above hypotheses using univariate and multivariate tests on the full sample and a variety of subsamples. In general, I find that, contrary to my hypotheses, Islam does not exert any influence on (a) the capital structure of Malaysian firms or (b) the earnings management behaviour of Malaysian managers.

My study differs from the previous research in a number of ways. First, I examine the effect of a non-economic motive (i.e., religion and Islam specifically) on earnings management behaviour. Consequently, the tests carried out provide a new avenue for studies into the relationship between accruals and other non-economic variables.

Second, I examine the earnings management practices with all three determinants in a single model. This contrasts with earlier studies that have generally investigated each determinant in isolation (see chapter 2 for a review of these studies). Thus, my study emphasises breadth over depth at least as far as the management compensation plan, debt, and political cost determinants are concerned.

Third, I examine earnings management practices using data from Malaysia. Previous studies on earnings management have primarily been carried out in the Western countries (particularly the US) where economic benefits are a crucial consideration for individual managers. In contrast, my study examines managerial decisions in a non-Western environment.

Fourth, my study is a non-event based study. Prior studies are generally based on an occurrence of an event (e.g., violation of a debt covenant, being targeted for political action) while my study is not aligned to any special event. It is normal for any individuals, including managers, to react to certain changes in the business environment. However, religion is likely to have a more enduring influence on managerial behaviour.

I have two more general motives for conducting this research. At an academic level, recently researchers in finance (e.g., Hirshleifer and Shumway, 2001) have begun to examine non-economic influences on market behaviour. This line of research is known as behavioural finance. However, accounting researchers have so far not shown much interest in using behavioural factors in empirical studies (of course, behavioural factors have long been considered in experimental accounting research). At a practical level, my results can be used to evaluate the success (or failure) of the Malaysian government's policy of inculcating Islamic values into the private sectors.

1.1 AIM AND OBJECTIVES OF THE STUDY

The aim of my study is to examine empirically the relationship between the religious orientation of the managers and (a) the capital structure of their firms and (b) the earnings management practices of their firms. To achieve these aims, I have two specific objectives, i.e., (a) to test on a univariate basis the association between two variables, i.e., religion on one hand and the debt-equity ratios and the discretionary accruals on the other, and (b) to examine on a multivariate basis the association between religion and the debt-equity ratios and the discretionary accruals after controlling for other factors that may affect the capital structure or earnings management decisions.

1.2 RESEARCH METHODOLOGY

My research is carried out using several methods. First, a literature-based search is used to identify the conceptual foundations and findings of previous studies in earnings management and capital structure. Specifically, I review studies related to each of the three determinants of earnings management practices, namely management compensation plans, debt, and political costs, and to the six factors influencing capital structure decisions in order to provide a base from which I develop my earnings management and debt hypotheses.

Second, I conduct univariate t-tests and Mann-Whitney U-tests to examine the relationship between two variables, i.e., religion and discretionary accruals for the earnings management hypothesis and religion and debt-equity ratios for the debt hypothesis. Third, I perform a multiple regressions examining the relationship between discretionary accruals (as the dependent variable) and religion, management compensation plans, debt, political costs, and industry membership to test the earnings management hypothesis and between the debt-equity ratio (as the

dependent variable) and religion, tax losses, firm size, financial distress, firm growth, collateral, and industry to test the debt hypothesis.

1.2.1 Literature Based Search

I review the literature on earnings management, capital structure, and Islam with particular focus on the Islamic principles and practices with regard to business. The literature is obtained from refereed journals, conference proceedings, electronic journals, working papers, discussion papers, books, and dissertations. The literature is identified from (a) database search (using Proquest and Business Source Premier), (b) a manual search of accounting, economics, finance, and other relevant fields based journals, and (c) references cited in the previous relevant search.

1.2.2 Data Collection And Analysis

I obtain the data used in the analysis from electronic databases (especially Bloomberg) and the manual compilation of financial data from annual reports contained in the libraries of The National Equity Board and Kuala Lumpur Stock Exchange. A list of the sample firms is contained in Appendix A. I analyse the data using Excel and SPSS.

1.3 Outline Of The Thesis

My thesis is divided into five more chapters. A brief description of each of the chapters is given below.

1.3.1 CHAPTER TWO

In this chapter, I review literature related to the purpose of my study. Specifically, I review theoretical and empirical research related to management compensation plans, debt, and political costs. I also review the literature on Islamic teachings.

1.3.2 CHAPTER THREE

I describe the Malaysian institutional environment and the influence of Islam on the Malaysian economy. I then develop two hypotheses regarding the influence of Islam. The two hypotheses developed in this chapter are the debt and the earnings management hypotheses.

1.3.3 CHAPTER FOUR

In this chapter, I discuss the sample selection procedures, the variables and the models used, and the results of the tests on debt hypothesis.

1.3.4 CHAPTER FIVE

In this chapter, I discuss the sample selection procedures, the variables and the model used, and the results of the tests on earnings management hypothesis.

1.3.5 CHAPTER SIX

In this chapter, I summarise the findings of the study and provide conclusion. Also, I discuss the contributions made by this study and the study's limitations. The final section of the chapter identifies directions for future research.

CHAPTER 2
LITERATURE REVIEW

2.0 INTRODUCTION

The purpose of this chapter is to set a foundation for the hypotheses that are developed later in this thesis. In this chapter I review the literature related to earnings management. I also consider earnings management from an Islamic perspective. Because my intention is to examine the effect of the Islamic religion on the manager's propensity to manage earnings, I concentrate on the opportunistic aspects of positive accounting theory (PAT) and only touch briefly on the efficiency aspects.

This chapter consists of seven more sections. Sections 2.1 and 2.2 review the origin of studies on earnings management. Sections 2.3 to 2.5 respectively discuss the effects of managers' accounting choices and review the three primary determinants (i.e., management bonus plan, debt and political cost hypotheses) affecting managers' opportunistic behaviour. Section 2.6 considers the interface between religion and earnings management, particularly from an Islamic perspective. Lastly, section 2.7 provides concluding remarks.

2.1 THE EFFICIENT CONTRACTING PERSPECTIVE OF AGENCY THEORY

Jensen and Meckling (1976) provide an analysis of the agency relationships of the firm. They identify the differences in managerial incentives between the owner managed firm and part-owner managed firm where the firm is financed by (a) only equity and (b) a combination of debt and equity.

In examining agency cost in relation to outside equity capital, Jensen and Meckling (1976) discuss the behaviour of a manager who owns all the shares of the firm compared with situations where the manager owns less than 100 percent of the firm. With full ownership (i.e., the manager owning all the 100 percent of the firm's issued shares), the manager would make operating decisions that maximise firm value and that simultaneously maximises his/her own utility. When a portion of equity is owned by an outsider (i.e., someone other than the manager), the manager's share of an increase in firm value is limited to his/her share of the equity. This provides the manager with incentives to consume an excessive amount of perquisites, e.g., luxurious office, first class travel, and expensive accommodation. Because the manager bears only a fraction of the costs of the perquisite (based on his/her share of the equity) but enjoys the entire benefit, the manager is better off. However, the value of the firm is reduced, and this reduction is referred to as the 'residual loss' by Jensen and Meckling (1976).

Rational investors would anticipate this behaviour and, accordingly, will discount the firm's shares or 'price protect' themselves (Jensen and Meckling, 1976). In Jensen and Meckling's model, the manager, not the shareholders, bears the cost of the residual loss. Consequently, the manager has incentive to enter into monitoring or bonding arrangements to reduce the residual loss. In a monitoring arrangement, a third-party (e.g., an auditor) observes and checks the manager's activity to ensure that the latter is acting in the best interest of the shareholders. In a bonding arrangement, the manager enters into a contract that ascertains the manager's action(s) to benefit the shareholders (e.g., a formal contract limiting the manager's decisions making power like budget restrictions).

When the firm uses external debt, Jensen and Meckling (1976) argue that managers can transfer wealth from debtholders to shareholders. For example, by undertaking riskier projects that yield higher returns, the manager can maximise the likelihood

that the project's pay-off will exceed the fixed payment due to the debtholders. However, potential debt providers will anticipate this behaviour (just like the potential equity investors) and will adjust the price of the debt and/or impose constraints that restrict the manager's ability to engage in such behaviour. These restrictions can be in the form debt covenants. The higher the percentage of debt, the more likely the firm will be constrained by the debt covenants (see Kalay, 1982). Again, the agency cost of debt is also borne by the manager.

Accounting plays an important role in controlling the agency costs that arise from equity and debt. For example, audited accounting statements are used by the agent-managers as a credible way of informing the shareholders about the firm's performance over the period. These reports, used to evaluate the manager's stewardship role, have been in existence since the nineteenth century (Watts and Zimmerman, 1986, p. 197). Importantly, this type of reporting existed before legally required, which shows that managers will voluntarily seek contracting solutions to minimise agency costs.

However, a particular agency problem (e.g., the incentive of managers to shirk) can be mitigated in a variety of ways (e.g., increasing managerial share ownership, increasing monitoring by outside directors). Because the cost of these different contracting solutions or technologies will vary, managers will choose the least costly mechanism (or mix of mechanisms). Similarly because firms can often choose between alternative accounting methods, it is expected that *ex ante* managers will choose those accounting methods which will most efficiently minimise agency costs. This efficient contracting view (Watts and Zimmerman, 1986, 1990) suggests the firm's accepted set of accounting methods is value maximising.

2.2 POSITIVE ACCOUNTING THEORY AND EARNINGS MANAGEMENT

The efficient contracting perspective of accounting procedures assumes that managers would choose the best accounting procedures that would resolve the firm's agency problems *ex ante*. However, managers are able to choose accounting procedures from among the accepted set *ex post*, i.e., after the contracts are in place, to satisfy their own objectives. For example, managers are able to change the firm's accounting policies to report higher reported earnings through earnings management (please refer to section 2.3 below for details) or can provide misleading information leading to the overvaluation of the firm's share price in the capital market.[2] Because these choices are often suboptimal from the firm's point of view, this behaviour is referred to as opportunism (Watts and Zimmerman, 1978).[3]

There are trade-offs between efficient contracting and opportunism. For example, managers' accounting choices need to be restricted to prevent managers from behaving in a way that is contrary to the shareholders' interest.[4] However, restricting managers' accounting choices too much may decrease firm value. Managers have specific knowledge about the best alternative accounting choice(s) that would maximise the firm value, and by allowing them to use this (these) choice(s), they are better able to find efficient solutions to contracting problems. For example, Demski *et al.* (1984, p.17) argue that 'the delegation to managers of the choice from among the set of acceptable (accounting) alternatives can best be understood as efficient, equilibrium behaviour' and that shareholders are able to capitalise the managers' internal expertise by motivating them (through proper

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[2] Teoh *et al.* (1998a) document earnings management practices during seasoned equity issues and Teoh *et al.* (1998b) document earnings management practices during initial public offerings. In both cases the earnings management results in higher valuation of equity in the capital market.

[3] Holthausen (1990) discusses at length on the differences between efficient contracting and opportunistic perspectives. Smith and Watts (1992) and Skinner (1993) consider these differences in debt contracts.

[4] Hagerman and Zmijewski (1979), Bowen *et al.* (1981), Holthausen (1981). Dhaliwal *et al.* (1982), and Daley and Vigeland (1983) have studied the effect of changes in accounting procedures on reported profits.

compensation) to choose the optimal accounting methods. Therefore, the firm must strike a balance between more choices for efficiency reasons and lesser choices to limit opportunism.

In a pioneering study, Watts and Zimmerman (1978) study the opportunistic behaviour of managers by analysing responses to a proposed standard requiring General Price Level Adjustments (hereafter termed as GPLA). They argued that managers would support a proposed standard if it results in positive net benefits for them. They expect that a manager's utility will be affected by the firm's taxes, regulation, political costs, and information production costs, and the manager's compensation plan. They develop a model predicting the managers' submission to the proposed standard. Whether a manager will support or oppose the proposal will depend on whether the proposed standard has a positive or negative effect on the firm's earnings. For large firms that would experience an earnings decrease, Watts and Zimmerman (1978) expect that the managers would support the proposed standard because it would reduce their political costs. For smaller firms that would experience an earnings decrease, managers would oppose the proposed standard because it would reduce their compensation.

The second part of Watts and Zimmerman's (1978) hypothetical model describes the situation where the proposed standard has the effect of increasing the firm's reported earnings. In this scenario, the managers of the smaller firms would be not motivated to make any submission because the increase in benefits arising from increased compensation would not outweigh the increase in information production costs. But the managers of the larger firms would oppose the proposed standard as the increase in firm's reported earnings would attract the attention of regulators and/or politicians thereby creating negative benefits for the firm and subsequently for the managers. Regulators can affect the firm by initiating anti-trust and anti-monopoly proceedings, by raising future tax payments, and/or by reducing revenue

where rates are regulated. Politicians can affect the firm by introducing legislation(s) that will negatively impact the firm's cash flows.

In the empirical tests, Watts and Zimmerman (1978) find that firm size is the single most important factor explaining the managers' opportunistic behaviour in relation to the proposed accounting standard on GPLA. They call this the 'size hypothesis.'

The study of the opportunistic perspective of agency cost developed further with researchers focusing on three determinants that affect managers' accounting choices. First, the management compensation plan hypothesis predicts that managers with accounting-based bonus plans have incentive to report higher earnings to maximise their rewards. Second, the debt/equity hypothesis predicts that managers of the firms with high financial leverage have incentive to report higher earnings to avoid breaching debt covenant restrictions. Third, the political cost hypothesis predicts that managers of large politically visible firms have incentive to report lower earnings to minimise the probability of wealth transfers resulting from the political process (i.e., Watts and Zimmerman's 'size hypothesis'). Each hypothesis is discussed below.

2.3 COMPENSATION PLAN HYPOTHESIS

2.3.1 BACKGROUND

Compensation contracts, particularly incentives and bonus plans, provide important direction and motivation for managers. Agency theory assumes that the interests of the managers and shareholders can be aligned through the use of proper rewards.[5] One common way to reward managers is through an accounting-based bonus plan. Watts and Zimmerman (1978) argue that earnings-based bonus plans work better if

[5] Kaplan (1998) provides a comprehensive discussion about executive compensation contracts and bonus plan in relation to agency theory.

the correlation between the change in earnings and the change in firm value resulting from the manager's action is high. For example, if a manager's total compensation is based on a project with a six-month lifespan (i.e., all cashflows are realised over a six month period), then the manager's decision could be easily linked with the project's profit for the six months. In this case, income is a good metric on which to base the manager's compensation. On the other hand, when the effect of the manager's decision is not reflected in current accounting earnings but is reflected in the firm's market value (e.g., in a long-term project where payoffs are not realised for five to ten years), the use of an annual earnings-based plan would not be appropriate.

The fact that accounting-based bonus plans are relatively widespread suggests that they are an efficient contracting mechanism.[6] However, such contracts can be costly to monitor and so by mechanically tying compensation to accounting earnings, managers can opportunistically adjust the accounting numbers in order to maximise their own utility. That is, they can change accounting policies or increase accruals to report higher earnings and *ex post* earn higher rewards.[7]

2.3.2 Prior Evidence

Healy (1985) examines the opportunistic behaviour of managers with accounting-based compensation plan using data for 94 companies from the years 1930-1980 (1527 firm-years observations). He estimates discretionary accruals, using total accruals as a proxy to test his prediction that managers have incentive to select income-decreasing discretionary accruals when their bonus plan's upper and lower bounds are binding and select income decreasing discretionary accruals if the

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[6] For example, Murphy (1998) reports that nearly all US firms employ some type of accounting-based bonus plan.

[7] Healy, Kang, and Palepu (1987) find that the management compensation is based on the reported earnings and the compensation committee does not adjust CEOs' bonus and salary awards for any changes in the accounting procedures.

bounds are not binding.[8] Using chi-square tests, he finds that the mean standardised accruals for observations with binding lower or upper bounds is smaller than the mean standardised accruals for observations which did not have a binding lower or upper bounds. This suggests that managers are more likely to choose income-decreasing accruals when they are outside the lower or upper bounds of their contracts. In other words, by deferring earnings to the next period, managers with binding constraints will be able to maximise their expected future rewards.[9]

Holthausen *et al.* (1995) re-examine the extent to which managers manipulate earnings in order to maximise the present value of their bonus plan payments. However, their study differs from Healy's in the following ways: (a) they use private rather than public data, (b) they use two different estimates of discretionary accruals, i.e., Healy's model and the Modified Jones model (see chapter 5 for details of the Modified Jones model), (c) they extend the tests of manipulation to include real investment expenditures and various other gains and losses, [10] and (d) they provide specification tests for their models.

Holthausen *et al.* (1995) predict that Chief Executive Officers (CEOs) who are either below the lower bound or above the upper bound of their bonus plan will (a) take more negative accruals, (b) have more real investment expenditures, and/or (c) record more extraordinary losses than CEOs who are within the two bounds of their bonus plans. Using chi-square tests, they compute the mean and the median of total

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[8] Discretionary accruals are part of the accruals (i.e., the differences between income before tax and the operating cash flow) upon which the managers can exercise influence. The other part of accrual is non-discretionary accruals that cannot be influenced by the managers.

[9] Healy (1985) also examines the association between bonus plan changes and changes in accounting procedures. By analysing the sample over a period of 13 years from 1968-1980 and using similar accruals test, he finds a strong association between the changes in bonus plan schemes and changes in accounting procedures.

[10] Houlthausen *et al.* (1995) run similar test on real investment expenditures (specifically for R&D, advertising, and capital expenditures) and extraordinary gains/losses (specifically special items, gains/losses on sale of property, plant and equipment, and discontinued operations). The results for these tests are similar to their accrual based findings.

accruals (from Healy's model) and the estimated discretionary accruals (from the Modified Jones model).

When using Healy's total accrual model, Holthausen *et al.* (1995) find that there are more negative discretionary accruals for below the lower bound group as predicted (statistically significant at 10 percent level), but the prediction did not hold for the above the upper bound group. This finding differs from Healy (1985).

However, the results are different when they use the Modified Jones model. The differences in the mean accruals between the below the lower bound and the within the bound groups are not statistically significant while the differences in the mean accruals between the above the upper bound and within the bound groups is statistically significant. Thus, based on the results of the Modified Jones model, Holthausen *at al.* (1995) conclude that managers adjust earnings downwards only when their bonuses are at their maximum and find no conclusive evidence on such practices when the earnings are below the lower bound of their bonus plan. This is inconsistent with Healy (1985).

Gaver *et al.* (1995) also extend Healy's (1985) work by examining discretionary accruals in relation to bonus plan boundaries using a sample of 102 firms over a period of 11 years from 1980-1990 (where 1980 is the last year in Healy's study). In addition to using more recent data, they use both Healy's model and the Modified Jones model to estimate discretionary accruals.

Using Healy's model, they find a significantly higher proportion of negative accruals for below the bound observations than for the within the bounds observations. Similarly the mean standardised accrual is significantly more negative for the below the bound observations. But results of the tests comparing total accruals between those bonus plans with and without the upper bounds do not yield

any statistically significant results. These results are inconsistent with the Healy's theory that managers select income-decreasing accruals when their bonus plans' upper bound is binding. Thus, Gaver *et al.* (1995) suggest that Healy's results may have resulted from selection bias rather than overt earnings management,

They conjecture that in Healy's (1985) sample, a firm with more negative total accruals would have lower reported earnings and, therefore, it is highly likely that it would be classified as the below the lower bound group. But the negative accruals may have been caused by the non-discretionary accruals rather than discretionary accruals.

Gaver *et al.* (1995) run similar tests using the Modified Jones model. Here, they find that the below the lower bound group has a significantly higher positive accruals (and higher means) than the within the bound group. This is inconsistent with the normal 'managers taking a bath' phenomena. Thus, Gaver *et al.* (1995) conclude that their results provide support for income smoothing rather than earnings management.

More recently, Guidry *et al.* (1999) study the bonus plan hypothesis at a micro level over a shorter period. They analyse departmental data (i.e., the performance of business units in a large conglomerate) for period 1994-1995.[11] Their study differs from the studies by Healy (1985), Holthausen *et al.* (1995), and Gaver *et al.* (1995) in that: (a) the sample consist of various departments in a large firm, (b) financial and bonus data are obtained directly from the firm, and (c) they use a new accrual estimation model (based on inventory reserves).

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[11] The use of micro level data and short-term bonus plan would facilitate a homogeneous setting that enables the research to link earnings management to the managers directly. This is in line with the suggestion made by Schipper (1989), Beaver *et al.* (1996), and Leone and Van Horn (1998).

Guidry *et al.* (1999) compute the mean and median measures of accruals using total accruals (from Healy's model), discretionary accruals (from the Modified Jones model), and inventory reserve model. The inventory reserve model estimates the accrual as the change in inventory reserve account deflated by the total assets of the department. The mean of accruals for the within bounds portfolio under all the three accrual measures are higher than the two outside the bounds (i.e., below the lower bound or above the upper bound) which is consistent with Healy's (1985) findings. Moreover, Guidry *et al.* (1999) find little evidence supporting income smoothing (as found by Gaver *et al.*, 1995).

In this section, I reviewed four empirical studies which have examined the relationship between earnings management and management compensation plans. While the evidence is not totally conclusive, there is some evidence that managers practice earnings management when their compensation is tied to accounting numbers. Table 1.1 below summarises details of the relevant studies discussed above.

TABLE 2.1

EMPIRICAL STUDIES ON COMPENSATION PLAN HYPOTHESIS

Author(s)/ Issue	Sample size	Methods	Findings	Comments and Criticisms
Healy (1985) Examines the effect of bonus schemes on accounting decisions	94 companies (1527 firm-years) during the period 1930-1980	Chi-square tests	A strong association between accruals and managers' income-reporting incentives under their bonus contracts.	a) Total accrual is a crude proxy for managers' discretionary decisions resulting in a weak test. b) The weak results can be caused by the selection bias.
Holthausen, Larcker & Sloan (1995) Investigate the extend to which executives manipulate earnings to maximise the present value of bonus plan payments.	Maximum of 123 firms (and 443 firms-years) during 1982-1984 and 1987-1991	Chi-square tests	a) CEO's manipulate earnings downwards when at upper bound of bonus contract. b) No evidence of earnings management when at (or below) the lower bound. c) No evidence that real investment decisions are influenced by the manager's compensation contract.	a) Use of confidential data may be unreliable. b) Chi-square test is not robust enough to control for other influential variables.
Gaver, Gaver & Austin (1995) Extend Healy's (1985) work by examining the relationship between discretionary accruals and bonus plan bounds based on publicly disclosed bonus plan formulae.	102 firms (with 837 firm-years) during 1980-1990 period	Chi-square tests	a) Findings are stronger when Healy's total accruals model is used. b) When Modified Jones model is used, the finding provides contrary evidence. Managers select income-increasing (decreasing) discretionary accruals when earnings before discretionary accruals fall below (above) the lower (upper) bound of bonus plan.	a) Chi-square test is not robust enough to control for other influential variables. b) Their finding favours income smoothing effect rather than earnings management effect.
Guidry, Leone & Rock (1999) Test the bonus plan hypothesis in a business unit-level data.	179 observations over a 2 year period	OLS regression	a) Managers of business units in the MID portfolio make income-increasing accruals relative to those in the UPP and LOW portfolios. b) There is little evidence in support of income-smoothing.	a) The scenario in one conglomerate may not be generalisable to all firms particularly to smaller ones. b) The accruals may be result from managers' actions before the study period.

2.4 DEBT/EQUITY HYPOTHESIS

2.4.1 BACKGROUND

This section reviews the literature that examines whether firms with debt covenants manage earnings. Under an opportunistic perspective, managers may attempt to redistribute wealth to the firm from its debt providers. Thus, opportunistic behaviour on the part of the manager creates a conflict between the debt providers and shareholders.

Smith and Warner (1979) identify four major sources of conflict between debt providers and shareholders, i.e., (a) the dividend payment problem that arises when the dividend rate is increased after debt is issued, (b) the claim dilution problem that arises when the firm issues debt with the same or higher priority as that of the existing debt, (c) the asset substitution problem that arises when the manager invests in riskier projects than those proposed after the issue of debt, and (d) the underinvestment problem that arises when the manager rejects positive net present value investments that benefit debt providers, but not the shareholders.

To reduce such conflicts, the debt providers would include debt covenants in their debt contracts (Smith and Warner, 1979). They identify four categories of debt covenant restrictions, i.e., (a) restrictions on the firm's production/investment policy (e.g., restriction on the disposition of any substantial assets), (b) restrictions on dividend payments (e.g., requirements to maintain an inventory of funds for dividend payment) [12], (c) restrictions on subsequent financing policy (e.g., restrictions on rental and/or sale-leaseback transactions) [13], and (d) covenants

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[12] Healy and Palepu (1990) find that accounting-based dividend covenants may not reduce the conflict between debt providers and shareholders as managers have the flexibility to make accounting decisions to circumvent the covenant constraints.

[13] Begley and Feltham (1999) study the management incentives influencing the choice of debt covenants which restrict dividends and additional borrowings. They find that the number of shares

specifying bonding activities (e.g., requiring an oathed statement from the directors and/or auditors indicating the compliance with the covenants).

Restrictive covenants can have an impact on firm value as well as affecting managerial behaviour. Leftwich (1981) studies the effect of a mandatory accounting principle change (for merger activities) on the value of a firm's equity. He finds that mandatory changes in accounting principles can affect the measurement rules defined in the restrictive debt covenants and, consequently, can have an impact on the value of the firm's equity. For example, if the adoption of a new standard results in lower reported earnings, existing debt covenants may be tightened and that can increase the probability that the firm will violate its debt covenants. If managers modify production, investment and/or financing activities in order to prevent covenant violations, the value of the firm may be reduced.

2.4.2 Prior Evidence

Studies such as Sweeney (1994), DeFond and Jiambalvo (1994), and DeAngelo *et al.* (1994) examine whether managers opportunistically take action to prevent or circumvent violation of debt covenants. Sweeney (1994) examines accounting changes and default costs for a sample of 130 firms that violated accounting-based debt covenants for first-time during the period 1980-1989. Based on her descriptive analysis, she finds (a) more than 90 percent of the covenant violations are related to bank lending agreements, which supports the findings of Leftwich (1983) that private lending agreements are the first to be violated, (b) net worth and working capital restrictions are the affirmative covenants that are most often violated (consistent with Smith and Warner, 1979, and Francis, 1989), (c) debt-equity ratios and income-based covenants are violated less frequently, and (d) increased

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held by the CEO relative to the total number of shares outstanding (i.e., the CEO's ownership fraction) influences the choice. Specifically, an increase in the CEO's ownership fraction increases debtholders' concern over possible opportunistic behaviour on the part of the CEO, and this leads to the inclusion of debt covenants restricting dividends payments and additional borrowings.

collaterisation, restricted further borrowings, increased interest rates, and the imposition of additional covenant restrictions are the most frequent default cost imposed upon the covenant violating firm.

Sweeney (1994) also studies the managers' accounting choices on a time-series basis around the violations of the accounting-based restrictions. Her sample consists of firms that have exhausted their accounting flexibility and are not able to circumvent constraints or avoid violations. She also uses an industry-wide matched sample (i.e., control firms) to provide a benchmark for non-managed accounting choices. She aligns the sample in event time for years -5 to +2 where year 0 is the violation year. She finds that the violating firms make two or three times the number of income increasing voluntary changes than the control firms, and these changes are large in the default year when compared to surrounding years. For example, the number of accounting changes made by violating firms increased from 17 in year -1 to 28 in year 1 while the number of changes for the control firms did not change in those two years. She also finds that the cumulative effects of the changes made by default firms are significantly greater than those made by the control firms. Thus, Sweeney's (1994) study provides evidence that managers of firms approaching technical default resort to earnings management to circumvent debt covenant violations.

DeFond and Jiambalvo's (1994) study also supports the existence of opportunistic earnings management in relation to debt covenants. They examine the abnormal accruals of 94 firms that had reported serious debt covenant violations in their annual reports in 1985-1988. They tabulate the total accrual changes, earnings changes, cashflow changes, and revenue changes by year relative to the violation year, and they find that the largest changes are in the year prior to the violations. The means of total accrual changes and the cashflow changes are 0.043 and -0.078

respectively in the year prior to violation, and these changes are statistically significant. This suggests earnings management in the year prior to violation.

DeFond and Jiambalvo (1994) further analyse the data using the Jones model on a time-series and cross-sectional basis. They hypothesise that debt covenant restrictions would influence accounting choices in the year preceding and the year of the violation. They compute the level of discretionary accruals (termed as prediction errors) for both the year prior to and the year of the violation and for both the total and working capital accruals. In the year -1, the prediction errors are significantly positive. This suggests that managers practice income-increasing accruals manipulation in the year prior to violation. In year 0, only the mean of the working capital accrual is positive, while the median of the working capital accruals and both the mean and median of total accruals are negative. Thus, they find no evidence of earnings management in the year of the violation.

DeFond and Jiambalvo (1994) repeat the tests after controlling for auditors' going concern qualifications and management changes in year 0 on a subset of the sample. They find that the mean and median of abnormal accruals are positive for both the total and working capital accruals which provide some evidence of earnings management in the violation year. They conclude that (a) in the year prior to violation, there is evidence of earnings manipulation, and (b) in the year of violation, there is evidence of earnings manipulation only after controlling for management changes and auditors' going concern qualifications.

DeAngelo *et al.* (1994) document evidence of earnings management in financially troubled New York Stock Exchange companies. They investigate the accounting choices of 76 firms that had reported at least three annual losses during the six-year period 1980-1985 and that reduced cash dividends. They analyse (a) the mean and median accruals and accrual changes over the fourteen years (i.e., ten years before

the dividend reduction to three years after, with year 0 being the dividend reduction year), and (b) accrual prediction error for four years from the dividend reduction.

DeAngelo *et al.* (1994) find that there is little difference in the accruals in the years before dividend reduction but remarkably large negative accruals in the dividend reduction and subsequent three years. They repeat the accrual prediction error test after controlling for firms' exogenous poor performances and found no evidence of materially high accrual prediction errors. This indicates two possibilities, namely (a) the accruals reflect managers' real responses to financial troubles, and/or (b) the accruals reflect managers' accounting choices.

DeAngelo *et al.* (1994) analyse further the lack of significant prediction errors. Their closer observation of the abnormal decline in inventory suggests that such large negative accruals are caused by the firms' difficult times rather than the event of dividend reduction. They also find that 40 out of 76 firms had discretionary write-offs. They note that the motives for managers to reduce the reported earnings include (a) contract re-negotiations, (b) management changes, and (c) lobbying for government assistance. In summary, although DeAngelo *et al.* (1994) find that large accruals are due to firms' difficult times, they do document opportunistic earnings management practices.

The review of the above empirical studies indicates that managers employ income increasing accruals, especially working capital accruals, in order to circumvent the debt covenant violations. This is primarily practiced in the year prior to violation, and partly in the year of violation. Table 1.2 below presents the details of the relevant studies discussed above.

TABLE 2.2

EMPIRICAL STUDIES ON DEBT/EQUITY HYPOTHESIS

Author(s)/ Issue	Sample size	Methods	Findings	Comments and Criticisms
Sweeney (1994) Examines debt-covenant violations and managers' accounting responses.	130 firms within the period of 1980-1989	Time-series	a) Managers of firms approaching default respond with income-increasing accounting changes. b) Default costs imposed by the lenders and accounting flexibility available to managers are important determinants of managers' accounting responses. c) Private lending agreements are the first violated, and net worth and working capital restriction are the most frequently violated restrictions.	The study excludes the firms which have not violated debt-covenant constraints, and thus, is not able to examine firms that have successfully avoided debt covenant violations.
DeFond & Jiambalvo (1994) Examine the association between debt covenant violation and manipulation of accruals.	94 firms that reported debt covenant violations in annual reports during fiscal year 1985-1988	Time-series and cross-sectional models	a) Violating firms have positive values of abnormal total accruals and working capital accruals in the year prior to violation but are negative in the year of the violation. b) There is evidence of positive abnormal working capital accruals after controlling for management changes and auditors' going concern qualifications.	Sample did not include firms that are nearing violations. Thus the accruals of these firms are not examined.
DeAngelo, DeAngelo & Skinner (1994) Studies the accounting choices in troubled companies.	76 NYSE firms over a period of 14 years (i.e., 10 years before dividend reduction to 3 years after)	Time-series regression	a) Managers' accounting choices primarily reflect their firms' financial difficulties rather than attempts to inflate income. b) Large negative accruals are found in the dividend reduction year and subsequent 3 years. This is due to both (i) managers' real economic decisions and (ii) earnings management. c) The motive for reducing reported earnings are contract renegotiation, management changes, and lobbying for government assistance.	The sample of firms with reported losses may have the tendency to select firms with already low accruals. This may create selection bias.

2.5 POLITICAL COST HYPOTHESIS

2.5.1 BACKGROUND

This section analyses the effect of regulatory and political costs on managers' accounting choices. As discussed in section 2.2, managers of firms that are sensitive to public issues and attract the attention of regulators and politicians have incentive to reduce earnings to prevent wealth transfers arising from government interference.[14]

2.5.2 PRIOR EVIDENCE

Watts and Zimmerman (1978) analyse managers' lobbying responses to a proposed GPLA standard in the US. They contend that large firms will be more politically sensitive and, therefore, will more likely favour the GPLA standard if it results in lower reported earnings.

Watts and Zimmerman (1978) examine firms' responses - either for or against - the proposed standard using discriminant analysis. They include six independent variables, i.e., two proxying for tax effect, two for the political cost effect, one for accounting-based management compensation plans, and one for regulation. Of these six independent variables, only size is consistently significant, and it explains more than half of the variance in voting behaviour. This supports the political cost hypothesis.

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[14] I have excluded studies on the banking and insurance sectors as they are not directly related. Readers interested in these areas are directed to Moyer's (1990) study which analyses the impact of capital adequacy ratio regulation on bank managers' accounting choices, Wahlen's (1994) study which analyses earnings management in unexpected write-offs for non-performing loans and chargeoffs, and Petroni's (1992) study which analyses earnings management by managers of insurers that are financially weak or close to attracting attention of regulators.

Watts and Zimmerman's (1978) work identifies firm size as a proxy for the political cost. This is based on the assumption that larger firms are more sensitive to political pressures and attention than smaller firms. The proxies that they use to surrogate for firm size are sales revenues and the change in sales revenue. Watts and Zimmerman (1986) find that there are two main weaknesses in the size hypothesis. First, large firms are powerful adversaries in the political process; they are able to influence governmental policies and are also observed to receive large wealth transfers, particularly when they are in financial distress. Second, industry-wide effects can influence an individual firm's political exposure. Hence, the use of sales revenues (or changes in sales revenue) to proxy for political cost might be an indirect and, possibly, an inadequate measure of an industry's political exposure. Correspondingly, they note that the size proxy needs to be used with caution (see Watts and Zimmerman, 1986, p. 239).

As a result, different studies use different variables to proxy for political costs. Sutton (1988) uses profit margin while Wong (1988) uses tax rates to measure political costs. However, Cahan (1992) argues that such proxies also ignore the mechanics of the political process.

Cahan (1992) uses antitrust investigations to measure political costs on a relative basis. He assumes political costs will be higher when a firm is being actively investigated for an antitrust violation than in non-investigation periods. He examines the effect of antitrust investigations on 48 firms' reported earnings during 1970-1983. He predicts that managers would use income reducing discretionary accruals during the period of investigation in order to (a) provide evidence that the firm's monopoly had diminished since the beginning of investigation or (b) plead for lower penalties if the case is decided against the firm.

Cahan (1992) uses the Jones model to estimate discretionary accruals and finds that they are significantly lower in the investigation period than in the non-investigation period as expected. He also shows a trend towards income reducing discretionary accruals during period around the start of investigations and a trend toward income increasing discretionary accruals around the end of the investigations. This finding supports the view that managers adjust their discretionary accruals in response to changes in political costs.

Hall (1993) uses changes in gasoline prices and firm earnings as proxies for political costs. He explores the relationship between gasoline prices or oil firm earnings and earnings management. He predicts that during periods of sharp oil price and earnings increases, the managers of oil firms will make more income-decreasing accounting changes and have lower accruals than in other periods. His sample consists of observations from the ten largest US oil refining firms over the period 1979-1988.

Hall (1993) runs a regression using the DeAngelo's changes in total accruals on his 10 sample firms (100 firm-years). He finds that two out of the three variables considered, namely (a) the effect of earnings changes and (b) the combined effect of gasoline price and earnings changes, are statistically significant. This indicates that managers make more income-decreasing (increasing) accounting changes during (a) periods of rising (falling) profit and (b) during periods when both gasoline prices and firm's profits are rising (falling). He finds no statistical evidence to say that income-decreasing (increasing) accounting changes are made in response to the rising (falling) of gasoline prices.

Hall (1993) proceeds to compare his sample of largest US oil firms with 27 smaller ones (i.e., the control firm sample) to increase the power of his tests. He adds one extra variable, i.e., firm size, to the three variables in the model. He finds that size is not statistically significant for large firms but is statistically significant for smaller firms. This indicates that the larger firms in the control sample made income-decreasing accounting choices relative to the other firms. Overall, Hall (1993) finds that the oil firms (especially the smaller ones) take income reducing discretionary accruals in periods when gasoline prices and oil firm earnings are rising and vice versa.[15]

Key (1997) studies the incentives for earnings management in the cable television industry during periods of Congressional scrutiny. Her sample consists of 26 firms over the period 1984 -1995. She first hypothises that cable television firms would manage earnings during Congressional scrutiny.

Key (1997) estimates discretionary accruals (i.e., proxy for earnings management) using Jones (1991) model. Her regression analysis reveals evidence that three variables, i.e., a dummy variable identifying the 1989 and 1990 fiscal years as years of scrutiny, intangible assets, and fixed assets, are statistically significant. The former variable is the variable of interest and is found to be statistically significant at 0.01 level. This indicates that discretionary accruals for the cable TV industry are more negative during periods of Congressional scrutiny than in non-scrutiny periods, i.e., managers manage earnings downwards in response to political

[15] Hall and Stammerjohan (1997) find that managers of oil firms facing potentially large damage awarding lawsuits (a) choose income decreasing non-working capital accruals relative to managers of other oil firms and (b) make accounting choices that result in lower non-working capital accruals during the litigation period than in other periods.

attention.[16] She further analysed the depreciation expense, amortisation expense, and working capital changes individually to determine the extent to which these three components of accruals are managed. She finds that managers exercise discretion over all these three components of accruals with some consistency but most notably through the depreciation expense.

To test for magnitude of earnings management, Key (1997) introduces two more variables, one to represent the importance of cable television operations to the firm and another to represent the importance of proposed rate regulation to the firm. Her univariate analysis shows that both the variables are statistically significant while the multivariate analysis shows that only the latter variable is statistically significant. Thus, she concludes that the absolute magnitude of the negative discretionary accruals during the Congressional scrutiny is positively related to (a) the importance of cable TV operations to the firms (though the multivariate analysis do not support it) and (b) the importance of proposed rate regulations to the firm. In summary, Key (1997) finds political cost motives behind earnings management practices in the cable television industry.

In this section, empirical studies on political cost hypothesis were reviewed. Researchers generally conclude that the managers of politically sensitive firms use discretionary accruals to report lower earnings in order to circumvent any potential political/regulatory interference. Collectively, they support the political cost hypothesis. Table 1.3 presents details of each of the key studies discussed above.

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[16] Key's (1997) study also indicate that the intangible assets and the fixed assets variables are statistically significant. This indicates that these two variables are significant determinants of the change in total accruals as well.

TABLE 2.3

EMPIRICAL STUDIES ON POLITICAL COST HYPOTHESIS

Author(s)/ Issue	Sample size	Methods	Findings	Comments/ Criticisms
Watts and Zimmerman (1978) Explores the factors influencing management's lobbying attitude towards the adoption of GPLA.	53 firms submitting views on adoption of GPLA	Discriminant analysis	The larger firms are more likely to favour GPLA if the adoption of the standard results in a decline in reported earnings. The motive for such reaction among the managers is to prevent any unwanted governmental/ political interference.	Firm size may not be a good proxy for political costs.
Cahan (1992) Examines the managers' behaviour during antitrust investigations.	48 firms that were investigated for violating antitrust law in US between 1970-1988	OLS regression	Managers use lower discretionary accruals during the antitrust investigation period than in non-investigation periods.	a) The study ignores the firms that were not investigated for antitrust violations. b) Use of single event may not be generalisable.
Hall (1993) Explores the relationship of gasoline prices and oil firm earnings with the earnings management.	10 largest oil firms in US in the period 1979-1988	Logit and OLS regression	a) Oil firms make accounting changes and discretionary accruals to decrease earnings when oil prices and firms' earnings are rising and vice versa. b) Firms making accounting choices to reduce political costs can be generalised to smaller oil firms.	a) No control on the possible lagged effect of other important events. b) The possibility of correlation between non-discretionary accruals and test variables could have confounded the accrual test results.
Key (1997) Examines the political cost incentives for earnings management in the cable television industry during periods of Congressional scrutiny.	26 firms (with 257 firm-years) during 1984-1995	OLS regression	a) Cable TV firms have greater income-decreasing accruals during the periods of Congressional security. b) Firms that are strictly operators (i.e., small undiversified firms) tend to have greater negative discretionary accruals than those diversified firms. c) Among firms where the impact of the proposed regulation is large, discretionary accruals are more negative for those with high rates than those with low rates.	a) The study is limited to one industry and a small sample which limits generalisability. b) Ignored the effect of long term liabilities on total accrual in the regression equation.

2.6 THE ROLE OF ISLAM ON BUSINESS

The prior section reviews evidence which suggests that earnings management is practiced by management in various circumstances. Since PAT was developed and almost exclusively tested in western capitalist economies, it is not clear whether such findings can be generalised to other economies and other cultures.

Culture has been found to be one of the key factors influencing and explaining behaviour in social system in anthropology, sociology, and psychology literature (e.g., Parsons and Shils, 1951; Kluckhohn and Strodbeck, 1961; Inkeles and Levinson, 1969; Hofstede, 1980). Hofstede (1980, p. 25; 1994, p. 40) defines cultures as 'the collective programming of the mind which distinguishes one group or category of people from another.' He further narrows down the scope of reference for group to mean a country. The norms of a social system consist of the value systems shared by major groups within a country where values have been defined as 'broad preferences for one state of affairs over others' (Hofstede, 1985, p. 347). Thus, values represent culture at a macro or collective level, i.e., culture describes a society's values (Gray, 1988).

Culture is a construct that may not be easily observable and that should not be reified (Hofstede, 1980). By comparing values between and across countries, Hofstede (1994) identifies five dimensions that can be used to analyse cultural behaviour.[17] For example, he classifies the US culture as being very individualistic, fairly masculine, oriented towards the short-term, and below average in terms of power distance and uncertainty avoidance (Hofstede, 1994, p. 43). Hofstede (1994)

[17] Hofstede (1994) identifies five dimensions with which he analyses and/or predicts the behaviour of a certain culture. The five dimensions are (a) power distance (i.e., the degree of inequality among people), (b) individualism vs. collectivism (i.e., the degree to which people in a country prefer to act, namely individually or collectively), (c) masculinity (i.e., the degree to which 'tough' values like assertiveness and competitiveness are associated to men) vs. femininity, (d) uncertainty avoidance (i.e., the degree to which people in a country prefer structured over unstructured rule for individual behaviour), and (e) long-term vs. short-term orientation.

further argues that 'US managers are socially classified as heroic (i.e., strives to achieve economic independence) upper-class' and notes that many Americans strive for this level.

Hofstede (1994) analyses the role of managers in other countries. For example, Japanese managers are different from their US counterparts on all five dimensions (with least difference on the power distance dimension). He finds that two of his four dimensions, namely the power distance and the uncertainty avoidance, affect the structuring and the functioning of organisations including business organisations. [18] His analysis of culture finds that managers are influenced by what happens at home, at school, in politics, and in government. Thus managers are considered a product of the cultural environment that they are trained in. Hosftede's analysis of the role of management in different countries provides a strong basis to support the argument that managers in a different cultural settings may not be motivated to behave similarly.

One important element that permeates all aspect of society is religion. The effects of religion on culture are well documented in behavioural science literature (see Hofstede, 1980, 1983). Hofstede (1980) and Gray (1988) agree that religion is a significant determinant of culture.

Weber (1970) describes religion as one of the key influential factors affecting political, social, economic, and historical forces, which retrospectively influences individual behaviour. Most religions govern all aspects of its believers' life including their customs, habits, traditions, and business dealings. All religions require their respective believers to exercise ethical behaviour at all times, including business transactions. They also preach against prioritising self-interest at

[18] Hofstede (1985) has analysed and grouped 53 countries based on his analysis of value system. Malaysia, which is the setting for this study, has been ranked high on the power distance dimension and weak on the uncertainty avoidance dimension.

the expense of others. Honesty, truthfulness, and justice are some of the key features of all religious teachings (Baydoun *et al.*, 1999).

From a religious point of view, business transactions are also seen as a matter of ethics and morality. As such, all moral and ethical teachings in religion are a necessary ingredient in an efficient economy (Noreen, 1988). Believers in a specific religion comply with the prescribed ethical conduct because they believe that they will be rewarded for compliance and will be punished for non-adherence. God is seen to have the ultimate power to reward compliance and punish breaches. Noreen (1988, p. 368) argues that religion has played a significant role in enforcing the ethical behaviour of its followers.

The development of trust and faithfulness between contracting parties is possible by adherence to religious teachings. However, Tawney (1926) argues that capitalism became successful after separating religion from business transactions.

It is not that Christian churches did nothing to influence the minds of the managers, but the concept of an economic man is non-religious. The Christian Church in Europe had attempted to enforce canon law[19] in business affairs but failed (Gambling and Karim, 1991; Tawney, 1926).

Weber (1905) has documented the development of modern capitalism among the fundamentalist Protestants in France in sixteenth-century Geneva and in Puritan communities in England, Scotland, and New England. He attributes the rise of Christianity to Martin Luther's concept of 'a Christian calling' and the fall to Jean Calvin's concept of 'the spirit of capitalism.'

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[19] The Merriam-Webster's Collegiate dictionary defines canon law as the usually codified law governing a church.

Tawney (1926) documents that by forbidding usury, the Christian churches opened up the opportunity for Jewish people to control the banking sector. Later, due to the outwardly rigorous definition of usury, the Christian church lost power, and Christians themselves (including the Church clergymen) began to participate in the money-lending business. Tawney (1926) describes a scenario where the powerless English churches were shocked and confused by the swift changes brought about by capitalism. In particular, the failure of the Church of England in inculcating religious values into its believers during the rise of capitalism was caused by (a) the land issue (i.e., the minority land owners who were behaving in unscrupulous, fraudulent, and intimidating ways were aggravating the poverty faced by the peasants and craftsmen who formed the majority of the middle class), (b) the redefinition of usury that permitted the rich to lend to the poor peasants and craftsmen at exorbitant rates, and (c) the growth of individualism that was a new ideology to the English society.

Tawney (1926) also sees the Puritan movements as attempts to revive the church by re-emphasising the religion. The Puritan movements intended to blend and intermingle the idea of theology, church government, political aspirations, business transactions, family life, and personal behaviour to form a new society that was attractive to both the religious and capitalistic groups. At an early stage, the Puritan movements were well-accommodated in England. But later, the Puritan movements failed because the followers were (a) directly involved in and were justifying the practices of usury, (b) unable to blend the collectivist attitudes of the churches with individualistic attitudes of the capitalism, and (c) unable to convince the Crown to impose their social reforms.

The main cause for the failure of the Christian church to influence the middle class citizens in the West was the separation of church and the state. In England, the churches were pushed aside without any influence on businesses through

secularisation of government, universities, judiciary, and other business oriented organisations. The Constitution of the United States of America specifically excludes religion from the affairs of the state.

The failure of churches to influence the business culture has developed into 'an oft-quoted Western maxim that all is fair in business' (Hamid *et al*, 1993, p.137). The failure of the Christian church has been well documented (see Tawney, 1926; Weber, 1905) while the study of the effect of religion on social behaviour was revitalised in the later part of the twentieth century (see Hofstede, 1980, 1983; Gray, 1988). An interesting research question, therefore, is whether other non-Christian religions have more influence over business culture and accounting decisions. In this study, I examine the influence of Islam, the world's second largest religion (Britannica, 2001)[20] over the accounting choices made by managers in Malaysia.

2.6.1 Background On Islam

The word Islam stems from the Arabic root letters *Salama* which stands for, among other things, peace, purity, submission, and obedience. It is one of the three divinely inspired religions (the other two being Christianity and Judaism) all of which believe in the existence of a supreme being, generally termed as God.

Islam does not separate religious deeds from politics, economic or social affairs. Its tradition is firmly embedded in the socio-economic and political development of the Muslim community. It commands man (and woman alike) to submit himself/herself totally to the wills of God, named Allah, and to be an obedient

[20] The 2001 Britannica Book of the Year (2001, p.302) lists that there are about 2 billion believers of Christianity, 1.2 billion believers of Islam, and 0.8 billion believers of Hinduism. I acknowledge the help of Joanna Wenman of Massey University Library for the assistance provided in getting this fact.

servant to his/her creator (see Gambling and Karim, 1991; Hamid *et al.*, 1993; Baydoun *et al.*, 1999).

Muslims are required to fulfill five basic principles, namely (a) instilling a belief that there is no other God than Allah (termed in Arabic as *Kalimah Shahadah*), (b) performing five prayers daily (termed in Arabic as *Solat*), (c) undertaking fasting throughout the month of *Ramadan*, the ninth month in Islamic lunar calendar (termed as *Saum*), (d) paying the obligatory tax (termed as *Zakah*) by those whose earnings exceed the sum required to maintain their immediate family, and (e) going on a pilgrimage to Mecca (termed as *Hajj*) at least once in their life if they can afford it. It is the belief of every Muslim that by performing these duties he/she would fulfill the minimum required duties towards Allah. His/her other duties would be the vicegerent of Allah, and hence all possession held in this world (including private property, material wealth and own children) are held in trust from God (see Gambling and Karim, 1991; Hamid, 1993). Each Muslim is obliged to guard their wealth and all his/her belongings in this world including family. Thus, every Muslim would relate his/her conduct to the purpose of his/her existence as envisaged by Allah, i.e., men (including women) are created to worship Allah (Quran: chapter 51, verse 56). Men (and women) are therefore considered to be the agents of Allah.

2.6.2 Islam And Business Practices

Islam encourages individuals to be involved in business and hence has clearly laid down the commercial law (called *Fiqh Muamalah*) to guide Muslims as to the lawful (called *halal*) and the forbidden (called *haram*) business activities (see Beekun, 1997). This law is based on the following sources in the order of supremacy: (a) the Quran, the revealed words of Allah, is considered the first major source which explains only the general guidelines, (b) the *Sunnah* (the tradition of

the sayings, preaching and the doings) of Prophet Muhammad, and (c) the *Ijma*, the pronouncements representing the consensus of Islamic scholars on matters not addressed explicitly by the above two sources.[21]

The *Fiqh Muamalah* prescribes the nature of allowable trade and services which generally desires justice, fair, and honesty in any business transactions. *Fiqh Muamalah* explicitly forbids transactions that are unclear, unfair, unjust, and fraudulent. Book IX, Volume III of Sahih Muslim narrates the *Hadith* (i.e., the proper documentation of *Sunnah*) on permissible and prohibited trade in Islam. It quotes events that took place during the time of Prophet Muhammad that were classified as unlawful and prohibited by the Prophet himself. Prohibited trading activities quoted in the *Hadith* include the involvement in uncertain transactions (termed in Arabic as *Gharar)*, the meeting with the traders on his way to his trading place to gain undue advantage, selling a commodity before taking possession of it, and selling a rotten (or low quality) commodity together with a good (or high quality) commodity. Thus, Islam emphasises justice and fair dealing in business transactions.

Fiqh Muamalah has not been legally enforced in all Muslim countries. Islamic Law which encompasses *Fiqh Muamalah* exists only in certain Muslim countries (including Saudi Arabia, Syria, Iran, and Pakistan) and even then it has been limited to banking sector only (see Gaoud and Lewis, 1997). Malaysia is one country where both conventional law and *Fiqh Muamalah* are practiced concurrently.

More generally, Islam requires Muslims to uphold ethical business practices. The Islamic ethical system is based on the following key factors: (a) actions and decisions are judged based on the individual's intention, (b) all individuals has

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[21] Islamic scholars use analogy (called *kiyas*), reasoning (called *ra'i*), and statement of jurists' preference (called *istihsan*) to determine *Ijma* (see Hamid *et al.*, 1993; Baydoun and Willet, 1997).

freedom to believe what they want but they are accountable for all actions and decisions, and (c) egoism is forbidden[22] (see Beekun, 1997).

Hence Islamic ethics require Muslims to consider their work as worship and believe that it is entrusted upon them to be ethical. Beekun (1997, p.27) has identified five key axioms that have been implicated in Islamic ethical system, i.e., (a) unity (different aspects of a human's life, including work time and leisure time, is part of a homogeneous whole unit), (b) equality (a well balanced life produces social order), (c) free will (freedom to act without external coercion), (d) responsibility (with accountability), and (e) benevolence (stakeholders consideration including the society).

In summary, Islam, like all other religions, preaches honesty, truthfulness, and justice. It teaches Muslims to be submissive to Allah. Muslims in their business dealings are required to serve and please Allah. The Muslims are guided by *Fiqh Muamalah* and good ethical practices. Thus, Islam does not permit opportunistic earnings management.

2.7 CHAPTER SUMMARY

This study integrates the findings of the earnings management in relation to bonus plan, debt, and political cost hypotheses. The salient features of the effects of each of the hypotheses on earnings management are discussed, followed up by brief summary and a detailed tabulation of key studies.

The four studies on the management compensation plan hypothesis reviewed in this study are Healy (1985), Holthausen *et al.* (1995), Gaver *et al.* (1995), and Guidry *et*

[22] Beauchamp and Bowie (1993, p. 17-18) state that 'if everyone acted egoistically, it seems reasonably certain that protracted conflict would occur, just as many international conflict now arise among nations primarily pursuing their own interest..... the egoist do not care about the welfare of others except insofar as it affects his/her welfare.'

al. (1999). Holthusen *et al.* (1995) and Gaver *et al.* (1995) attempt to corroborate the findings of Healy (1985). The last study uses regression analysis on business unit-level data.

The three studies on debt reviewed in this study are Sweeney (1994), DeFond and Jiambalvo (1994), and DeAngelo *et al.* (1994). These studies use data from the 1980s and 1990s, and concentrate on troubled companies only. All these studies examine discretionary accruals in the violation year compared to other years.

The four studies on political cost reviewed in this study are Watts and Zimmerman (1978), Cahan (1992), Hall (1993), and Key (1997). Other than Watts and Zimmerman's (1978) study, these studies on political cost examine discretionary accruals in response to particular political events.

All the prior studies reviewed have focused on the economic explanation for opportunistic earnings management. In this study, I attempt, to analyse the influence of a non-economic motive, i.e., religion, for earnings management.

The last section of the chapter identifies a religion, i.e., Islam, as having the potential to restrict opportunism. It introduces the role of Islam, the law governing the Islamic business transactions (i.e., the *Fiqh Muamalah*), and discusses how Muslims are expected to behave. Islam requires its believers to fulfill five basic principles and envisage them as the agents of God as Muslims believe that all possessions are held on behalf of God. Islam does not separate religious deed from the political, economic, and social affairs. It has *Fiqh Muamalah* that guides the Muslims through the permissible and forbidden business transactions.

The chapter concludes by stating that a pious Muslim would be guided by *Fiqh Muamalah* and good ethical practices. Thus, Muslims would be expected not to engage in opportunistic earnings management.

The next chapter discusses the institutional environment (both the business and religious environments) in Malaysia and develops two testable hypotheses.

CHAPTER 3
INSTITUTIONAL BACKGROUND AND HYPOTHESES

3.0 INTRODUCTION

Prior research, which is reviewed in sections 2.3 to 2.5 of the preceding chapter, provides some evidence of opportunistic behaviour by managers. Opportunism can be seen as a by-product of Western capitalist systems and the West's concept of economic man. Moreover, the role of religion has diminished in businesses of the West.

Given that the Western capitalist system is now the predominant economic model on a worldwide basis, an interesting and important question is how does the Western economic system affect managers' behaviour in non-Western societies. In particular, do managers in non-Western societies behave similarly to their Western counterparts or does their culture, particularly their religion, moderate their behaviour. Specifically, the effect of a non-Western religion (i.e., Islam) on managers operating in a Western-based economy (e.g., Malaysia) has not been studied.

The aim of this study is to examine the differences in the degree of earnings management between Muslim managed and non-Muslim managed firms. To test this, one could either examine the differences between managers in a Western economy (e.g., US or New Zealand) and a predominantly Muslim country (e.g., Kuwait or Saudi Arabia) or examine the differences between managers of Muslim and non-Muslim managed firms in a single economy. Because it is difficult to control for political, social, and economic factors across countries, in this study, I examine the behaviour of Muslim and non-Muslim managed firms listed in the Kuala Lumpur Stock Exchange (hereafter termed as KLSE).

In this chapter, I discuss the institutional environment in Malaysia and develop the hypotheses for empirical examinations. Specifically, I discuss the business and religious backgrounds within which Malaysian companies operate.

This chapter has four more sections. Section 3.1 provides the background information on the Malaysian business environment, section 3.2 discusses the general role of Islam (being the official religion) in Malaysia, section 3.3 discusses the Islamic elements of Malaysian businesses, and the last section contains the summary and conclusion of the chapter.

3.1 MALAYSIAN BUSINESS ENVIRONMENT

3.1.1 MALAYSIAN ECONOMIC GROWTH

Since independence in 1957, Malaysia has undergone significant transformation and rapid growth. For example, Malaysia's gross domestic product (hereafter termed as GDP) grew by an average of 4.1 percent per annum for the period 1956-1960, by an average of 5.2 percent in the 1960s, by an average of 7.95 percent in the 1970s, and 4.95 percent in 1980s (Jomo, 1990, p. 39). The GDP growth in 1997 was 7.5 percent after which it started to shrink due to the economic crisis faced by the Southeast Asian countries. However, Malaysian GDP had started to grow again in 2000 with a growth rate of 7 percent in 2001. The GDP grew from RM 5.7 billion in 1960 to RM 192.8 billion in 1999 (Bank Negara Malaysia, January 2001).[23]

Malaysia has diversified its economy since independence. It changed from being the world's leading producer/exporter of both tin and rubber during the early 1960s

[23] For a latest update of GDP figures for Malaysia, please refer to the Malaysian Treasury's webpage at http://www.treasury.gov.my/org/ecodata/bfgdpy.PDF.

to being the exporter of manufactured goods (like computer chips). It has also expanded into heavy industries like automotive making and petroleum extractions. The agricultural sector's share of GDP has declined from 30.8 percent in 1970 to 22.8 percent in 1980 and 0.5 percent in 2000 while the manufacturing sector's share of GDP rose from 13.4 percent in 1970 to 20.0 percent in 1980 and 23.9 percent in 1988. However, the manufacturing sector's share of GDP in year 2000 was only 17.0 percent due to the economic crisis faced by Malaysia (see Bank Negara Malaysia's Annual Report 2001 for a detailed analysis). Thus, Malaysian economic growth during 1960s and 1970s was very impressive compared to most other Third World economies (Jomo, 1990, p. 51).

The government's active fiscal policy stimulation with the aid of foreign direct investments (especially from Japan and US) has boosted the economy over these two decades. Furthermore, the government with the adoption of Policy of Malaysia Incorporated in 1983 has privatised many state-run enterprises that are now registered under Companies Act 1965, e.g., Malaysian Airline System Berhad (airline), Syarikat Telekom Malaysian Berhad (telecommunication), and Tenaga Nasional (electricity).

For private firms, raising capital through public share offerings was made possible through the modernisation of the Malaysian stock exchange (Committee for Financial Technical Assistance in Asia, 1994). As a result, there has been a large increase in the number of new shares issued and the number of firms being listed on the KLSE (see below for details).

3.1.2 KLSE AND PUBLIC LISTED FIRMS

Even though stockbroking activities date back to 1930, the KLSE existed formally only since 1973. The KLSE was formed when the Currency Interchangeability Agreement between Malaysia and Singapore was discontinued and the Securities Industries Act 1973 was adopted. The KLSE is a self-regulatory body which governs (a) the conduct of its members and member stock broking companies in securities dealings, (b) enforces the listing requirements that spell out the listing and disclosure standards to be maintained by public listed companies, and (c) is also responsible for the surveillance of the market place.

The KLSE was fully computerised in 1992.[24] The KLSE was the sixth largest bourse in Asia in 1992, after the stock exchanges of Tokyo, Osaka, Hong Kong, Taiwan, and Korea with a market capitalisation of RM 245.8 billion (NZ$140.46 billion). It has grown remarkably to become the largest in Southeast Asia, third largest in Asia Pacific (after Tokyo and Hong Kong), and the fourteenth largest in the world (Ghoush and Salleh, 1999). Its market capitalisation at the end of 2000 was RM 444.44 billion (NZ$253.94 billion) and the market capitalisation before the crisis (i.e., in 1996) was RM809.84 billion (NZ$462.77 billion) (see KLSE Annual Handbook, 2001).

The KLSE has grown from 285 companies (with a market capitalisation of RM 131.billion (NZ$75.26 billion)) in 1990 to 795 companies (with a market capitalisation of RM 444.44 billion (NZ$253.94 billion)) in 2000. It saw a 180

[24] The traditional outcry system of trading has been replaced with a semi-automated trading system called SCORE (System on Computerised Order Routing and Execution). Currently it uses two different systems of order-matching, namely the call system (where a periodic single-price auction is made) and the continuous market system (where the bid-offers are continuously matched over time). The first opening and closing prices are determined using the call market system while the continuous market system is used to conclude transactions throughout the rest of the trading sessions. According to Chang *et al.* (1993), at the time of its introduction, this system was unique and was not available elsewhere including Tokyo and New York stock exchanges.

percent increase in the number of companies listed and a 237 percent increase in market capitalisation over this decade. [25]

At the KLSE, companies are listed either on a main board or a second board. A company seeking listing on the main board needs to fulfill the following five conditions: (1) the company is incorporated in Malaysia, (2) the paid-up ordinary share capital is not less than RM 60 million (NZ$34.29 million), (3) at least 25 percent of the paid-up capital is in the hands of a minimum of 500 public shareholders holding not less than 1,000 shares each, (4) the company has five consecutive years of after-tax profit of at least RM2 millions (NZ$1.14 million) and an aggregate after-tax profit of not less than RM 30 million (NZ$17.14 million) over the same five years, and (5) the company complies with the corporate disclosure requirements and other rules and by-laws of the KLSE. The number of companies listed on the main board at the end of 2000 was 499.

The requirements for listing on the second board are less stringent than the main board, i.e., (1) the company is incorporated in Malaysia, (2) the paid-up ordinary share capital is not less than RM 40 million (NZ$22.86 million), (3) at least 25 percent, but not more than 50 percent, of the paid-up capital is in the hands of a minimum of 500 public shareholders holding not less than 1,000 shares each, (4) the company has five consecutive years of after-tax profit of at least RM1 millions (NZ$0.57 million) and an aggregate after-tax profit of not less than RM 12 million (NZ$6.86 million) over the same five years, and (5) the company complies with the corporate disclosure requirements and other rules and by-laws of the KLSE. The number of companies listed on the second board at the end of 2000 was 296.

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[25] For the latest update on the number of companies listed on KLSE, please refer to KLSE webpage at http://www.klse.com.my/website/listing/listing stats.htm. For the latest update on the listing requirement, please refer to KLSE webpage at http://www.klse.com.my/website/listing/listingreqs.htm.

All listed companies are required to publish annual reports that should contain a Chairman's/President's report on the future progress of the company, the directors' report on the general performance of the company in the reporting year, audited annual accounts, an auditor's report, and a statutory declaration (that the published financial statement show a true and fair view of the state of affairs of the business) by two members of the Board of Directors. The published annual reports have to be prepared in accordance with the Ninth Schedule of the Companies Act 1965 and must comply with the accounting standards and pronouncements of the profession. The Companies Act 1965 generally requires the annual reports to adhere to the approved accounting standards (by Malaysian Institute of Accountants), while the Ninth Schedule of the Companies Act 1965 prescribes minimal disclosure requirements for the profit and loss statement and balance sheet.

The Malaysian Institute of Accountants (MIA) is empowered by the Accountant's Act 1967 to set the accounting standard in Malaysia and, to date has issued 24 Malaysian Accounting Standards (called MASBs).[26] Nevertheless, most public listed companies tend to voluntarily disclose more information than those prescribed by the law and the accounting standards.

3.2 MALAYSIA AND ISLAM

Islam was brought to Malaysia in the thirteenth century by Indian traders even though earlier traces of Islam existed from 674 (see Fatimi, 1963). The Malay Archipelago (i.e., Malaysia, then called the Malay states, and Sumatra, an Indonesian island neighbouring Malaysia) became the trans-shipment centre for the spice trade between Europe, China, and India. These Indian traders did not only do

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[26] For the latest update of the MASBs please refer to MASB's webpage at http://www.masb.org.my.

business in Melaka (the trading port in Malaysia) but also worked as missionaries to spread Islam (see Andaya and Andaya, 1982).

The ruler of Melaka, named Parameswara, was the first ruler to embrace Islam in the early thirteenth century. His citizens were Malays as there were no Chinese or Indians (i.e., the other major ethic groups now living in Malaysia), and they became converts as well.[27] As the trade expanded, Melaka Sultanate persuaded or compelled its vassals (the primary mode of business at that time) in the straits area to accept Islam. Its development as a leading commercial and religious centre made it the benchmark by which other Muslim kingdoms in the Malay Archipelago were measured (see Andaya and Andaya, 1982). Islam was pronounced as the official religion in Malaysia in 1204 and Islamic values have become part of the Malay tradition.[28]

3.2.1 Voluntary Islamic Movements

Even though Islam has been pronounced as the official religion since 1204, the political significance of Islam was generally limited until 1982. Economic, political, and industrial developments were in the hands of the federal government which favoured a secular style of administration (that was handed down from the British after the independence) while the religious matters were handled at the state level.[29] Issues in Islam (excluding issues pertaining to national security) varied from state to state and were not co-ordinated at the national level (see Mehmet, 1990). Islamic values were not closely followed in business and political circles.

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[27] Large scale Chinese immigration to Malaya took place in the nineteenth and early twentieth centuries while Indian immigration took place in the late nineteenth century even though there were Chinese and Indian traders who had set foot in Malaya before then (see Andaya *et al.*, 1982, p. 176).

[28] Even today Muslims are synonymously termed as Malays. For example, the occasion when a person embraces Islam is colloquially expressed as becoming Malay.

[29] Malaysia gained independence from Britain on 31 August 1957.

Until 1982, Islam had been developing through voluntary movements. Such movements include Jemaat Tabligh, Darul Arqam, the Islamic Welfare and Missionary Association (PERKIM), and the Malaysian Islamic Youth Movement (ABIM). Jemaat Tabligh came from India in 1950 and is part of a world-wide missionary network. It aims at increasing the piousness among the individual Muslims and making them true believers who adhere to the teachings of Islam. It conducts discussions and holds retreats (usually in a mosque) emphasising the ritualistic and formal aspects of Islam (see Mehdan, 1986, p. 90-92). All expenses are borne by the followers, and Jemaat Tabligh does not seek any financial assistance from any governmental or business organisations. Jemaat Tabligh is still active in all parts of the world where there are Muslims.

Darul Arqam was an organisation that conducted small businesses and used the return to manage the social and religious activities of its members. It expected its followers to isolate themselves from the secular world and ran all the necessary day-to-day activities (including schools, medical clinics, and prayer centres) in rural locations. This movement had branches in Singapore, Brunei, Thailand, and Indonesia. This movement had been declared illegal in all these countries since 1994 because some of its practices and rituals were not consistent with normal Islamic teachings (see Abdullah, 1999).

PERKIM began as a non-governmental organisation that provided schools and adult learning centres along Islamic paradigms. Its main objective has been to teach the practices of Islam to new converts. It is still active and is currently partly funded by the Malaysian government.

ABIM, being the largest and the most active group, was formed in 1972. ABIM is mostly popular among tertiary students as its founder formed the group when he was still a student. This group had the objective of turning Malaysia into a full-

fledge Islamic state (like Iran) but toned its goals down when the group's founder joined the ruling political party in 1982. ABIM has been and is currently a catalyst for linking Islamic activities in Malaysia to World Assembly of Muslim Youth (WAMY) and other international Islamic organisations.

3.2.2 The Resurgence Of Islam In Malaysian Politics

Two major events that contributed to the resurgence of Islam in Malaysia at the national political level were the 1969 race riot and the Islamic revolution in Iran (see Mehmet, 1990, p. 109).

Prior to the 1969 race riot, commercial activities in Malaysia were associated with ethnicity. A vast majority of Malaysians are Malays (who are predominantly Muslims) and they were found to be involved in agriculture. The Indians (consisting of about 10 percent of the Malaysian population) were generally estate plantation workers, while the Chinese (consisting of about 35 percent of the Malaysian population) were mostly traders who had settled down in urban areas. The Malays were much poorer than other ethnic groups in Malaysia. Jomo (1990, p. 92) tabulates the average monthly income of Chinese, Indian, and Malay households in 1970 as RM 394, RM 304, and RM 172 respectively.

Because the Malays believed that the government was less sensitive to their needs and too liberal in its approach to other ethnic groups, Malaysia was confronted with a bloody race riot on 13 May 1969. This event brought about a silent *coup d'etat*. The then Deputy Prime Minister took over the helm and became the second Prime Minister of Malaysia. He immediately adopted the New Economic Policy (hereafter termed as NEP).

NEP was a twenty-year socio-economic plan that had two major aims, namely to eradicate poverty and to restructure the ownership of industrial and corporate capital. It also aims at abolishing the identification of ethnicity with the economic functions. In practice these efforts were attempts to increase capital ownership and participation in certain occupations among Malays without confiscating those held by other ethnic groups. This was done by granting more shares to Malays in new growth area and by training more Malay professionals/graduates (using a required minimum percentage quota intake of Malay students) in the local polytechnics and universities. This special privilege is termed as 'Bumiputra rights' meaning 'rightful to the son of the soil'.

Official data on the incidence of poverty suggest that the number of Malaysians below the poverty line declined from 49.3 percent in 1970 to 29.2 percent in 1980. While the data on ownership reveal that the share of capital owned by Chinese, Indians, and Malays rose from 27 percent, 1 percent, and 3 percent in 1969 to 33 percent, 2 percent, and 39 percent in 1988 respectively (see Jomo, 1990, p. 145-165).[30] In effect, NEP (which expired in May 1990) was less successful at eradicating poverty than at restructuring equity.

Equity restructuring, too, has its weaknesses, i.e., it created inter-Malay inequalities. Among the causes for inter-Malay inequalities were the emergence of cronyism or the distribution of rentier opportunities to firms (and individuals) controlled by or well-connected to politicians. By such political-bureaucratic practices, the government created an avenue for the emergence of a small group of politically influential 'new rich' Malay thereby creating inter-ethnic inequalities (Chandra, 1979; Gomez and Jomo, 1997). This led to a resurgence of Islam in the new environment of the NEP.

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[30] The unaccounted percentages (i.e., 69 percent in 1969 and 26 percent in 1988) were foreign ownership.

The second major event that brought about a resurgence of Islam in Malaysia was the Islamic revolution in Iran. The successful coup which toppled the Shah's reign demonstrated the power of Muslim militants throughout the world and revived the voluntary movements in Malaysia. Academicians in religious studies began to write daringly of the rejuvenation of Islam (Mehmet, 1990). PERKIM managed to gain outside international funding to win new converts. ABIM managed to win over Muslim students at the local universities, while the rural Malays were inclining to support Parti Islam Malaysia (hereafter referred to as PAS), the only Islam based opposition political party in Malaysia. Furthermore, PAS entered into tacit alliance with ABIM (see Mehmet, 1990, pp. 109-110).

The Islamic revolution in Iran began to derogate support for UMNO (the dominant party in the ruling coalition which represents the Malays).[31] UMNO was literally forced to react to outflank its Islamic opposition. In July 1981, UMNO managed to influence both ABIM and PAS leaders. ABIM's founding leader was co-opted into UMNO and started his political career with his election as a Member of Parliament in the 1982 general election. Shortly after the same election, the prominent PAS president surrendered his PAS leadership to the religious leaders and joined the UMNO faction (Mehmet, 1990, p. 110).

UMNO began to lose its secular character, and Islamic values started to be inculcated into national policies. Malaysia, now, has Islam based socio-economic entities like Bank Islam Malaysia Limited (a public listed firm dealing in Islamic Banking), Islamic windows in a few conventional banks in Malaysia, two Takaful Insurance firms (firms formed to manage Islam based insurance schemes), Sultan

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[31] The National Front, i.e., the ruling coalition in Malaysia since independence, composes of 13 political parties. Of these 13 political parties, three major ones are UMNO (United Malay National Organisation - the dominant party in the coalition and which represents the Malays), MCA (Malaysian Chinese Association - the second largest party in the coalition and which represents the Chinese community), and MIC (Malaysian Indian Congress - the third largest party in the coalition and which represents the Indians).

Zainal Abidin Religious College and International Islamic University Malaysia (tertiary institutions set up to consolidate Islamic and western teachings), Pilgrimage Fund Board (a board set up to look after the needs of Muslims performing their fifth principle of Islam, *Hajj*), and a Department of Islamic Affairs (a department in the Prime Minister's department headed by a politician with a religious background). The Department of Islamic Affairs is responsible for co-ordinating all major religious matters at the national level.

3.3 ISLAM AND THE MALAYSIAN BUSINESSES

The influence of Islam over the Malaysian businesses is clearly visible in the banking, insurance, and the stock market sectors. These developments are also in line with the recent development of Islamic financial products throughout the world (see Karim 1990; Gaoud and Lewis, 1997).

3.3.1 ISLAMISATION PROCESS IN MALAYSIAN STOCK MARKET

The Islamisation process in the stock market is evident from the recent launching of *Syariah* Index (hereafter termed as KLSE SI). [32] The KLSE launched the new index on 17 April 1999 to expand participation of investors who are keen on investing in securities approved by the Islamic *Shariah* (meaning Islamic law in Arabic). The KLSE SI is a weighted average index made up of 273 main board companies designed as *Syariah*-approved securities by the *Syariah* Advisory Council (hereafter termed as SAC) of the Malaysian Securities Commission.[33]

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[32] In addition to KLSE SI, KLSE computes 12 other indices every 15 minutes during its trading hours. The 12 other indices are Composite Index, EMAS (Exchange Main All Securities) Index, Industrial Index, Mining Index, Plantation Index, Property Index, Finance Index, Trading/Services Index, Construction Index, Industrial Products Index, Consumer Products Index, and Second Board Index.

[33] For an update of the Shariah index, please refer to the KLSE webpage at http://www.klse.com.my/website/marketinfo/indexcomp_syariah.htm.

The *Syariah* approved securities are the securities of the companies that do not carry out forbidden activities in their normal course of business. At present, the forbidden activities considered by SAC are *Maisir* (gambling), *Khamr* (sale/provision of liquor), and *Riba* (interest). Other elements, like the composition of interest bearing loaned capital, is not considered by the committee as there are no financial instruments that can be used alternatively by the businesses.

The SAC is assigned the responsibility of identifying the *Halal* (permissible) or green counters (the securities which are free from dealings in forbidden activities) and *Haram* (forbidden) or red counters (the securities which deal with any or all of the forbidden activities). All investors (including individual, institutional investors, and Islamic fund managers) who identify themselves as Muslims would normally invest in these green counters.

The computation of KLSE SI does not mark the first attempt to inculcate Islamic values in the Malaysian stock market. In May 1996 (about three years before the launching of KLSE SI), Rashid Hussain Berhad (hereafter termed as RHB), one of the public listed company had launched its own Islamic Index with the assistance of its securities dealing subsidiary (Rashid Hussain Securities Sendirian Berhad). Later in the same year when the government had approved a securities dealing licence to the Bank Islam Malaysia (the first and the only Islamic Bank in Malaysia), RHB and BIMB Securities Sendirian Berhad (the securities dealing arm of Bank Islam Malaysia) teamed up to form the *Shariah* Committee to identify the green counters in KLSE that constitute the Islamic Index. The Islamic Index was initially based on 179 KLSE Main Board companies. It is updated regularly and the list as at 15 November 1996 contained 377 companies from both the main and the second boards.

To date there are no laws passed in favour of Islamisation in the stock market in Malaysia. Thus, the Islamisation process is voluntary.

3.3.2 Islamic Insurance Schemes In Malaysia

The Islamic insurance schemes (hereafter termed as IIS) in Malaysia are governed by the Takaful Act 1984. As at the end of 2001, there were two firms operating under the Takaful Act in Malaysia, namely Syarikat Takaful Malaysia Berhad and Takaful Nasional Sendirian Berhad. There are two types of IIS, namely general *Takaful* policies (which are similar to conventional short-term property protection insurance policies) and family *Takaful* policies (which are somewhat similar to conventional long-term life insurance policies). Both of the Islamic insurance companies in Malaysia provide these two types of insurance policies. The sizes of the Takaful insurance schemes as compared to the conventional insurance schemes are as listed in Table 3.1 below.

Table 3.1

Comparison Of The Size Of Islamic And Conventional Insurance Companies In Malaysia

	Takaful Insurance	Conventional Insurance
Number of Insurance companies in 2001	2	59
Premium income in 2001 (NZ$ equivalent in parenthesis)	RM 1.5 billion (NZ$0.86 billion)	RM 17.1 billion (NZ$9.77 billion)
Funds' assets as at 31 December 2001 (NZ$ equivalent in parenthesis)	RM 2.4 billion (NZ$1.37 billion)	RM 59.8 billion (NZ$34.17 billion)

Adopted from the Bank Negara Malaysia's quarterly report for first quarter 2002.

The general *Takaful* differs from the short-term property protection insurance in two ways, i.e., the existence of *Tabarru'* and *Mudaraba*. *Tabarru'* means that the participants (i.e., the policyholders) agree to donate their insurance premium to help

other participants who are in distress. The policyholders' spirit of *Tabarru'* eliminates the element of *Gharar* (uncertainty) and *Maisir* (gambling), the two elements which are condemned by Islam. Thus, the insurance premiums collected are invested and if necessary used to repay claims during distress (Yusof, 1996, p.18-20).

Any unused profit from the investment and premium, after deducting a reasonable amount as an administration fees for the insurers, is returned to the policyholders.[34] This is similar to provision of a non-claim bonus in conventional insurance policies. This process of refund of excess return is termed as *Mudaraba* (trust financing) (Yusof, 1996, p. 25).

The family *Takaful* differs from the conventional life insurance by being transparent in apportionment of the profits obtained from successful investment of the insurance premiums. Conventional life insurance promises a fixed return at the maturity date or when calamity arises without disclosing the actual return obtained from the successful investment of the insurance premium. Thus, any difference between the returns and the claims repayment represents the conventional insurer's profit (Bakar, 1996).

The operation of the family *Takaful* can be sequenced as (1) the agreement on the insurance premium between the parties to the insurance policies, i.e., the policyholder and the insurance firm, (2) the agreement on the proportion of policyholder's personal pool (i.e., the accumulation of benefits accruing to the policyholders) and the communal pool (i.e., the common pool of fund available to all policyholders to cover for claims during calamities, like death or permanent disablement, which are covered under the family *Takaful*), (3) investment of the whole insurance premium in an Islamic investment by the insurer, (4) the return is

[34] Currently the rate of administration fee for a general *Takaful* is 50% in Malaysia.

ascertained at the end of each period, generally one year, (5) a pre-agreed percentage of the return is taken as the administration fees by the insurer, (6) the balance of the return is apportioned to the policyholder's personal pool and the communal pool in similar proportion as in (2) above, and (7) all the net returns are ploughed back and re-invested together with fresh premiums received.[35]

The terminal value (at the maturity date) of the *Takaful* is the total of (a) the fund accumulated in his/her personal pool and (b) the portion of his/her share of the unused communal pool. The policyholder's claim during calamities is the covered sum which would come from the fund accumulated in his/her personal pool and the balance (if insufficient) from the communal pool. If policyholders' personal pool is higher than the covered sum, then his claims would be equal to the terminal value of his policy.[36]

3.3.3 Islamic Banking Products In Malaysia

The conventional banking system is based on interest and earns its income primarily from margin.[37] Interest is prohibited in Islam.[38] As an alternative, the Islamic banking mobilises the deposits received based on profit sharing. The Islamic banking system uses *Mudaraba* (trust financing), *Musharakah* (partnership), *Murabaha* (combination of credit and cost-plus pricing) transactions, and *Qard al-hassan* (interest free loans) (see Karim, 1990; Hamid *et al.*, 1993).

Mudaraba is an arrangement in which investor(s) entrust capital or merchandise to an agent-manager (*Mudarib*). The bank would normally have: (a) one such

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35 Currently the rate of administration fee for a family *Takaful* is 32% in Malaysia.

36 The detailed operation of both Takaful plans are well illustrated by the relevant insurance companies' webpages. One of the webpage is http://www.takaful-malaysia.com/.

37 The conventional bank uses the fund deposited by its customers to lend out as loans to other customers. The bank charges a higher percentage of interest to loans while paying a lower percentage to depositors. The difference, called the margin, is the profit accruing to the bank.

38 Interest was also prohibited by the Canon Law of the medieval Christian Churches.

arrangement with the depositors whereby both the parties agree to allow the bank to mobilise the deposits and take a pre-agreed share of the profit from the successful lending of the fund and (b) another such arrangement with the borrowing customer to whom the bank requires a pre-agreed share of benefits (i.e., profits) accruing from the loaned capital. This type of capital lending arrangement is normally provided to businesses that are able to provide some return. It is not lent out to individuals because they are not able to utilise the loan to yield profits.

For example, a businessman who intends to increase his working capital (or buy some fixed assets) by $10,000 which will increase his profit by $6,000 would approach an Islamic bank for a *Mudaraba* transaction. The bank (now acting as a *mudarib*) would demand a certain percentage from the extra profit obtained (in Malaysian environment, the percentage is about 30). The bank provides the cash after concluding the agreement on the percentage on the share of the profit. The bank, at the end of the year or upon repayment of the loan, obtains $1800 (30 percent of the additional profit) and then divides the profits between its depositor and itself.[39] Assuming the share is 30 percent, the bank takes $540 and forwards the balance of $1260 to the depositor.

Islam requires the existence of trust and honesty between the parties to a *Mudaraba* transaction, and the bank needs to provide the best return to the depositor without overburdening the borrower. In a *Mudaraba* transaction, any losses from an unsuccessful business venture are borne exclusively by the investor(s), i.e., the depositor(s) in the case of the Islamic banking transactions. The borrower is not liable for losses unless the loss is caused by some willful behaviour on the part of the borrower. The borrower's loss is limited to the opportunity cost of time and

[39] The profit sharing ratio varies depending on the amount borrowed, the term of the loan, and the risk factor of the investment. Please refer to the Bank Islam Malaysia's homepage at http://bankislam.com.my/bislam.htm for the latest profit sharing provided by Bank Islam Malaysia.

effort expended in the business, i.e., he loses his salary or any kind of reward obtainable from the business (see Hamid *et al.*, 1993, p.139).

In a *Musharaka* transaction, the bank can take the form of *Sharika mal* (financing partners) or *Sharika wujuh* (credit partners). In a *Sharika mal*, the bank may lend the capital for the whole life or part of a project and it comes closest to the Western joint-venture partnership. In a *Sharika wujuh*, credit is provided by the bank for a share in the profit. In both the transactions, the bank (and therefore the depositor) is not guaranteed a fixed return as in the case of a conventional banking system, and the lender takes part in the risk of the business to which they had lent.

Musharaka transactions, generally, include *Sharika a'mal* (labour partnership) where one party brings in the capital while the other party provides the expertise in the field and these two (or more) parties undertake ventures on a profit sharing basis. This type of *Musharaka* is not common in Islamic banking systems throughout the world, including Malaysia, as some sects in Islam do not consider this type of *Musharaka* to be a valid partnership (see Hamid *et al.*, 1993, p. 138).

A *Murabaha* transaction is a form of co-operative venture partnership in which a bank finances the purchase of goods and sells them, at an agreed mark-up. The bank normally uses this type of transaction in place of the conventional hire purchase and export trade credits. It thereby combines the characteristics of a partnership and cost-plus pricing. For example, an individual intending to buy a car worth $40,000 would approach the Islamic bank. The bank buys the car at $40,000 and sells it to the customer at $60,000 where $5,000 is paid on the spot and the balance over a period of 60 months. The ownership is jointly held (as is the case in hire purchase transactions) until full settlement.

There are many types of *Murabaha*, for example *Ijara* (leasing), *Ijara-wa-igtina* (hire purchase), and *Al-Bai bithamin ajil* (sale at staggered installment payment). However, in *Murabaha* transactions, the Islamic bank is required to disclose the profit mark-up to the borrower before the transaction takes place. It is a requirement that the borrower needs to know the exact amount that needs to be paid over the period of the credit term. This ensures that the Islamic bank does not charge any extra to prevent any element of interest in the financing.[40]

Qard al-hassan refers to short-term interest free petty loans provided by the Islamic banks. The borrower is required to repay the exact amount borrowed within the stipulated period (usually less than a year), and he/she may voluntarily donate any extra if he/she wishes. Since this does not yield any profit to the bank and its depositors, the Islamic bank seldom extends this type of loan.

Islamic banking activities in Malaysia are governed by the Islamic Banking Act 1983. At the end of 2001, there were only two fully fledged Islamic banks, i.e., Bank Islam Malaysia Berhad and Bank Muamalat Berhad, and 47 other banks that have both the conventional and Islamic banking activities together although the two systems are clearly divided (see Bank Negara Malaysia's annual report for the year 2001). The market share of the Islamic banking assets stood at 7 percent (RM51million which is equivalent to NZ$29.15 million) (see Bank Negara Malaysia's Annual Report 2001).[41]

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[40] This is different from the conventional bank's floating interest rates which specifies the interest rate that can be changed after the transaction and thus exposes the borrower tothe interest rate increases that are beyond his/her control. The Quran specifies that the key element of interest is that it grows as time passes (see Quran chapter 3, verse 130).

[41] For a copy of the Bank Negara Malaysia Annual Report, please refer to its webpage at http://www.bnm.gov.my/en/Publications/ar.asp?yr=2001.

3.3.4 ACCOUNTING STANDARDS FOR ISLAMIC FINANCIAL INSTITUTIONS

Islamic banks throughout the world, including Malaysia, have recently agreed to set up an autonomous non-profit making corporate body with the objective of developing, disseminating, preparing, promulgating, interpreting, reviewing, and amending accounting (and auditing) standards for Islamic financial institutions. The accounting and auditing organisation for Islamic financial institutions was established in Bahrain in February 1990. The Board of Trustees of this body consists of 15 members from 10 Muslim member countries. Malaysia has two representatives, one representing Bank Islam Malaysia Berhad and another representing International Islamic University Malaysia (see Accounting and Auditing Organisation for Islamic Financial Institutions, 1997). To date, the Accounting and Auditing Organisation for Islamic Financial Institutions has published two concept statements, eight financial accounting standards, and four auditing standards (see Accounting and Auditing Organisation for Islamic Financial Institutions, 1997).[42] These standards are similar to the conventional standards except that they deal with the Islamic requirements in addition to the conventional requirements when the convention requirements do not contravene the Islamic teaching.

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[42] The two concept statements published by the Accounting and Auditing Organisation for Islamic Financial Institutions are: (a) Objectives of Financial Accounting for Islamic Banks and Financial Institutions (called Statement of Financial Accounting 1), and (b) Concepts of Financial Accounting for Islamic Banks and Financial Institutions (called Statement of Financial Accounting 2). The eight financial accounting standards issued by the Accounting and Auditing Organisation for Islamic Financial Institutions focus on: (a) general presentation and disclosure in the financial statements of Islamic banks and financial institutions, (b) *Murabaha* and *Murabaha* to purchase order, (c) *Mudaraba* financing, (d) *Musharaka* financing, (e) the disclosure of the profit allocation between owners of equity and investment account holders, (f) the equity of investment account holders and their equivalent, (g) *Salam* and parallel *salam*, and (h) *Ijarah* and *ijarah muntahia bittamleek*. The four auditing standards issued by the Accounting and Auditing Organisation for Islamic Financial Institutions focus on: (a) the objectives and principles of auditing, (b) the auditor's report, (c) the terms of engagement, and (d) the Shari'a supervisory board (e.g., the appointment, composition, and reporting).

3.4 HYPOTHESES DEVELOPMENT

In this section, I develop hypotheses that test whether Islam has an effect on the behaviour of Muslim managers in Malaysia. I examine two aspects of behaviour. First, I examine the effect of Islam on the capital structure of Muslim managed firms. Second, I examine the effect of Islam on earnings management.

3.4.1 DEBT TESTS ON MUSLIM MANAGERS

Because Islamic teachings prohibit dealings in usury (i.e., interest), I first examine the impact of these rules on the capital structure of non-financial companies listed on the KLSE.

Riba (i.e., usury in Arabic) literally means interest, but in Islamic terminology 'riba means effortless earnings and profit or that profit which comes free from compensation or that extra earnings obtained that is free of exchange'[43] (Muttaqun, 1999). There are two types of *riba*, namely (a) *Riba An-nasia* (i.e., interest on the money lent/borrowed); and (b) *Riba Al-fadl* (i.e., taking a superior thing of the same kind of goods). *Riba Al-fadl* happens when a trader exchanges a lower quality item for a higher quality item of the same good during repayment (Muttaqun, 1999).

Riba is prohibited by both the Quran and the *Hadith* (i.e., sayings and preaching of the Prophet). The Quran talks about *riba* in six places, i.e., Chapter 2 verses 275 (hereafter written as 2:275), 2:276, 2:278, 2:279, 2:280, 2:281, and 3:130 (see IFTA, 1990). It condemns and prohibits usury in the strongest possible terms. For example, Allah[44] says in 2:276 that those who devour usury will be deprived of all

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[43] *Riba* has been described as a loan with the condition that the borrower will return to the lender more than and better than the quality borrowed.

[44] Muslims believe that the Quran is the compilation of Allah's own words, which are revealed to Prophet Muhammad through his angel Gabriel. It is called Book of Guidance to mankind (2:2 and 2:185). Rahman (1980, p.3) describes the Quran as a firm, well-knit structure with no gaps,

blessings, and in 2:279 that Allah and the Prophet would wage a war against those involved in usury. Thus, a staunch believer would avoid involving himself/herself in *riba* as his/her God would disavow him/her.

The *Hadith*, too, condemns usury and this has been narrated in 5 places. Two of these are documented in Sahih Bukhari (volume 2, number 468; and volume 3, number 299) and the rest in *Sahih Muslim.*[45] Such *Hadith* are also documented and narrated by Imam Ghazzali's *Ihya Ulum-id-din*[46] (see Fazul-ul-Karim, 1978). These *Hadiths* have explicitly expressed that the Prophet has forbidden the receiving or giving *riba*. The Prophet has also forewarned that there will be a time when the spread of *riba* would be so overwhelming that it would be extremely difficult for Muslims to avoid it. This warns Muslims to be extra cautious during business transactions.

Given such strong statements against usury by the two supreme sources of *Fiqh Muamalah*, it is expected that firms managed by Muslim CEOs would not raise fund by issuing fixed return yielding capital (i.e., preference shares) and interest bearing debt. Islam does permit such issuance under special circumstances when such non-interest bearing capital is unobtainable and when the issue of debt is unavoidable (as narrated in the *Sahih Muslim*). Since there were no Islamic debt instruments in Malaysia before 1983 (i.e., before the emergence of Bank Islam Malaysia Berhad), Muslim managed firms might have issued such prohibited loans.

However, since 1983, Muslim managed firms should avoid raising capital by issuing interest-bearing debt or equity instruments. Thus, I test whether the Muslim

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no ruptures, and no dislocations. It works by its own laws (i.e., Law of nature) ... and is, therefore autonomous.

[45] There are six authentic sources of the *Hadith*, namely Sahih Bukhari, Muslim, Tirmidhi, Abu Daud, Nisai and Ibn Majah (see Khan, 1975).

[46] Imam Al-Ghazzali is the prominent Islamic scholar and one of the first few Islam Jurists to draft Fiqh including Fiqh Muamalah.

managers in Malaysia adhere to this prohibition and avoid dealings involving *riba*. I expect that Muslim managed firms will rely more heavily on straight equity and their non-Muslim counterparts, i.e.,

> *H_1: Muslim managed firms use less interest-bearing debt and preference shares relative to straight equity than non-Muslim managed firms.*

3.4.2 Test Of Earnings Management Practices

Healy and Wahlen (1998, p.6) defines earnings management as managers using 'judgment in financial reporting and structuring transactions to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company or to influence the contractual outcomes that depend on reported accounting numbers.'

The phrases 'to mislead some stakeholders' and 'to influence the contractual outcomes' emphasises the opportunistic behaviour of managers. Such behaviours are prohibited in Islam. Islam encourages individuals to be involved in business but requires the individual Muslims to relate his/her conduct to his/her existence as envisaged by Allah, i.e., to worship Allah (Quran, 51:56). The Quran (2:30) spells out the role of man in this world, i.e., man is made to be the vicegerent of Allah in this world and hence all possession held in this world (including private property, material wealth, and own children) are held in trust from God (see Gambling and Karim 1991; Hamid *et al.*, 1993). It is therefore similar to the agency principle discussed in chapter 2 where Allah is the principal and the believers are the agents. However this agency relationship would not contain any elements of self-interest as the agent here is seen to be worshipping his principal, Allah, and therefore having faith and full trust in the principal.

The Quran clearly allows trade and wealth accumulation, moreover, it sets high values on wealth which it calls as 'the bounty of Allah' (62:10; 73:20; 5:20; 24:22; 27:16 and 30:23) and 'good deeds' (2:18; 2:215; 2:272-273; 11:84; 22:11; 38:32; 50:25; 68:12 and 70:21). It further guides mankind to conclude that wealth, through trades and businesses, accounts for peace and prosperity (106:1-4). The Quran also warns mankind of the outcome of the abuse of the wealth (see 3:14; 3:185: 3:197; 4:77; 9:38; 10:23; 10:70; 13:36; 16:117; 28:60; 40:39; 42:36; 43:35 and 47:20).

The basic weakness of man (including women) as described by the Quran is his pettiness and narrowness of mind (Rahman, 1980, p. 25). Symptoms of pettiness in man are the pride, hopelessness, and despair (Rahman, 1980, p.26). This unstable human behaviour is well described in the Quran as 'fretful when evil touches him/her' (70:20) and 'when good things come his way, he prevents them from reaching others' (70:21). Man, by his nature, is very impatient (70:19) and has been permeated with greed and selfishness (4:128). It is this greed and selfishness that makes him impatient and drives him into pride and utter despair. The Quran, therefore, condemns pride, self-righteousness, hopelessness, and despair (12:87; 29:33; 15:50 and 39:53).

The Quran does provide remedy for such sickness. It exhorts Muslims to adhere to the law set out in *Fiqh Muamalah* (Gambling and Karim, 1991). It specifically prohibits unclear, unfair, unjust, and fraudulent transactions (Hamid *et al.*, 1993; Beekun, 1997; Bashir, 1998; Rice, 1999).

The *Hadith* quotes Prophet Muhammad saying, 'Take to trade and commerce because nine-tenths of the source of earnings is in trade' (Fazul-ul-Karim, 1978, p. 54). The *Hadith*, too, is in line with the teachings of the Quran on matters pertaining to trade and wealth accumulation.

Islam censures economic exploitation as strongly as social excuses and individual dishonesty (Siddiqi, 1977). A true Islamic society should be based upon honesty, justice, and fraternity and would not tolerate dishonesty in business or trade. Book 3, Chapter DCIV (i.e., chapter 604) of *Sahih Muslim* quotes *Hadith* analogy of business transaction as 'When you enter into a transaction, say: There should be no attempt to deceive' (Siddiqi, 1977, p. 805).

Siddiqi (1977), explaining that all business transactions should be based on the fundamental principle of mutual co-operation for the good cause, emphasises that any deviation from this sound principle are motivated by the lust for money and an ignoble desire to build up prestige. Such undesirable behaviour is expected from hypocrites. Sahih Bukhari and Muslim cites the Prophet Mohammed's definition of a hypocrite as having three characteristics 'When he talks he lies, when he makes a promise he acts contrary, and when something is entrusted to him he embezzles it.' Another *Hadith* (see Khan, 1975, p. 140) cites another characteristic as 'when he contends he reviles.'

Hadith further quotes the Prophet identifying lying and giving false evidence as one of the three major sins (see Khan, 1975, p. 263). A person who goes on lying is named a liar and will be spiritually condemned.[47] Such a saying of Prophet is recorded in both Sahih Bukhari and Muslim (see Khan, 1975, p. 18).

Managers behaving opportunistically can be viewed as putting self-interest above everything else. They have the tendency to abuse wealth and/or transfer wealth to favoured individuals or groups of stakeholders leading to economic exploitation. By practising earnings management, managers alter financial reports to either mislead users of financial reports and/or influence contracting parties. This is

[47] Muslims, like Christians and Jews, believe that good deeds are rewarded in heaven and bad deeds are punished in hell.

tantamount to providing false evidence or taking a false oath. Such behaviours emerge from a desire to accumulate wealth and/or prestige.

Islam requires its believers to uphold ethical business practices. The Islamic ethical system is based on the following key factors, (a) actions and decisions are judged based on individual's intention - good intention that is followed by good action/decision is worship and the ends do not justify the means, (b) free will but individuals are accountable for all actions and decisions[48], (c) Islam preaches ethical business dealings and thus egoism has no place in Islam (see Beekun, 1997).

Hence Islamic ethics require Muslims to consider their work as worship and believe that it is entrusted upon them to be ethical. The Islamic ethical system is grounded in five key axioms: (a) unity (different aspects of a human's life, including his work time and leisure time, is combined in a homogeneous whole unit), (b) equality (well balanced life which produces social order), (c) free will (freedom to react without external coercion), (d) responsibility (with accountability), and (e) benevolence (stakeholders consideration including the society)(see Beekun, 1997, p.21).

Earnings management is not permissible in Islam as it contradicts the five key axioms of Islamic ethics. By practising earnings management, the manager contravenes (a) the unity axiom as his/her business practice (i.e., self-serving) contradicts his/her religious practice (i.e., communal serving), (b) the equality axiom as he/she creates a social redistribution of wealth, (c) the freewill axiom as he/she may have to manage earnings against his/her own will (e.g., if instructed to do so by his/her superior), (d) the responsibility axiom as the managers normally do not disclose the act of earnings management, and (e) the benevolence axiom as he/she does not consider all parties equally. Thus, Islam condemns earnings management and a pious Muslim should not practice earnings management.

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[48] Individuals based on his/her freedom may practice earnings management but he/she is answerable to Allah in the day of judgment.

Based on this analysis, managing earnings to maximise personal gains (i.e., management compensation plan hypothesis) would be condemned by the Quran and Hadith for its greed. Similarly earnings management in an attempt to avoid debt covenant violations (i.e., debt hypothesis) and to prevent any political intervention (i.e., political cost hypothesis) contradicts Islamic business ethics.[49] Consequently, it is expected that there would be less earnings management among firms that are managed by Muslim managers. More specifically, a second hypothesis examines the difference in the earnings management behaviour of Muslim and non-Muslim managers. Thus, it is hypothesised that:

> *H2: Muslim managed firms are less likely to manage earnings than non-Muslim managed firms.*

3.5 CHAPTER SUMMARY

In this chapter, I provided background information on the Malaysian business environment, the resurgence of Islam, and current Islamic practices in Malaysian businesses. The Malaysian business environment is similar to any Western business environment. The economic transformation, the rapid economic growth, and the aggressive expansion of the KLSE provide evidence that Malaysia is tying its economic success to the West.

While Malaysia is charting its economic development using the Western economic model, it has not discarded its religion, i.e., unlike Western economies that have separated religion from business and government. In Malaysia, Islam permeates society. This is evident through the success of the voluntary Islamic movements

[49] It is clear that Islam condemns the *ex-post* opportunistic behaviour of earnings management but I presume that the *ex-ante* efficiency contracting theory is acceptable as it leads to cost effectiveness which attempts to maximise the firm's value.

prior to 1982 to present inculcation of Islamic values in political, national policy matters, and civil services.

Islam has a direct and indirect influence on the Malaysian business environment. Its direct effect is apparent in the banking and insurance industries and in the stock market. It indirectly affects all sectors of the Malaysian business to the extent that Muslim managers should be influenced by Islamic doctrine and should adhere to ethical Islamic business practices. This includes refraining from opportunistic earnings management.

Thus, the Malaysian business environment provides a desirable testing ground to empirically examine whether religion influence managers' behaviour. In this chapter, I hypothesise that Muslim managed firms will use less debt and will be less likely to manage earnings than non-Muslim managed firms. The next chapters discuss the research methodology and the results for the two hypotheses.

CHAPTER 4
RESEARCH METHODOLOGY AND RESULTS FOR THE DEBT HYPOTHESIS

4.0 INTRODUCTION

The previous chapter addresses the institutional environment in Malaysia. The latter part of the previous chapter specifically develops testable hypotheses to test the influence of Islam on Malaysian firms' debt and their managers' accounting decisions.

This chapter discusses the research methodology used to test the debt hypothesis developed in the previous chapter. I structure the remaining part of the chapter into six sections. Section 4.1 discusses the research design for the debt hypothesis. Section 4.2 discusses variables used to test the debt hypothesis. Section 4.3 discusses the model used to test the debt hypothesis. Section 4.4 discusses the sample used to test the debt hypothesis. Section 4.5 discusses the results of these tests. The last section provides a summary of and conclusion to the chapter.

4.1 RESEARCH DESIGN FOR THE DEBT HYPOTHESIS

The hypotheses developed in the previous chapter can be categorised into two hypotheses, i.e., the debt hypothesis and earnings management hypothesis. This section discusses the research method for debt hypothesis.

Before proceeding, I repeat the debt hypothesis below:

> *H1: Muslim managed firms use less interest-bearing debt and preference shares relative to straight equity than non-Muslim managed firms.*

4.2 VARIABLES

This section has three sub-sections. Section 4.2.1 discusses the dependent variable, section 4.2.2 discusses the test variable, and section 4.2.3 discusses the control variables.

4.2.1 DEPENDENT VARIABLE

The dependent variable for the test of the debt hypothesis (hereafter termed as H1) is the firm's debt ratio which is labeled DEBT. Moh'd *et al.* (1998) define the debt ratio as the book value of long term debt divided by the sum of the book value of long term debt and the market value of equity. I modify this definition to include all fixed return yielding equity (i.e., preference shares) in addition to debt defined by Moh'd (1998). This is necessary since H1 differentiates straight equity from interest bearing capital. Thus, for the purpose of this study, the firm's debt ratio is defined as:

$$\text{DEBT} = \frac{\text{Book value of preference shares and debt}}{\text{Book value of preference shares and debt + market value of equity}} \quad (1)$$

4.2.2 TEST VARIABLE

The independent variable used to test the debt hypothesis is MUSLIM. I use two alternative definitions to classify firms as Muslim or non-Muslim managed. The first measure classifies firms as Muslim managed when the CEO is a Muslim. The second measure classifies firms as Muslims managed if a majority of the top three managers are Muslims. In each case, the classifying variable is labeled as MUSLIM. MUSLIM is measured on a dichotomous basis and is equal to 1 if the firm is Muslim managed and 0 if it is not. As the results of the tests for both the

definitions of MUSLIM are similar, I report only the results of the tests using the first measure. The results of the multivariate test using the second measure are included in Appendix B. Because Islam prohibits usurious dealings (both lending and borrowing), I predict *ceteris paribus* a negative relationship between MUSLIM and DEBT.

The name of the managers of the firm is used to classify the firm as either Muslim managed or non-Muslim managed firms. The names of the managers are obtained from the Bloomberg database.

One limitation of using the manager's name to classify firms is that all Muslim managers might not possess Muslim names. However, it is customary for Muslims in Malaysia to have a Muslim name.[50] In the case where a manager has migrated to Malaysia from another country, this custom might not hold. For example, a Japanese who has embraced Islam in Japan need not change his name to a Muslim one. Based on my classification method, this manager would be misclassified as a non-Muslim. However, a count of hundred randomly selected Malaysian companies in 1998 shows that there were only three foreigners who held the CEO posts. Thus, any classification error arising for this reason will be minimal.

Another limitation of using managers' names to classify firms is that there is a possibility that the first name is common to more than one religion. For example, Jennifer and Daniel are both Muslim and Christian names. This is overcome by referring to the word '*bin*'[51] and by referring to the second and/or surname with which then the classification applies. Thus, it is very unlikely that a Muslim would

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[50] A Muslim has the benefit of classifying himself/herself as Bumiputra which entitles him/her to some privileges under the NEP by having Muslim name. Therefore, individuals who are Muslims in Malaysia would have strong incentive to have a Muslim name.

[51] '*Bin*' means 'son of' in Malay (which has its root meaning from Arab called '*Ibni*') and is used only by Muslims. Non-Muslims either use their father's name or surname.

have common names for his first, middle, and surnames, and any classification error arising from this will also be small.

4.2.3 Control Variables

Recent studies on capital structure have looked at various variables that affect the capital structure of the firm. Such studies include Gilson (1997), Moh'd *et al.* (1998), Newberry (1998), Varela and Limmack (1998), and Graham (1999).

Based on prior research, I use six control variables - i.e., tax rate, firm size, the cost of financial distress, firm growth, the costs of borrowings, and industry class – to control for other factors affecting capital structure. Tax rates have been the most extensively studied variable in the studies on capital structure (e.g., Haugen and Senbet, 1986). Because interest on debt is deductible for tax purposes, firms with higher tax liabilities are expected to utilise greater amounts of debt (e.g. Haugen and Senbet, 1986). Prior studies have used many proxies for tax rates including the effect of personal tax rates (Graham, 1999), tax credits (Newberry, 1998; Graham, 1999), corporate tax rates (Zimmerman, 1983; Moh'd *et al.*, 1998), non-debt-tax shields (DeAngelo and Masulis, 1980; Titman and Wessels, 1988), and marginal tax rates (see Miller *et al.*, 1994; Barclay and Smith, 1995; Alderson and Betker, 1995; Gilson, 1997; Graham, 1999).

Of these, the marginal tax rate is the most widely used measure. Miller *et al.* (1994, p. 199) defines the marginal tax rate as 'the present value of current and future income taxes to be paid per dollar of additional taxable income generated in the current period.' Common proxies for the marginal tax rate relate to tax losses carried forward, the alternative minimum tax, the progressivity of the statutory tax system, and the uncertainty about the future taxable income (see Shevlin, 1987; Mackie-Mason, 1990; Graham, 1996, 1999). Consistent with studies such as

Alderson and Betker (1995), Barclay and Smith (1995), Gilson (1997), and Newberry (1998), I use tax losses carried forward. I label this as NOL where NOL is a dummy variable equal to 1 if the firm has any losses carried forward and equal to 0 if the firm has none. I predict a negative relation between NOL and DEBT as firms with negative operating losses have less incentive to finance operations with debt instruments.

The second control variable for the capital structure is firm size. Ang *et al.* (1982) and Warner (1977) theorise that large firms' cashflows are diversified which makes these firms less vulnerable to bankruptcy. Based on this argument, they develop the hypothesis that large firms are expected to employ more debt in their capital structure. Prior studies have used two proxies for firm size, namely (1) the natural log of sales (e.g., Homaifar *et al.*, 1994; Mohamad, 1995; Newberry, 1998; Moh'd *et al.*, 1998; Graham, 1999), and/or (2) the natural log of total assets (e.g., Kochhar *et al.*, 1998; Gilson, 1997; Mohamad, 1995). I use the first definition, i.e., the natural log of sales. This is labeled SIZE. Consistent with Warner (1977) and Ang *et al.* (1982), I predict a positive relation between SIZE and DEBT.

The third control variable used for the capital structure analysis is bankruptcy cost or the cost of financial distress. This variable captures the notion that firms balance the benefits of debt financing with the financing-induced cost of distress, i.e., the higher the debt, the higher the risk of bankruptcy (Altman, 1968). Altman's (1968) Z-score is used commonly to estimate the probability of financial distress. I adopt the modified Z-score used by MacKie-Mason (1990) and Graham (1996, 1999).[52] Consistent with MacKie-Mason (1990) and Graham (1998), I defined ZSCORE as:

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[52] Altman (1993) has used an alternative Z-score measurement formula. He has included the ratio of market equity to book value of debt in equation (3) above. Because this measure is almost identical to the inverse of DEBT, I omit this ratio in the study. This is consistent with Mackie-Mason's (1990) and Graham's (1999) study.

$$ZSCORE = 3.3(EBIT/ASSET) + 1.0(REV/ASSET) + 1.4(RE/ASSET) + 1.2(WC/ASSET) \quad (2)$$

where

EBIT = earnings before interest and extraordinary income and taxes,

REV = revenue,

RE = retained earnings,

WC = working capital, and

ASSET = total assets.

Because firms with a high risk of bankruptcy have less incentive to increase debt capital, I predict a positive relation between ZSCORE and DEBT.

The fourth control variable used in my study is firm growth. Growth firms, i.e., firms with future investment opportunities, tend to have high debt financing costs. For example, Myers (1977) argues that the financing cost will be lower when firms have more assets-in-place rather than growth options because of possible underinvestment problems.[53] Because growth options are harder to value than assets-in-place and provide less security for creditors, he suggests that assets consisting primarily of growth options should not be financed by debt capital. The finance literature commonly uses market value of equity to book value of equity (hereafter termed as GROWTH) to account for this variable.[54] Thus, I include the GROWTH ratio as a proxy of firm growth in my multivariate analysis. Given that the high growth firms have less ability to issue debt capital, I predict a negative relation between GROWTH ratio and debt.

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[53] The under-investment problem arises when the manager rejects profitable investments that might benefit the debt providers.

[54] Tobin's q-ratio is also a common proxy for firm growth variable (see Graham, 1999). I have run similar tests using the q-ratio defined by Chung and Pruitt (1994) in place of GROWTH. The results are no different from the tests using MVE/BE. The results using the q-ratio are reported in Appendix C.

The fifth control variable used in my study is collateral. Myers (1977) argues that firms with more assets-in-place can use more debt financing. Because assets-in-place can be used as collateral, firms with extensive collateral are able to borrow on more favourable terms and have more borrowing capacity. Following Graham (1999), I use PPE-to-assets as a proxy for this variable in my analysis and label this variable COLLATERAL. PPE-to-assets is defined as net property, plant and equipment divided by total assets (see Graham, 1999). Given that the firms with more collateral have more incentive to issue debt capital, I predict a positive relation between COLLATERAL and DEBT.

The sixth control variable used in my study is industry class. Mohamad (1995) analyses the capital structure of large Malaysian companies. He finds that there are significant inter-industry differences in capital structure among Malaysian companies. Following his study, I incorporate industry class in my study as a control variable. In my sample, there are 14 different industries based on two digit industry codes. Thus, I use 13 dummy variables – labeled IND1 to IND13 - to represent these industries.

4.3 MODEL

As several variables influence a firm's capital structure, a multivariate analysis is the appropriate statistical tool. The multivariate analysis is defined as an analysis of multiple variables in a single relationship or set of relationships (see Hair *et al.*, 1992). The multivariate model used in this capital structure study is:

$$DEBT = \beta_0 + \beta_1 MUSLIM + \beta_2 NOL + \beta_3 SIZE + \beta_4 ZSCORE + \beta_5 GROWTH + \beta_6 COLLATERAL + \beta_7 IND1 + \ldots + \beta_{19} IND13 + \varepsilon \quad (3)$$

where

DEBT = debt/equity (see equation 1);

MUSLIM = 1 if Muslim managed, 0 otherwise;

NOL = 1 if firm has net operating losses, and 0 otherwise;

SIZE = natural log of sales;

ZSCORE = probability of financial distress (see equation 2);

GROWTH = market value of equity/book value of equity; and

IND1 – IND13 = industry dummy variables.

Using the data over a period of 12 years, i.e. 1987 to 1998, I estimate the coefficients using a pooled time-series, cross-sectional regression model. Table 4.1 below summarises the definitions and the predicted signs of the variables related to debt hypothesis.

TABLE 4.1

DEFINITION AND PREDICTED SIGNS OF THE VARIABLES USED IN THE DEBT HYPOTHESIS

Variable	Predicted sign	Definition
DEBT	Dependent variable	Book values of preference shares and debt ÷ Book values of preference shares and debt + market value of equity.
MUSLIM	-	Coded 1 if the firm's CEO is a Muslim and 0 otherwise.
NOL	-	Coded 1 if the firm has net operating losses carried forward and 0 otherwise.
SIZE	+	Natural log of sales.
ZSCORE	+	Formula of modified Z-score used by MacKie-Mason (1990) and Graham (1996, 1999).
GROWTH	-	Market value of equity to book value of equity.
COLLATERAL	+	Net property, plant and equipment divided by total assets.
IND1 – IND13	?	Dummy variables where IND1=1 if the firm is in industry 1 and 0 otherwise; and so on.

4.4 SAMPLE

The sample consists of 170 non-financial firms listed on KLSE continuously between 1980 and 1998. However, data used for the tests are for the period 1987-98 because sufficient data for period 1980-86 could not be obtained.

The sample excludes financial institutions and insurance companies. These industries are excluded from the sample for two reasons, namely (a) Muslim and non-Muslim firms in these two industries have significant operational differences, and (b) financial sector firms have dramatically different financial profiles than non-financial sector firms.

All the financial data was gathered from the annual reports available at the KLSE library and the National Equity Board library located in Kuala Lumpur, Malaysia. I have attached the list of the firms in my sample in Appendix A.

From a possible maximum of 2040 possible firm-year observations, 1607 firm-year observations have the required data (i.e., annual reports and share price data). Table 4.2 below provides a cross-tabulation of the observations by year and by industry. The least number of firm-year observations is in the transportation industry (10), while the most is in the property industry (342). On an annual basis, the least number of observations is for 1987 (86 firm-year observations) while 1995 has the most observations (148).

The 1607 observations consist of 1120 non-Muslim managed firm-years and 487 Muslim managed firm-years. The breakdowns of the Muslim and non-Muslim CEO managed firms by industry, quartiles based on firm size, and year are provided in Table 4.3 below.

The breakdown of observations from Muslim managed and non-Muslim managed firms by industry shows that observations of non-Muslim managed firms outnumbered observations of Muslim managed firms in all the industries except the publishing and media industry (the publishing and media industry has Muslim managed firms only), and the securities investment industry. The analysis by year shows that there are fewer Muslim managed firm-year observations in all years, with the largest difference in 1989. The analysis of firms by the quartiles based on firm size also shows a similar pattern.

Descriptive statistics for the dependent and all the independent variables other than the industry variables are presented in Table 4.4. It provides the mean, median, mode, standard deviation, minimum, maximum, and number of observations for the full sample (panel A), the Muslim managed firms (panel B), and the non-Muslim managed firms (panel C).

The Muslim managed firms have a larger mean and median of debt ratio than the non-Muslim managed firms. The Muslim managed firms have a larger mean for NOL than the non-Muslim managed firms but smaller means for SIZE, ZSCORE, GROWTH, and COLLATERAL.

TABLE 4.2

CROSS-TABULATION OF OBSERVATIONS BY INDUSTRY AND YEAR FOR THE DEBT HYPOTHESIS

Industry	87	88	89	90	91	92	93	94	95	96	97	98	Total
Building material	9	11	14	15	15	15	13	13	14	14	13	13	159
Construction	3	4	4	4	4	4	4	4	4	3	4	3	45
Consumer products	4	5	5	5	5	6	6	6	6	6	6	5	65
Food, beverage and tobacco	7	9	10	12	11	13	13	11	12	12	12	11	133
Gaming	4	4	4	4	4	3	5	5	5	5	5	4	52
Industrial products	10	13	17	17	15	17	16	15	15	15	16	15	181
Investment holdings	5	8	9	9	10	11	11	11	11	11	11	11	118
Mining	3	4	4	4	4	5	5	5	6	6	5	4	55
Plantation	13	17	23	21	21	23	22	25	25	25	25	22	262
Properties	19	24	30	29	26	30	31	31	33	33	29	27	342
Publishing & media	1	1	1	1	1	1	1	1	1	1	1	1	12
Securities investment	0	0	2	1	2	3	3	3	3	3	3	2	25
Trading & Services	8	14	14	12	12	14	12	12	12	12	13	13	148
Transportation	0	0	1	1	1	1	1	1	1	1	1	1	10
Total	86	114	138	135	131	146	143	143	148	147	144	132	1607

TABLE 4.3

BREAKDOWN OF MUSLIM MANAGED AND NON-MUSLIM MANAGED FIRMS BY INDUSTRY, FIRM SIZE, AND YEAR FOR THE DEBT HYPOTHESIS

The table provides the number of firm-year observations (and percentages) of Muslim managed, non-Muslim managed, and total observations. The table is presented in three sections. Panel A provides the detail by industry, panel B provides the detail by quartile based on firm size, and panel C provides the detail by year.

	Number of Muslim managed firms		Number of non-Muslim managed firms		Total observations	
	No.	%	No.	%	No.	%
Panel A: By industry						
Building material	55	11.29	104	9.29	159	9.89
Construction	14	2.87	31	2.77	45	2.80
Consumer products	24	4.93	41	3.66	65	4.04
Food, beverage and tobacco	24	4.93	109	9.73	133	8.28
Gaming	1	0.21	51	4.55	52	3.24
Industrial Products	28	5.75	153	13.66	181	11.26
Investment holdings	46	9.45	72	6.43	118	7.34
Mining	11	2.26	44	3.93	55	3.42
Plantation	108	22.18	154	13.75	262	16.30
Properties	104	21.36	238	21.25	342	21.28
Publishing and Media	12	2.46	0	0.00	12	0.75
Securities investment	15	3.08	10	0.89	25	1.56
Trading and services	45	9.24	103	9.20	148	9.21
Transportation	0	0.00	10	0.89	10	0.62
Total	487	100	1120	100	1607	100
Panel B: By quartile based on firm size						
First quartile	106	21.77	296	26.43	402	25.02
Second quartile	143	29.36	258	23.07	401	24.94
Third quartile	130	26.69	272	24.29	402	25.02
Fourth quartile	112	22.18	294	26.25	402	25.02
Total	487	100	1120	100	1607	100

Continuation of Table 4.3

Panel C: By year						
1987	26	5.34	60	5.63	86	5.35
1988	33	6.78	81	7.23	114	7.09
1989	36	7.39	102	9.11	138	8.59
1990	39	8.01	96	8.57	135	8.40
1991	36	7.39	95	8.48	131	8.15
1992	43	8.83	103	9.20	146	9.09
1993	42	8.62	101	9.02	143	8.90
1994	47	9.65	96	8.57	143	8.90
1995	49	10.06	99	8.84	148	9.21
1996	48	9.86	99	8.84	147	9.15
1997	46	9.45	98	8.75	144	8.96
1998	42	8.62	90	8.04	134	8.21
Total	487	100	1120	100	1607	100

TABLE 4.4

DESCRIPTIVE STATISTICS OF THE VARIABLES FOR THE DEBT HYPOTHESIS

The descriptive statistics are based on a sample composed of 1607 firm-year observations related to firms listed on the Kuala Lumpur Stock Exchange continuously over the period 1980-1998. Panel A provides the means, medians, modes, standard deviations, minimum values, maximum values, and total number of observations for each of the variables in the analysis for the whole sample. Panel B provides the means, medians, modes, standard deviations, minimum values, maximum values, and total number of observations for each of the variables in the analysis for the Muslim managed firms. Panel C provides the means, medians, modes, standard deviations, minimum values, maximum values, and total number of observations for each of the variables in the analysis for the non-Muslim managed firms. DEBT is the dependent variable and measures the debt-equity ratio of the firm concerned. MUSLIM is the test variable and is a dichotomous measure equal to 1 for firms that have Muslim CEOs, otherwise 0. NOL is a control variable (proxy for tax rate) and is a dichotomous measure equal to 1 for firms having tax losses carried forward, otherwise 0. SIZE is a control variable and is measured by the natural log of sales. ZSCORE is a control variable (proxy for the firm's financial distress rating) and is measured by the modified Z-score using the formula of 3.3(EBIT/ASSET) + 1.0(REV/ASSET) +1.4(RE/ASSET) + 1.2(WC/ASSET). GROWTH is a control variable and is measured using the ratio market value of equity to book value of equity. COLLATERAL is a control variable and is measured by PPE-to-assets.

	DEBT	MUSLIM	NOL	SIZE	ZSCORE	GROWTH	COLLATERAL
Panel A: All observations							
Mean	0.217	0.303	0.246	11.722	2.872	23.185	0.559
Median	0.150	0.000	0.000	11.890	0.960	1.460	0.310
Mode	0.000	0.000	0.000	11.291	1.140	0.580	0.010
Standard Deviation	0.223	0.460	0.431	1.881	82.912	300.175	7.726
Minimum	0.000	0.000	0.000	3.220	-391.640	-102.080	0.000
Maximum	1.000	1.000	1.000	18.900	3297.150	10716.610	309.670
Number	1607	1607	1607	1607	1607	1607	1607
Panel B: Observations with Muslim managed firms							
Mean	0.226		0.290	11.686	1.089	20.035	0.392
Median	0.151		0.000	11.860	0.880	1.690	0.350
Mode	0.000		0.000	12.210	1.290	1.350	0.010
Standard Deviation	0.230		0.447	1.748	6.537	138.670	0.324
Minimum	0.000		0.000	4.430	-16.060	-92.290	0.000
Maximum	0.960		1.000	15.690	139.060	1500.420	2.240
Number	487		487	487	487	487	487

Continuation of Table 4.4

	DEBT	MUSLIM	NOL	SIZE	ZSCORE	GROWTH	COLLATERAL
Panel C:- Observations with non-Muslim managed firms							
Mean	0.213		0.228	11.737	3.647	24.554	0.631
Median	0.144		0.000	11.930	1.000	1.400	0.310
Mode	0.000		0.000	11.820	0.750	0.580	0.010
Standard Deviation	0.219		0.420	1.937	99.225	347.796	9.253
Minimum	0.000		0.000	3.220	-391.640	-102.080	0.000
Maximum	1.000		1.000	18.903	3297.150	10716.610	309.670
Number	1120		1120	1120	1120	1120	1120

4.5 RESULTS OF TESTS

4.5.1 RESULTS OF THE UNIVARIATE ANALYSIS

I first examine whether DEBT differs between the two sub-samples (the Muslim managed and the non-Muslim managed firms) on a univariate basis. The univariate tests run are the t-tests and the nonparametric Mann-Whitney U tests.

The t-test compares the mean debt ratio for the two groups. The hypothesis developed above can be written in statistical form as below and is a one-tail test:

$$H_o : \mu_m \geq \mu_{nm}$$

$$H_a : \mu_m < \mu_{nm}$$

The nonparametric Mann-Whitney U test measures the difference between the medians of the two sub-samples. The main significance of the test is that it relaxes one of the key assumptions of the t-tests which assume that the samples are normally distributed.

TABLE 4.5

RESULTS OF THE UNIVARIATE TESTS BETWEEN DEBT AND MUSLIM

The results of the t-test and nonparametric Mann-Whitney U test for the debt hypothesis using 487 Muslim managed firm-year observations and 1120 non-Muslim managed firm-year observations are tabulated below. It provides the mean, t-value (and its significance in parenthesis) and the Z-statistics of the Mann-Whitney U test (and its significance in parenthesis). The t-test measures the difference in the mean of debt/equity ratio between the Muslim and the non-Muslim managed firms. The Mann-Whitney U test measures the difference in the median of debt/equity ratio between the Muslim and the non-Muslim managed firms.

	Mean	T-test (significance)	Median	Mann-Whitney Z-score
Muslim managed firms	0.226	1.705 (0.141)	0.151	1.197 (0.116)
Non-Muslim managed firms	0.213		0.144	

Table 4.5 above provides the results of the univariate tests performed on the sample. The t-test and Mann-Whitney U test show that the results are not significant. This indicates that the difference in the debt/equity ratios between the Muslim managed firms and non-Muslim managed firms are not statistically significantly. Thus, there is no evidence to support H1.

I further run the analyses by industry, year, and quartiles based on firm size. The results are tabulated in Table 4.6 below. The analysis by industry shown in panel A of Table 4.6 is based on 11 of the 14 industries. Three industries are omitted, i.e., gambling, publishing and media, and transportation. Gaming is omitted because it has only one Muslim managed firm observation, publishing and media is omitted because it has only Muslim managed firms observations, and transportation is omitted because it has only non-Muslim managed firms observations.

The analysis by industry indicates that six industries have statistically significant results, namely (i) building material, (ii) consumer products, (iii) industrial products, (iv) mining, (v) plantation, and (vi) properties. Three out of these six industries, i.e., (i) building material, (ii) mining, and (iii) properties, have negative t-values. This indicates that the Muslim managed firms in these three industries have lower debt/equity ratios than the non-Muslim managed firms which is consistent with H1.

The remaining three industries that have statistically significant results have positive t-values. This indicates that the Muslim managed firms in these three industries have higher debt/equity ratios than the non-Muslim managed firms which is contrary to H1.

The remaining five industries do not have any statistically significant results. These industries are (i) construction, (ii) food, beverage and tobacco, (iii) investment holdings, (iv) securities investment, and (v) trading and services. This indicates that there is no difference between the debt/equity ratios of the Muslim and non-Muslim managed firms which is contrary to H1.

The analysis by quartiles based on firm size (see panel B of Table 4.6 below) shows that only the fourth quartile (i.e., the largest group of sub-sample) has statistically significant results. The t-value for this quartile is positive. This indicates that the large Muslim managed firms have higher debt/equity ratios than the large non-Muslim managed firms which is contrary to H1. The remaining three quartiles do not have any statistically significant results. This indicates that the there is no difference in the debt/equity ratios between the Muslim managed and non-Muslim managed firms in these three groups. This is also contrary to H1.

The year-by-year analysis (see panel C of Table 4.6 below) shows that only three years have statistically significant results, the three years are 1988, 1992, and 1993. Of these three years with statistically significant results, only 1988 has negative test statistics. This indicates that the Muslim managed firms in this year have lower debt/equity ratios than the non-Muslim managed firms as expected by H1.

The results for1992 and 1993 have positive t-values. This indicates that the Muslim managed firms in these two years have higher debt/equity ratios than the non-Muslim managed firms which is contrary to H1.

The results of the tests in other years do not have any statistically significant results. This indicates that there is no difference in the debt/equity ratios between the Muslim and non-Muslim managed firms. Thus, these findings are also contrary to H1.

TABLE 4.6

UNIVARIATE TESTS ANALYSED BY INDUSTRY, QUARTILE BASED ON FIRM SIZE, AND YEAR

Results of the t-tests and the non-parametric Mann-Whitney U tests for the debt hypothesis is further analysed by industry (see panel A), quartile based on firm size (see panel B), and year (see panel C). It provides the mean (and the median in parenthesis) for the Muslim sub-sample, the mean (and the median in parenthesis) for the non-Muslim sub-sample, t-value, and the Z-statistics of the Mann-Whitney U test. The t-test measures the difference in the mean of debt/equity ratio between the Muslim and the non-Muslim managed firms. The Mann-Whitney U test measures the difference in the median of debt/equity ratio between the Muslim and the non-Muslim managed firms.

	Mean (median) of Muslim managed firms	Mean (median) of Non-Muslim managed firms	T-test (equal variance assumed) H_o: $\mu_m \geq \mu_{nm}$ H_a: $\mu_m < \mu_{nm}$	Mann-Whitney test
Panel A: By industry				
Building material	0.104 (0.050)	0.251 (0.115)	-3.667 *	-3.000*
Construction	0.236 (0.195)	0.291 (0.190)	-0.786	0.613
Consumer Products	0.304 (0.220)	0.174 (0.150)	2.469*	2.289**
Food, beverage & tobacco	0.172 (0.070)	0.170 (0.100)	0.028	-0.369
Industrial products	0.378 (0.295)	0.202 (0.140)	4.200*	2.970*
Investment holdings	0.373 (0.310)	0.336 (0.310)	0.820	0.806
Mining	0.052 (0.020)	0.140 (0.065)	-1.690**	-1.629**
Plantation	0.162 (0.085)	0.107 (0.000)	2.210 **	4.932*
Properties	0.215 (0.145)	0.247 (0.210)	-1.304***	-2.399*
Securities investment	0.288 (0.170)	0.220 (0.180)	0.690	-0.698
Trading & services	0.283 (0.220)	0.249 (0.200)	0.823	1.120

Continuation of Table 4.6

Panel B: By quartiles based on firm size				
1st quartile	0.168 (0.100)	0.180 (0.100)	-0.567	-0.284
2nd quartile	0.213 (0.160)	0.201 (0.150)	0.561	0.752
3rd quartile	0.230 (0.160)	0.230 (0.180)	0.022	-0.421
4th quartile	0.296 (0.220)	0.240 (0.160)	1.913**	1.878**
Panel C: By year				
1987	0.234 (0.180)	0.278 (0.235)	-0.81 8	-0.639
1988	0.215 (0.130)	0.296 (0.280)	-1.634**	-1.278***
1989	0.203 (0.120)	0.227 (0.160)	-0.543	-0.573
1990	0.157 (0.120)	0.181 (0.115)	-0.705	-0.515
1991	0.218 (0.165)	0.200 (0.150)	0.470	0.268
1992	0.268 (0.250)	0.198 (0.160)	1.903**	1.630**
1993	0.204 (0.120)	0.140 (0.090)	2.089**	1.782**
1994	0.147 (0.080)	0.121 (0.070)	0.886	0.989
1995	0.165 (0.130)	0.146 (0.090)	0.657	0.440
1996	0.163 (0.105)	0.158 (0.100)	0.143	0.353
1997	0.301 (0.250)	0.266 (0.205)	0.766	0.686
1998	0.451 (0.505)	0.404 (0.355)	0.835	0.855

*, **, *** denote that the results are significant at 1 percent, 5 percent, and 10 percent based on one-tail tests.

4.5.2 MULTIVARIATE ANALYSIS

I compute the Pearson's correlation coefficients for all the independent variables used in the OLS regression. The correlation table is provided in Table 4.7 below.

TABLE 4.7

PEARSON'S CORRELATION COEFFICIENTS

The table provides the Pearson's correlation coefficient (and its probability value in parenthesis) for the independent variables used in the OLS regression. The correlation is estimated using 1607 firm-year observations related to firms listed on the KLSE continuously over the period 1987-1998. The test variable in the regression is MUSLIM and is a dichotomous measure equal to 1 if the firm is Muslim managed, otherwise 0. The control variables are NOL, SIZE, ZSCORE, GROWTH, COLLATERAL, and IND. NOL is a dummy variable equal to 1 if the firm has any losses carried forward, otherwise 0. SIZE is measured by the natural log of sales. ZSCORE is computed by the modified Z-score formula of 3.3(EBIT/ASSET) + 1.0(REV/ASSET) +1.4(RE/ASSET) + 1.2(WC/ASSET). GROWTH is measured by market value of equity to book value of equity. COLLATERAL is computed by dividing net property, plant and equipment with the total assets.

	MUSLIM	NOL	SIZE	ZSCORE	COLLATERAL	GROWTH
MUSLIM	1.000	0.066	-0.013	-0.014	-0.014	-0.007
		(0.008)	(0.616)	(0.570)	(0.570)	(0.782)
NOL		1.000	-0.188	-0.022	-0.015	-0.038
			(0.000)	(0.387)	(0.545)	(0.124)
SIZE			1.000	0.106	-0.026	-0.075
				(0.000)	(0.292)	(0.003)
ZSCORE				1.000	-0.119	-0.008
					(0.000)	(0.742)
COLLATERAL					1.000	0.050
						(0.045)

The correlations of all the variables are all weak, the largest being the correlation of –0.188 between NOL and SIZE. Thus, the likelihood of multicollinearity caused by bi-variate correlation is low.

I estimate equation (3) above using OLS regression. The sample has 1607 firm-year observations. The results are contained in Table 4.8 below.

TABLE 4.8

RESULTS OF THE MULTIVARIATE REGRESSION ANALYSIS

The following is the regression model: DEBT = β_0 + β_1 MUSLIM + β_2 NOL + β_3 SIZE + β_4 ZSCORE + β_5 GROWTH + β_6 COLLATERAL + β_7 IND1 +..... +β_{19} IND13 + ε. The dependent variable, DEBT, in the regression is the debt/equity ratio which is measured by dividing book value of preference shares and debt to the value of book value of preference shares, debt, and market value of equity. The test variable in the regression is MUSLIM and is a dichotomous measure equal to 1 if the firm is Muslim managed, otherwise 0. The control variables are NOL, SIZE, ZSCORE, GROWTH, COLLATERAL, and IND. NOL is a dummy variable equal to 1 if the firm has any losses carried forward, otherwise 0. SIZE is measured by the natural log of sales. ZSCORE is computed by the modified Z-score formula of 3.3(EBIT/ASSET) + 1.0(REV/ASSET) +1.4(RE/ASSET) + 1.2(WC/ASSET). GROWTH is measured by market value of equity to book value of equity. COLLATERAL is computed by dividing net property, plant and equipment with the total assets. IND1 –IND13 are dummy variables used to represent the 14 industries in the sample. For economy, the coefficients for the industry variables are not tabulated below. The model is estimated using a sample of 1591 firm-year observations related to firms listed on the KLSE continuously over the period 1987-1998.

	Predicted signs	Coefficient	t-value	Significance	Variance Inflation Factor
Intercept	?	-0.0535	-0.751	0.247	-
MUSLIM	-	0.011	0.971	0.166	1.084
NOL	-	0.110	8.973	0.000	1.102
SIZE	+	0.017	5.529	0.000	1.318
ZSCORE	+	-0.000	-1.723	0.043	1.035
GROWTH	-	-0.000	-3.023	0.002	1.025
COLLATERAL	+	0.000	0.792	0.215	1.019
Adjusted R-square		0.149			
F-value		14.499			
Significance		0.000			
Durbin-Watson Statistics		1.748			
Number of observations		1591			

The regression model is statistically significant (F-value = 14.499, p-value = 0.000) and the R-square is 14.9 percent. This indicates that the model is able to explain about 15 percent of the variation in DEBT. Four of the control variables (i.e., NOL, SIZE, ZSCORE, and GROWTH) are statistically significant, but NOL and ZSCORE have signs opposite to the predicted sign. COLLATERAL is found to be statistically not significant. This indicates that the firm's debt/equity ratio is influenced by firm size, and growth, as predicted, but net operating losses and

financial distress do not influence the firm's debt/equity ratio in the direction predicted.

The coefficient of the test variable for the debt hypothesis, i.e., the MUSLIM variable, is not statistically significant. This indicates that the debt/equity ratio is not influenced by the religious orientation of the firm's CEO. Therefore, the result does not support H1.

Of the 14 industry variables included in the regression, only the investment holdings industry has statistically significant results. The results of the other 13 variables are statistically not significant. For economy, the results of the industries are omitted.

The regression model above has a Durbin-Watson statistics of 1.748. The Durbin-Watson statistics measures the autocorrelation that is used to measure the independence of the residuals of the regression. One of the assumptions of classical linear regression is that the disturbances associated with the observations are said to have uniform variances and are not correlated with one another. When there is no autocorrelation, the Durbin-Watson statistics is close to 2.00. The further away the Durbin-Watson statistics is from 2.00, the less confident a researcher can be that there is no autocorrelation in the disturbance (see Kennedy, 1992, p.121). Thus, the residuals in the regression model above may be autocorrelated. Accordingly, I also estimate equation (3) with dummy variables for each of the year, i.e., 1987-1998. The results were similar to those in Table 4.8 and the Durbin-Watson was 2.021. These results are not tabulated.

Variance Inflation Factor (VIF), which is the inverse of the correlation matrix of the explanatory variables, measures multicollinearity among the independent variables. When two or more variables are collinear, it becomes difficult to infer the separate

influence of such variables on the response variable. Kennedy (1992, p.183) suggests a cut-off point of ten for the VIF to determine when a correlation is close to unity. The VIFs for the test and control variables are all below ten. Thus, it appears that multicollinearity is not a problem.

4.5.2.1 MULTIVARIATE ANALYSIS USING SUB-SAMPLES

I further estimate equation (3) using five different sub-samples, i.e., based on (a) firms excluded from the Syariah Index, (b) firms included in the Syariah Index, (c) firms that have no change in the religious orientation of the CEO for five consecutive years, (d) firm groupings by quartiles of based firm size, and (e) firms based on industry groupings.

The analysis of the sub-sample of firms included in the Syariah Index provides a stronger test of H1 because this test excludes business types that are not acceptable to Islam. It is expected that in these industries Islamic teachings would have more influence. On the other hand, for firms excluded from the Syariah Index, I expect that Islamic teachings would have less influence. That is, managers who are willing to work in prohibited industries probably are not close followers of Islam even though they may be Muslims. Thus, I expect that H1 will be supported using the Syariah sample but not using the non-Syariah sample.

Table 4.9 below reports the results of the tests using sub-sample of firms included in the Syariah Index (panel A) and excluded from the Syariah Index (panel B). The regression model for the sub-sample of firms included in the Syariah Index is statistically significant (F-value = 9.423, p-value = 0.000) and the R-square is 15.3 percent. This indicates that the model is able to explain about 15 percent of the variation in DEBT. Three of the control variables (i.e., NOL, SIZE, and GROWTH) are statistically significant but NOL has a sign opposite to the predicted sign.

TABLE 4.9

RESULT OF THE MULTIVARIATE REGRESSION ANALYSIS ON THE SUB-SAMPLE OF FIRMS INCLUDED IN AND EXCLUDED FROM THE SYARIAH INDEX

The following is the regression model: DEBT = β_0 + β_1 MUSLIM + β_2 NOL + β_3 SIZE + β_4 ZSCORE + β_5 GROWTH + β_6 COLLATERAL + IND1 +..... +β_{19} IND13 + ε. The dependent variable, DEBT, in the regression is the debt/equity ratio which is measured by dividing book value of preference shares and debt to the value of book value of preference shares, debt, and market value of equity. The test variable in the regression is MUSLIM and is a dichotomous measure equal to 1 if the firm is Muslim managed, otherwise 0. The control variables are NOL, SIZE, ZSCORE, GROWTH, COLLATERAL, and IND. NOL is a dummy variable equal to 1 if the firm has any losses carried forward, otherwise 0. SIZE is measured by the natural log of sales. ZSCORE is computed by the modified Z-score formula of 3.3(EBIT/ASSET) + 1.0(REV/ASSET) + 1.4(RE/ASSET) + 1.2(WC/ASSET). GROWTH is measured by market value of equity to book value of equity. COLLATERAL is computed by dividing net property, plant and equipment with the total assets. IND1–IND13 are dummy variables used to represent the 14 industries in the sample. For economy, the coefficients for the industry variables are not tabulated below. Panel A provides the results of the model based on a sample of firms that are included in the Syariah Index of KLSE. The sub-sample consists of 902 firm-year observations related to 90 firms listed on the KLSE continuously over the period 1987-1998. Panel B provides the results of the model based on a sample of firms that are excluded from the Syariah Index of KLSE. The sub-sample consists of 689 firm-year observations related to 65 firms listed on the KLSE continuously over the period 1987-1998.

Panel A: Sub-sample of the firms that are included in the Syariah *Index of the KLSE.*

	Predicted signs	Coefficient	t-value	Significance	Variance Inflation Factor
Intercept	?	-0.008	-1.572	0.058	-
MUSLIM	-	0.004	2.531	0.006	1.176
NOL	-	0.111	6.891	0.000	1.139
SIZE	+	0.016	4.004	0.000	1.373
ZSCORE	+	-0.000	-1.613	0.054	1.035
GROWTH	-	-0.000	-2.114	0.018	1.179
COLLATERAL	+	0.003	0.118	0.453	1.186
R-square		0.153			
F-value		9.423			
Significance		0.000			
Number of observations		902			

Panel B: Sub-sample of the firms that are excluded from the Syariah *Index of the KLSE.*

	Predicted signs	Coefficient	t-value	Significance	Variance Inflation Factor
Intercept	?	-0.084	-1.037	0.150	-
MUSLIM	-	-0.052	-3.041	0.000	1.154
NOL	-	0.120	6.355	0.000	1.214
SIZE	+	0.021	4.156	0.000	1.553
ZSCORE	+	-0.010	-3.232	0.000	37.117
GROWTH	-	-0.000	-2.478	0.007	1.019
COLLATERAL	+	-0.011	-3.004	0.002	36.924
R-square		0.253			
F-value		12.612			
Significance		0.000			
Number of observations		689			

ZSCORE and COLLATERAL are found to be statistically insignificant. This indicates that the firm's debt/equity ratio is influenced by the firm size, and growth as predicted, while net operating losses influence the firm's debt/equity ratio in a direction opposite to that predicted.

The coefficient of the key variable for the debt hypothesis, i.e., the MUSLIM variable, is statistically significant with a positive coefficient. This indicates that the debt/equity ratio of Muslim managed firms are higher than the non-Muslim managed firms which is contrary to H1.

The regression model using the sub-sample that excludes the Syariah Index is statistically significant (F-value = 12.612, p-value = 0.000), and the R-square is 25.3 percent. This indicates that the model is able to explain about 25 percent of the variation in DEBT. All the five control variables are statistically significant, but NOL, ZSCORE, and COLLATERAL have signs opposite to the predicted sign. This indicates that the firm's debt/equity ratio is influenced by the firm size and growth as predicted, while net operating losses, financial distress ratio, and collateral influence the firm's debt/equity ratio in a direction opposite to that predicted.

The coefficient of the key variable for the debt hypothesis, i.e., the MUSLIM variable, is statistically significant and has a negative coefficient. This indicates that the debt/equity ratios of Muslim managed firms are lower than the non-Muslim managed firms which is contrary to expectations.

Together, the results in panels A and B do not provide any support for H1. In panel A, the coefficient for the MUSLIM variable was significant and positive where a negative coefficient was expected. In panel B, the coefficient for the MUSLIM variable was significant and negative where an insignificant coefficient was expected.

In the next analysis, I use a subsample of firms that had no change in the religious orientation of their managers for five consecutive years. One problem of the main analysis is that the capital structure might reflect decisions made by previous managers. If these managers have a different religious orientation, the current capital structure may not reflect the current manager's religious orientation. This would bias the tests against H1. To avoid this confounding effect, I re-run the regression using only those firms that had a MUSLIM manager in place for five consecutive years or a non-MUSLIM manager in place for five consecutive years. The results of this test is provided in Table 4.10 below.

The regression model using the sub-samples of firms that have no change in the religious orientation of the CEO for five consecutive years is statistically significant (F-value = 10.775, p-value = 0.000) and the R-square is 23.6 percent. This indicates that the model is able to explain about 24 percent of the variation in DEBT. Four of the five control variables, i.e., all except COLLATERAL, are statistically significant but NOL and ZSCORE have signs opposite to the predicted sign.

TABLE 4.10

RESULTS OF THE MULTIVARIATE REGRESSION ANALYSIS ON THE SUB-SAMPLE OF FIRMS THAT HAVE NO CHANGE IN THE RELIGIOUS ORIENTATION OF THE CEO FOR FIVE CONSECUTIVE YEARS

The following is the regression model: DEBT = β_0 + β_1 MUSLIM + β_2 NOL + β_3 SIZE + β_4 ZSCORE + β_5 GROWTH + β_6 COLLATERAL + IND1 +..... +β_{19} IND13 + ε. The dependent variable, DEBT, in the regression is the debt/equity ratio which is measured by dividing book value of preference shares and debt to the value of book value of preference shares, debt, and market value of equity. The test variable in the regression is MUSLIM and is a dichotomous measure equal to 1 if the firm is Muslim managed, otherwise 0. The control variables are NOL, SIZE, ZSCORE, GROWTH, COLLATERAL, and IND. NOL is a dummy variable equal to 1 if the firm has any losses carried forward, otherwise 0. SIZE is measured by the natural log of sales. ZSCORE is computed by the modified Z-score formula of 3.3(EBIT/ASSET) + 1.0(REV/ASSET) +1.4(RE/ASSET) + 1.2(WC/ASSET). GROWTH is measured by market value of equity to book value of equity. COLLATERAL is computed by dividing net property, plant and equipment with the total assets. IND1–IND13 are dummy variables used to represent the 14 industries in the sample. For economy, the coefficients for the industry variables are not tabulated below. The sub-sample consists of 683 firm-year observations related to firms listed on the KLSE continuously over the period 1987-1998.

	Predicted signs	Coefficient	t-value	Significance	Variance Inflation Factor
Intercept	?	-0.273	-2.508	0.006	-
MUSLIM	-	0.024	1.337	0.091	1.152
NOL	-	0.085	3.952	0.000	1.256
SIZE	+	0.042	7.738	0.000	1.678
ZSCORE	+	-0.020	-5.046	0.000	1.296
GROWTH	-	-0.000	-1.966	0.025	1.053
COLLATERAL	+	0.010	0.420	0.337	1.139
R—square		0.236			
F-value		10.775			
Significance		0.000			
Durbin-Watson Statistics		1.243			
Number of observations		683			

The coefficient of the key variable for the debt hypothesis, i.e., the MUSLIM variable, is found to be statistically significant (at the 0.10 level based on a one-tail test) but with a positive t-value. This indicates that the debt/equity of the Muslim managed firms are higher than the non-Muslim managed firms which is contrary to H1.

In Table 4.11, I provided a summary of the results of the regression run on sub-samples split by quartiles based on firm size and by industry. These analyses are provided primarily for completeness as a priori there is no reason to expect that the hypothesised relation between DEBT and MUSLIM would be influenced by either firm size or industry classification.

For economy, only the coefficients for MUSLIM are reported in Table 4.11. Panel A shows that for the regression model run on sub-samples based on the quartiles of firm size, none of the MUSLIM coefficients are significant in the expected direction. Thus, I find no support for H1 in any of the quartile-based results.

The regression model based on industries show that only four industries have statistically significant results. These industries are (i) building material, (ii) consumer products, (iii) industrial products, and (iv) plantations. Out of these four industries, only one industry, i.e., building material industry, has negative coefficient that is statistically significant. This suggests that Muslim managed firms in building material industry have lower debt/equity ratios than the non-Muslim managed firms. However, in general, there is no support for H1.

4.5.2.2 MULTIVARIATE ANALYSIS BASED ON CHANGES

In Table 4.10 above, I examine the results for firms with no change in religious orientation over a five-year period. This test was based on the notion that the capital structure might not change immediately once a new manager is put in place. However, an alternative scenario is that a change in the religious orientation of top management is a significant event and that change in orientation will be quickly reflected in the capital structure of the firm. To capture this possibility, I examine those firms where a Muslim manager was replaced by a non-Muslim manager or

TABLE 4.11

RESULTS OF THE MULTIVARIATE REGRESSION ANALYSIS ON SUB-SAMPLES BASED ON FIRM SIZE AND INDUSTRY

The following is the regression model: DEBT = $\beta_0 + \beta_1$ MUSLIM + β_2 NOL + β_3 SIZE + β_4 ZSCORE + β_5 GROWTH + β_6 COLLATERAL + + IND1 +..... +β_{19} IND13 + ε. The dependent variable, DEBT, in the regression is the debt/equity ratio which is measured by dividing book value of preference shares and debt to the value of book value of preference shares, debt, and market value of equity. The test variable in the regression is MUSLIM and is a dichotomous measure equal to 1 if the firm is Muslim managed, otherwise 0. The control variables are NOL, SIZE, ZSCORE, GROWTH, COLLATERAL, and IND. NOL is a dummy variable equal to 1 if the firm has any losses carried forward, otherwise 0. SIZE is measured by the natural log of sales. ZSCORE is computed by the modified Z-score formula of 3.3(EBIT/ASSET) + 1.0(REV/ASSET) +1.4(RE/ASSET) + 1.2(WC/ASSET). GROWTH is measured by market value of equity to book value of equity. COLLATERAL is computed by dividing net property, plant and equipment with the total assets. IND1–IND13 are dummy variables used to represent the 14 industries in the sample. For economy, the coefficients for the industry variables are not tabulated below. Panel A provides the summary of the results of the model based on a sub-sample of firms based on quartiles of firm size. Panel B provides the summary of the results of the model based on industries. Industries with less than 28 observations are not analysed.

	N	Coefficient of Muslim variable	T-value of Muslim variable	R-square	F-value	Support/ not support the hypothesis
Panel A: Regression analysis by quartile based on firm size.						
1st quartile	400	-0.021	-0.970	0.308	9.428*	Not supported
2nd quartile	395	0.020	0.917	0.136	3.300*	Not supported
3rd quartile	397	0.006	0.274	0.144	3.554*	Not supported
4th quartile	399	0.068	2.465 ***	0.271	8.336*	Not supported
Panel B: Regression analysis by industry						
Building material	158	-0.088	-2.054*	0.268	9.273*	Support
Construction	44	-0.006	-0.077	0.412	4.430*	Not Supported
Consumer Products	65	0.442	5.941*	0.454	8.039*	Not Supported
Food, beverage, & tobacco	132	0.062	1.523	0.213	5.671*	Not Supported
Gaming	51	0.238	1.276	0.642	13.467*	Not Supported
Industrial product	180	0.191	4.564*	0.168	5.869*	Not Supported
Investment holdings	117	0.043	1.077	0.359	10.282*	Not Supported
Mining	54	-0.088	-1.238	0.072	0.603	Not Supported
Plantation	257	0.049	2.294**	0.256	14.374*	Not Supported
Properties	342	-0.019	-0.824	0.123	7.731*	Not Supported
Trading & services	148	-0.034	-0.887	0.234	7.176*	Not Supported

*, **, *** denote statistical significance at the 1, 5, and 10 percent levels respectively, based on one-tail tests.

where a non-Muslim manager was replaced by a Muslim manager. If H1 holds and if the capital structure is relatively flexible, in the latter case, the debt/equity ratio should decrease from the prior year when the non-Muslim manager was in place.

I compute the changes in all the independent variables from the previous period and estimate an OLS regression model that is based on the year-to-year change in each of the previously defined variables. I compute the changes in DEBT, changes in ZSCORE, changes in GROWTH, and changes in COLLATERAL as the arithmetic differences between period t and period t-1. The change for variables that are measured dichotomously are handled differently, i.e., a change in MUSLIM from non-Muslim to Muslim is equal to 1 (otherwise 0) and a change from no losses carried forward to having a loss carried forward is equal to 1 (otherwise 0). The new variables are labeled C_DEBT, C_MUSLIM, C_NOL, C_SIZE, C_ZSCORE, C_GROWTH, and C_COLLATERAL. The industry variables are all omitted as there are no changes in the industry classifications. The results of the OLS regression run on these variables are provided in Table 4.12 below.

The regression model using the samples of firms with the changes in all the independent variables from the previous period is statistically significant (F-value = 2.557, p-value = 0.000), but the R-square is only 3.4 percent. This indicates that the model is able to explain only about 3 percent of the variation in C_DEBT. Three of the five control variables, i.e., C_NOL, C_SIZE, and C_COLLATERAL, are statistically significant, but C_NOL and C_COLLATERAL have signs opposite to that predicted. This indicates that changes in the firm's debt/equity ratio are influenced by the changes in firm's size as predicted, while the changes in the firm's reported net operating losses and the changes in collateral influence the

TABLE 4.12

RESULTS OF THE MULTIVARIATE REGRESSION ANALYSIS ON THE SUB-SAMPLE WITH THE CHANGES IN ALL THE INDEPENDENT VARIABLES FROM THE PREVIOUS PERIOD

The following is the regression model: $C\_DEBT = \beta_0 + \beta_1 C\_MUSLIM + \beta_2 C\_NOL + \beta_3 C\_SIZE + \beta_4 C\_ZSCORE + \beta_5 C\_GROWTH + \beta_6 C\_COLLATERAL + \varepsilon$. The dependent variable, C_DEBT, in the regression is the changes in the debt/equity ratio from the previous period. The test variable in the regression is C_MUSLIM is a dichotomous measure equal to 1 if the firm experienced a change in CEO from non-Muslim to Muslim, otherwise 0. The control variables are C_NOL, C_SIZE, C_ZSCORE, C_GROWTH, and C_COLLATERAL. C_NOL is a dummy variable equal to 1 if the firm reported income has changed from having no losses carried forward to having a losses carried forward, otherwise 0. C_SIZE is measured by the change in the natural log of sales. C_ZSCORE is the change in the Z-score computed from the previous period. C_GROWTH is measured by the change in the market value of equity to book value of equity from the previous period. C_COLLATERAL is computed by the change in PPE-to- total assets from the previous period. The sub-sample consists of 1384 firm-year observations related to firms listed on the KLSE continuously over the period 1987-1998.

	Predicted signs	Coefficient	t-value	Significance	Variance Inflation Factor
Intercept	?	033	0.739	0.230	-
C_MUSLIM	-	0.085	2.523	0.006	1.011
C_NOL	-	0.075	4.834	0.000	1.008
C_SIZE	+	0.008	1.658	0.049	1.072
C_ZSCORE	+	-0.000	-0.111	0.456	1.087
C_GROWTH	-	0.000	0.605	0.273	1.019
C_COLLATERAL	+	-0.000	-1.779	0.038	1.002
R-square		0.034			
F-value		2.557			
Significance		0.000			
Durbin-Watson Statistics		2.092			
Number of observations		1384			

firm's debt/equity ratio unexpectedly. C_ZSCORE, and C_GROWTH do not influence the changes in the debt/equity position of the firms.

The coefficient of the key variable for the debt hypothesis, i.e., the C_MUSLIM variable, is statistically significant with a positive coefficient. This indicates that the changes in the debt/equity ratio of firms experiencing changes in the CEO from a non-Muslim to a Muslim are higher than other firms. Again, this is not consistent with H1.

4.6 CHAPTER SUMMARY

In this chapter, I discuss the research design, the variables, the model, the sample, and the results of the tests of H1. The sample size is 1607 firm-year observations related to 170 firms listed on the KLSE continuously over the period 1987-1998.

T-tests and nonparametric Mann-Whitney tests on the whole sample indicates that there is no statistically significant difference in debt/equity ratios between Muslim managed and non-Muslim managed firms.

The results of the OLS regression performed on the sample also do not support H1. The findings are tabulated below:

NUMBER	SAMPLE	SUPPORT/ NOT SUPPORT THE DEBT HYPOTHESIS
1	The whole sample	NOT SUPPORTED
2	Firms excluded from the Syariah Index	NOT SUPPORTED
3	Firms included in the Syariah Index	NOT SUPPORTED
4	Firms that have no change in the religious orientation of the CEO for five consecutive years	NOT SUPPORTED
5	Changes in the variables from the previous period	NOT SUPPORTED
6	Quartiles based on firm size	NOT SUPPORTED
7	Industry	NOT SUPPORTED

Overall, based on both the univariate and multivariate tests, H1 is not supported. There are a few possible reasons that could explain why religion has no effect on the capital structure of Malaysian firms. First, Muslim managers may not adhere to their religious teaching any more than non-Muslim managers. Thus, Muslim and non-Muslim managers may behave alike when making capital structure decisions.

Second, it is possible that Muslim managed firms had resorted to issuing debt capital as it is easier and faster to obtain as compared to equity capital. Firms

issuing equity capital would be required to obtain prior approval from the relevant government authorities, e.g., the Securities Commission and KLSE which normally takes longer time as compared to direct application of debt capital from the financial institutions and/or insurance companies.

Third, it is possible that firms had issued Islamic debts, e.g., *Musyarakah*, *Murabaha*, and *Ijarah*. This would not be captured by the study because these debts are not distinguished in publicly available financial reports. Fourth, it is possible that there are some omitted variables that are not captured by the model used.

The next chapter discusses the research design, the variables, the model, the sample, and the results of the tests on H2, i.e., earnings management hypothesis.

CHAPTER 5
RESEARCH METHODOLGY AND RESULTS FOR EARNINGS MANAGEMENT HYPOTHESIS

5.0 INTRODUCTION

Chapter 3 addresses the institutional environment in Malaysia. The latter part of chapter 3 specifically develops testable hypotheses to test the influence of Islam on Malaysian firms' debt and their managers' accounting choices. The test of the debt hypothesis has been discussed in the previous chapter.

This chapter discusses the research methodology used to test the earnings management hypothesis developed in chapter 3. I structure the remaining part of the chapter into nine sections. Section 5.1 discusses the research design for the earnings management hypothesis. Section 5.2 discusses the variables used in the model. Section 5.3 discusses the model. Section 5.4 discusses the sample and data collection. Section 5.5 discusses the results of earnings management tests using the Healy model based on total accruals. Section 5.6 discusses the results of earnings management tests using the DeAngelo model based on changes in total accruals. Section 5.7 discusses the results of earnings management tests using the Jones model that estimates discretionary accruals using a regression approach. Section 5.8 discusses the results of earnings management tests using the Modified Jones model, and the last section provides a summary of and a conclusion to the chapter.

5.1 RESEARCH DESIGN FOR THE EARNINGS MANAGEMENT HYPOTHESIS

This section discusses the research method for the earnings management hypothesis. Before proceeding, I repeat the earnings management hypothesis below:

H2: Muslim managed firms are less likely to manage earnings than non-Muslim managed firms.

Prior studies have found that earnings management can be achieved by various means such as the use of accruals (e.g., Dechow et al, 1995), changes in accounting methods (e.g., Sweeney, 1994), and changes in capital structure (e.g. Defeo et al, 1989). I focus on discretionary accruals (hereafter termed as DA) as the source of earnings management because DA choices are less visible and less likely to be undone by the users (of reported earnings) than other methods of earnings management (see Healy *et al.*, 1987).

Various models of accruals have been used to detect discretionary accruals. These range from simple models in which DA are measured as total accruals (hereafter termed as TA) to more sophisticated models that attempt to separate total accruals into DA and non-discretionary accruals (hereafter termed as NDA).

I use several different models to estimate DA. In my study, I use the four most popular models: the Healy (1985) model, the DeAngelo (1986) model, the Jones (1991) model, and the Modified Jones model. Each of the four models is discussed briefly below.

Healy (1985) develops his model to test the effect of management bonus schemes on accounting decisions (see chapter 2). Healy (1985) uses TA_t to represent DA_t for each firm i. He argues that DA would sum up to zero over the manager's tenure and, therefore, assumes that DA would equal TA.

Symbolically, the TA in a given period t, TA_t, consists of DA_t and NDA_t:

$$TA_t = DA_t + NDA_t. \quad (4)$$

Thus, if NDA are constant over time and DA have a mean of zero in the estimation period, the Healy model would accurately measure NDA. Conversely, if NDA is not constant, TA is a poor proxy for DA (see DeAngelo, 1986; Jones, 1991; Dechow *et al.*, 1995).

The second model is the DeAngelo model. This model uses last period's TA (scaled by lagged assets) as the measure of NDA.[55] This model, thus, differs from Healy's model in that DeAngelo includes an explicit estimate of NDA. DeAngelo (1986) determines DA by computing the differences in TA in the consecutive periods, and this can be written as:

$$DA_t = TA_t - TA_{t-1}. \quad (5)$$

The most significant weakness of the DeAngelo model is that it fails to acknowledge the effect of economic reality. Changes in working capital, and consequently accruals, depend upon the economic circumstances of the firm, especially in revenue. Therefore, NDA can change during a period and will not necessarily be equal to the lagged TA (see Kaplan, 1985). Failing to control for these economic conditions will lead to inflated standard errors and a less powerful test.

The third model is the Jones (1991) model. Jones (1991) proposes this model as an attempt to control for the effect of the changes in a firm's economic circumstances on NDA. She estimates the NDA in the event year by:

$$NDA_t = \alpha_1 (1/A_{t-1}) + \alpha_2 (\Delta REV_t) + \alpha_3(PPE_t) \quad (6)$$

where

NDA_t = non-discretionary accruals in year t scaled by total assets in year t-1,

ΔREV_t = revenue in year t scaled by total assets in year t-1;

PPE_t = gross property, plant, and equipment in year t scaled by total assets in year t-1; and

A_{t-1} = total assets in year t-1.

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[55] DeAngelo (1986) develops this model to investigate the accounting decisions made by managers of 64 publicly listed companies during the management buyouts in 1973 -1982. She finds that managers do not systematically understate the earnings possibly because earnings, during any take-over and/or management buyout, are sufficiently important to attract careful scrutiny by the parties who would be adversely affected by a successful strategy of income manipulation.

Further, α_1, α_2, α_3 are firm-specific parameters generated from the following model (Jones, 1991):

$$TA_t = a_1 (1/A_{t-1}) + a_2 (\Delta REV_t) + a_3(PPE_t) + \varepsilon_t \quad (7)$$

where a_1, a_2, and a_3 denote the OLS estimates of α_1, α_2, and α_3 and TA is scaled by lagged assets. She notes that her model is successful at explaining around one quarter of the variation in TA.

The weakness in Jones's (1991) model is that it assumes revenues are always nondiscretionary. However, in some instances managers can exercise discretion in recognising revenues. For example, managers may exercise their discretion to accrue revenue at the end of the year when the cash has not yet been received. This discretionary action would result in an increase in revenue and accounts receivables (a component of TA). The Jones model would ignore this discretionary component of TA causing the estimate of DA to be biased towards zero. Jones (1991) recognises this limitation of her model (see her footnote 31).

Dechow *et al.* (1995) modify the Jones model to overcome this problem, and this is the fourth model used in this study. The Modified Jones model estimates NDA during the event period (i.e., during the periods when earnings management is hypothesised) as:

$$NDA_t = \alpha_1 (1/A_{t-1}) + \alpha_2 (\Delta REV_t - \Delta REC_t) + \alpha_3(PPE_t) \quad (8)$$

where

ΔREC_t = net receivables in year t less net receivables in year t-1 scaled by total assets in year t-1.

The TA computation model of Jones (1991) is adopted without any modification to estimate the α_1, α_2, and α_3, (i.e., equation (7) above is used to determine the values of α_1, α_2, and α_3). This implies that the Modified Jones Model assumes that all changes in credit sales in the event period result from earnings management. This is justified by the argument that managers are able

to exercise discretion over the recognition of revenue of credit sales but not over cash sales.

Dechow *et al.* (1995) provide evidence supporting the superiority of the Modified Jones model (over the other three models) in detecting earnings management.[56] They evaluate the relative performance of five earnings management models by comparing the specification, i.e., by examining the frequency with which type I errors are generated, and the power, i.e., by examining the frequency with which type II errors are generated, in statistics by conducting an empirical analysis on four distinct samples of firm-year observations.[57] The four sets of samples are: (a) a sample of 1000 randomly selected firm-year observations, (b) a sample of 1000 randomly selected firm-year observations from pools of firm-years experiencing extreme financial difficulties, (c) a sample of 1000 randomly selected firm-year observations with artificially induced earnings management, and (d) a sample of 32 firms that had violated the financial reporting requirements of the securities law in the US.

Dechow *et al.* (1995) find that the standard errors of the coefficients of DA tend to be lowest for the Jones and the Modified Jones models (compared to the other two models) when analysing the first set of samples. The standard errors of the Healy model, DeAngelo model, Jones model, and Modified Jones model are 0.195, 0.281, 0.092 and 0.092 respectively. All the models have statistically significant t-values. This indicates that the Jones and the Modified Jones models are more effective at modeling the time-series process generating NDA and suffer least from misspecification caused by omitted determinants of NDA.

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[56] Dechow *et al.*(1995) compare five models in their study, namely the Healy's (1985) model, the DeAngelo's (1986) model, the Jones (1991) model, the modified Jones model, and an industry model. I discuss only the relevant data for the four models that I use in this study and ignore the findings for the industry model.

[57] Type I error arises when the null hypothesis is rejected when it is true, and type II error arises when the null hypothesis is not rejected when it is false. The null hypothesis for tests of earnings management is normally stated as 'earnings are not systematically managed in response to the stimulus identified by the researcher' and the stimulus identified by this study is religious orientation of CEOs of Malaysian firms.

Dechow *et al.* (1995) analyse the fourth set using firms that are alleged by the US Securities and Exchange Commission (SEC) as overstating earnings. They find a sharp decline in accruals in the year immediately after the allegations by the SEC which is consistent with their prediction of reverse accrual management. Moreover, the medians of earnings and total accruals of the alleged firms are higher in year –5 through to year 0 than the random sample firms and markedly lower in year 1 through to year 5. Thus, their findings are consistent with management attempting to delay a decline in reported earnings through accrual management.

Dechow *et al.* (1995) find that Z-statistic (for the last set of samples) is positive and statistically significant at conventional levels for all the models and thereby conclude that earnings have been managed upwards prior to allegations. The modified Jones model has the largest Z-statistic (5.76), largest t-statistic (1.193), and lowest standard errors[58] (0.136) for the coefficient of DA indicating the superiority of the model.[59]

Based on these samples, Dechow *et al.* (1995) find that all four models are able to detect earnings management with some degree of certainty. However, they find that the Modified Jones model has (a) less severe misspecification errors in the random sample of event-years and (b) markedly lower random errors for samples of firm-years experiencing extreme financial performance. Thus, they conclude that this model is more powerful in detecting earnings management.

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[58] Z-statistics is applied to test the null hypothesis of no earnings management for the firms by aggregating the individual t-statistics for the firms in the sample while the t -statistic is applied to test the similar null hypothesis for firms individually. The standard error measures the source of the difference in the Z-statistic, thus, a lower standard error is desirable indicating lesser deviation from the population mean.

[59] The high values of the t-statistics and Z-statistics reject the null hypothesis of no earnings management while the positive values indicate upward adjustments as mentioned.

The Modified Jones model also has some weaknesses. Dechow*et al.* (1995) recognise three limitations to their model. First, like all other models, their model is not very powerful in detecting earnings management. Even though the modified Jones model is by far the best model, it is only able to detect 28 percent of the 32 firms that were targeted by the SEC for earnings management practices between 1982 and 1992 (see the fourth sample of Dechow *et al.*, 1995). They say that 'subtle cases of earnings management in the order of, say, one percent of total asset require sample sizes of several hundred firms to provide a reasonable chance of detection' (Dechow *et al.*, 1995, p. 223).

Second, the test may have misspecified the earnings management partitioning variable(s) if the variable(s) is (are) correlated with firm performance. The Modified Jones model has addressed the known weakness related to revenue recognition, but there still exist other possible omitted variables.

Third, the appropriate model that is employed need to be considered within the context of scenario of research. For example, if the managers cannot exercise their discretion over revenues then Jones model would be appropriate. Thus, it is important to consider the relationship between the context in which earnings management is hypothesised and the choice of the model to prevent unintentional extraction of the DA from the TA.

5.2 VARIABLES

This section has three sub-sections. Section 5.2.1 discusses the dependent variable, section 5.2.2 discusses the test variable, and section 5.2.3 discusses the control variables.

5.2.1 DEPENDENT VARIABLE

I compute TA for each of the firms consistent with the previous studies on earnings management (see Jones 1991; Dechow *et al.* 1995) using the following formula[60]:

$$TA_t = \frac{\text{Reported earnings less cash flow from operations in year t}}{\text{Total assets in the previous period in year t-1}} \quad (9)$$

where earnings is measured using net income before extraordinary items and discontinued operations. Reported earnings are divided by lagged total assets for standardisation.[61]

Using each of the four models discussed above, I estimate the DA by subtracting the NDA from TA. All earnings, cashflow, TA, NDA, and DA are standardised by lagged total assets.

5.2.2 TEST VARIABLE

Consistent with the study on capital structure in chapter 4, I classify firms as Muslim or non-Muslim based on whether the CEO is a Muslim. The classifying variable is labeled as MUSLIM. MUSLIM is measured on a dichotomous basis and is equal to 1 if the firm is Muslim managed and 0 if not. Based on the discussion in chapter 3, I predict a negative relation between MUSLIM and DA.

As discussed in chapter 4, the names of the managers are used to classify managers as either Muslim or non-Muslim. The names are obtained from the Bloomberg database. Limitations related to this approach were discussed in chapter 4.

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[60] I have not made any adjustments to overcome the limitations of this model. Rather, I have used all four models as specified in the literature.

[61] When the variance of the error term in a regression equation is not consistent, i.e., the data is said to be heteroskedastic, the data need to be transformed. Prior studies on earnings management (e.g. Jones, 1991; Dechow *et al.et al.*, 1995) have found the residuals to be heteroskedastic and have used lagged total assets to correct it.

5.2.3 CONTROL VARIABLES

The other variables in the regression equation above, i.e., MCOMP, DEBT, FSIZE, IND, and ABSTA are introduced as control variables. Prior studies on earnings management have established three main motives for earnings management practices, i.e., management compensation plan, debt restrictions, and political costs (see chapter 2 for a detailed discussion). The industry class is included in the regression equation above to control for unspecified industry factors. In addition, the absolute value of total accrual is included in the second regression equation to control for managers discretion over the total accruals. Each one of the control variables is discussed below.

The MCOMP variable is used to control for the effect management compensation plans have on earnings management. MCOMP is derived following McNichols and Wilson (1988). The return on assets is first computed for each sample firm using the information obtained from annual reports. The observations are stratified by return on assets from highest to lowest. The first and last deciles of the return on assets of the sample are then coded 1, and the remaining observations are coded 0. Consistent with McNichols and Wilson (1988), I predict a negative relation between MCOMP and DA.

DEBT is used as a control variable for the influence of debt covenants restricting debtholders-equityholders conflicts. DEBT is measured using the debt/equity ratio. The information is obtained from the firms' annual reports. Like Sweeney (1994), DeFond and Jiambalvo (1994) and DeAngelo *et al.* (1994), I predict a positive relation between DEBT and DA.

FSIZE is a proxy for political costs. FSIZE is measured using the natural logarithm of sales as computed in my earlier debt hypothesis (see section 4.2.2). I obtain sales revenue from the firms' annual reports. Consistent with Watts and Zimmerman (1978), I predict a negative relation between FSIZE and DA.

IND is used to control for industry-related factors including industry-level political costs. As discussed in chapter 2, there are weaknesses in using firm size as a proxy for the political cost incentives. Watts and Zimmerman (1986) finds that one of the weaknesses in using firm size as a proxy for political cost incentives is that it might be an indirect and possibly an inadequate measure of an industry's political exposure. Thus, I include industry as a control variable in my study. There are 14 different industries in the sample based on two-digit industry codes. I use 13 dummy variables – labeled IND1 to IND13 – to represent the 14 industries

ABSTA is the absolute value of total accruals. Becker *et al.* (1998) have used this variable in their study on the effect of audit quality on earnings management to control for the degree to which management has discretion in reporting earnings. Consistent with Becker *et al.* (1998), I predict a negative relation between ABSTA and DA.

5.3 MODEL

To test for earnings management, I regress the estimated DA on the MUSLIM (as independent variable) and other control variables using OLS regression. I use two different models in my study. Model 1 identifies four control variables (see equation 10 below), and model 2 identifies five control variables (see equation 11 below):

$$DA_t = \alpha_i + \beta_1 MUSLIM + \beta_2 MCOMP + \beta_3 DEBT + \beta_4 FSIZE + \beta_5 IND1 + \ldots + \beta_{18} IND + \varepsilon_t \quad (10)$$

and,

$$DA_t = \alpha_i + \beta_1 MUSLIM + \beta_2 MCOMP + \beta_3 DEBT + \beta_4 FSIZE + \beta_5 IND1 + \ldots + \beta_{18} IND + \beta_{19} ABSTA + \varepsilon_t \quad (11)$$

where

MUSLIM = 1, if Muslim managed; 0 if non-Muslim managed,

MCOMP = management bonus plan which proxies for management plan

incentive for earnings management,

DEBT = a proxy for debt restrictions for earnings management,

FSIZE = firm size, a proxy for political cost incentive for earnings management,

IND = industry class,

ABSTA = total absolute value of total accrual, and

ε_t = an error term that is independently and identically normally distributed.

Table 5.1 summarises the definitions and the predicted signs of the variables related to earnings management hypothesis.

TABLE 5.1

DEFINITION AND PREDICTED SIGNS OF THE VARIABLES USED IN THE EARNINGS MANAGEMENT HYPOTHESIS

Variable	Predicted sign	Definition
DA	Dependent variable	Computed from the TA model and estimation of NDA.
MUSLIM	-	1 if Muslim managed; 0 otherwise
MCOMP	-	Equals 1 for firms in the first and last deciles of the return on assets in the sample; otherwise 0.
DEBT	+	Debt/equity ratio.
FSIZE	-	Natural log of sales.
IND1 – IND13	?	Dummy variable where IND1=1 if the firm is in industry 1, and otherwise; and so on.
ABSTA	-	Absolute value of total accruals (in thousand Ringgits).

5.4 SAMPLE

The sample consists of 170 non-financial firms listed on KLSE continuously between 1980 and 1998. The banking and insurance companies are excluded as these industries have different means of computing accruals.[62] This sample is the same sample that I used to test H1, i.e., the debt hypothesis. All the financial data was gathered from the annual reports available at the KLSE library and the National Equity Board library located in Kuala Lumpur, Malaysia.

For the earnings management hypothesis, I select firm-year observations in 1997 and 1998 as the prediction years (i.e., event years) and the period 1980-1996 forms the estimation years. Consistent with Dechow *et al.* (1995), the sample selection procedures ensure that all firms have at least ten observations in their estimation period.

5.4.1 DESCRIPTIVE STATISTICS

Table 5.2 below provides the cross-tabulation of the number of observations by industry and year. There are marginally more observations in 1997 (51.5 percent) than in 1998 (48.5 percent). The properties industry has the most number of observations.

The breakdown of the Muslim managed and non-Muslim managed firms by industry and year are presented in Table 5.3 below. The total number of Muslim managed observations is 97 (32.4 percent) and the total number of non-Muslim managed observations is 202 (67.6 percent).

Descriptive statistics for the independent variables are presented in Table 5.4 below. It provides the mean, median, standard deviation, minimum, maximum,

[62] See Moyer's (1990) and Wahlen's (1994) for studies related to earnings management in banking industry, see Petroni's (1992) and Gaver and Paterson (2001) for studies on earnings management in insurance industries.

and number of observations for the full sample (panel A), the non-Muslim managed firms (panel B), and the Muslim managed firms (panel C). The Muslim managed firms have a higher mean and median of MCOMP, DEBT, and FSIZE, and lower mean and median of ABSTA.

I compute the Pearson's correlation coefficient for all the independent variables used in the OLS regression. The correlations are tabulated in Table 5.5 below. The correlations of all the variables are all weak, the largest being the correlation of – 0.223 between DEBT and FSIZE. Thus, multicollinearity caused by bi-variate correlations should not be a problem when running regressions using these variables.

TABLE 5.2

CROSS TABULATION OF THE SAMPLE BY INDUSTRY AND YEAR FOR THE SAMPLE USED IN THE HEALY MODEL

The table provides the number of firm-year observations (and percentages) by industry and by year.

Industry	1997	%	1998	%	Total	%
Building material	13	8.44	13	8.97	26	8.70
Construction	4	2.60	3	2.07	7	2.34
Consumer products	7	4.55	6	4.14	13	4.35
Food, beverage & tobacco	14	9.09	13	8.97	27	9.03
Gaming	5	3.25	4	2.76	9	3.01
Industrial products	17	11.04	17	11.72	34	11.37
Investment Holdings	12	7.79	12	8.28	24	8.03
Mining	5	3.25	5	3.45	10	3.34
Plantation	27	17.53	25	17.24	52	17.39
Properties	32	20.78	30	20.69	62	20.74
Publishing & media	1	0.65	1	0.69	2	0.67
Retailing	0	0.00	0	0.00	0	0.00
Securities investment	3	1.95	2	1.38	5	1.67
Trading & services	12	7.79	12	8.28	24	8.03
Transportation	2	1.30	2	1.38	4	1.34
Total	154	100.00	145	100.00	299	100.00

5.5 RESULTS OF TESTS USING THE HEALY MODEL

This section describes the research design and results using the Healy model. The remainder of this section is presented in four subsections, namely section 5.5.1 discusses the descriptive statistics for DA, section 5.5.2 discusses the results of the univariate analysis, section 5.5.3 discusses the results of the multivariate analysis, and lastly section 5.5.4 provides the summary for this section.

TABLE 5.3

BREAKDOWN OF MUSLIM MANAGED AND NON-MUSLIM MANAGED FIRMS BY INDUSTRY, AND YEAR FOR THE SAMPLE USED IN THE HEALY MODEL

The table provides the number of firm-year observations (and percentages) of Muslim managed firms, non-Muslim managed firms and total observations. The table is presented in two sections. Panel A provides the detail by industry, and panel B provides the detail by year.

	Non-Muslim		Muslim			
	Number	%	Number	%	Total	%
Panel A: By industry						
Building material	20	9.90	6	6.19	26	8.70
Construction	6	2.97	1	1.03	7	2.34
Consumer products	9	4.46	4	4.12	13	4.35
Food, beverage & tobacco	23	11.39	4	4.12	27	9.03
Gaming	9	4.46	0	0.00	9	3.01
Industrial products	26	12.87	8	8.25	34	11.37
Investment Holdings	12	5.94	12	12.37	24	8.03
Mining	8	3.96	2	2.06	10	3.34
Plantation	30	14.85	22	22.68	52	17.39
Properties	39	19.31	23	23.71	62	20.74
Publishing & media	0	0.00	2	2.06	2	0.67
Securities investment	2	0.99	3	3.09	5	1.67
Trading & services	16	7.92	8	8.25	24	8.03
Transportation	2	0.99	2	2.06	4	1.34
	202	100	97	100	299	100.00
Panel B: By year						
Year 1997	105	51.98	49	50.52	156	51.51
Year 1998	97	48.02	48	49.48	145	48.49
	202	100.00	97	100.00	299	100.00

TABLE 5.4

DESCRIPTIVE STATISTICS FOR THE INDEPENDENT VARIABLES

The descriptive statistics are based on a sample composed of 299 firm-year observations during 1997 and 1998 related to firms listed on the Kuala Lumpur Stock Exchange continuously over the period 1980-1998. Panel A, panel B, and panel C respectively provide the means, medians, modes, standard deviations, minimum values, maximum values, and total number of observations for each of the variables in the analysis for (a) the full sample, (b) the non-Muslim managed firms, and (c) the Muslim managed firms. MCOMP is a control variable (proxy for management compensation plan hypothesis) and is a dichotomous measure equal to 1 for firms in first and last deciles of the return on assets for the sample firms, otherwise 0. DEBT is a control variable (proxy for the debt hypothesis) and is measured by the debt/equity ratio. FSIZE is a control variable (proxy for the firm's political cost hypothesis) and is measured by natural log of sales. ABSTA is the absolute value of TA and is derived from the difference between the firm's income before tax and net operating cash flow.

	MCOMP	DEBT	FSIZE	ABSTA
Panel A: All observations				
Mean	0.201	0.399	12.480	185826.393
Median	0.000	0.156	12.654	-724.000
Standard Deviation	0.401	0.720	1.830	2443419.000
Minimum	0.000	-1.944	6.064	-2598133.000
Maximum	1.000	5.691	16.034	39431581.000
Number	299	299	299	299
Panel B: Non-Muslim managed firms				
Mean	0.193	0.374	12.445	259156.096
Median	0.000	0.153	12.625	1499.500
Standard Deviation	0.396	0.721	1.891	2901139.273
Minimum	0.000	-1.944	6.064	-1766537.000
Maximum	1.000	5.691	16.034	39431581.000
Number	202	202	202	202
Panel C: Muslim managed firms				
Mean	0.216	0.451	12.554	33119.175
Median	0.000	0.180	12.655	-5879.000
Standard Deviation	0.414	0.719	1.702	935765.678
Minimum	0.000	-1.210	6.652	-2598133.000
Maximum	1.000	2.945	15.827	7956937.000
Number	97	97	97	97

TABLE 5.5

PEARSON'S CORRELATION COEFFICIENTS

The table provides the Pearson's correlation coefficients (and its probability values in parentheses) for the independent variables used in the OLS regressions. The test variable in the regressions is MUSLIM and is a dichotomous measure equal to 1 if the firm is Muslim managed, otherwise 0. The other variables in the regression models are the control variables. MCOMP is a proxy for management compensation plan hypothesis and is a dichotomous measure equal to 1 for firms in first and last deciles of the return on assets in the sample firms, otherwise 0. DEBT is proxy for the debt hypothesis and is measured by the debt/equity ratio. FSIZE is a proxy for the firm's political cost hypothesis and is measured by natural log of sales. ABSTA is a control variable used in the second model only and it is derived from the difference between the firm's income before tax and net operating cash flow. The model is estimated using a sample of 299 firm-year observations during 1997 and 1998 related to firms listed on the KLSE continuously over the period 1980-1998

	MUSLIM	MCOMP	DEBT	FSIZE	ABSTA
MUSLIM	1.000	0.027	0.050	0.028	-0.043
		(0.637)	(0.389)	(0.631)	(0.455)
MCOMP		1.000	-0.215	-0.173	-0.015
			(0.000)	(0.003)	(0.802)
DEBT			1.000	0.223	-0.089
				(0.000)	(0.123)
FSIZE				1.000	0.118
					(0.042)
ABSTA					1.000

5.5.1 DESCRIPTIVE STATISTICS FOR DA

Table 5.6 provides the descriptive statistics for DA as defined by Healy (1985). The mean of DA (equal to TA in the Healy model) is lower for the Muslim managed firms than non-Muslim managed firms. This indicates a possibility that Muslim managed firms have used more income-decreasing DA than the non-Muslim managed firms.

TABLE 5.6

DESCRIPTIVE STATISTICS FOR DA AS COMPUTED USING THE HEALY MODEL

The descriptive statistics are based on a sample composed of 299 firm-year observations during 1997 and 1998 related to firms listed on the Kuala Lumpur Stock Exchange continuously over the period 1980-1998. Column 2, column 3, and column 4 respectively provide the means, medians, modes, standard deviations, minimum values, maximum values, and total number of observations for (a) the full sample, (b) the non-Muslim managed firms, and (c) the Muslim managed firms.

	Full Sample (Column 2)	Non-Muslim managed firms (Column 3)	Muslim managed firms (Column 4)
Mean	-0.008	-0.004	-0.017
Median	-0.002	0.006	0.033
Standard Deviation	0.274	0.295	0.227
Minimum	-1.566	-1.566	-0.569
Maximum	2.661	2.661	1.132
Number	299	202	97

5.5.2 UNIVARIATE ANALYSIS

I first examine whether DA differs between Muslim and non-Muslim managed firms on a univariate basis. Table 5.7 presents the results of using a parametric t-test and a nonparametric Mann-Whitney U test. The t-test compares the mean DA for the two groups, i.e., the Muslim managed and non-Muslim managed firms. The hypothesis developed above can be written in statistical form as below and is a one-tail test:

$$H_o : \mu_m \geq \mu_{nm}$$

$$H_a : \mu_m < \mu_{nm}$$

The nonparametric Mann-Whitney U tests measures the difference between the medians of the two subsamples. The main significance of the test is that it relaxes one of the key assumptions of the t-tests, i.e., the assumption that the samples are normally distributed.

The Mann-Whitney U test shows a significant difference between the Muslim and non-Muslim firms at the ten percent (one-tail) level. However, the t-test shows no significant difference.

To analyse the differences further, I test subsamples based on firm size by quartiles, year, and industry. The results are provided in Table 5.8 below. The results of the t-tests indicate that there are some significant differences in DA between the Muslim managed firms and non-Muslim managed firms in two industries, i.e., industrial products and investment holding industries (see column 3 in panel C), but in both cases, the DA is smaller for non-Muslim managed firms than Muslim managed firms. The year-by-year and firm size subsamples do not yield any significant results.

TABLE 5.7

RESULTS OF THE UNIVARIATE TESTS BETWEEN DA AND MUSLIM USING THE HEALY MODEL

The results of the t-test, and nonparametric Mann-Whitney U test for the earnings management hypothesis using 97 Muslim managed firm-year observations and 202 non-Muslim managed firm-year observations is tabulated below. It provides the mean, t-value (and its significance in parentheses), and the Z-statistics of the Mann-Whitney U test (and its significance in parentheses). T-test measures the difference in the mean of DA between the Muslim and the non-Muslim managed firms. Mann-Whitney U test measures the difference in the median of DA between the Muslim and the non-Muslim managed firms.

	Mean	t-value (significance)	Median	Mann-Whitney U test (significance)
Muslim managed firms	-0.017	0.359	-0.033	-1.490
Non-Muslim managed firms	-0.004	(0.360)	0.006	(0.068)*

* denotes significance at the ten percent level based on a one-tail test.

The Mann-Whitney U tests indicates that that there are some significant difference DA between the Muslim managed and non-Muslim managed firms in two industries, i.e., food, beverage & tobacco, and investment holdings (see column 6 in panel C of Table 5.8). The analysis by the quartile of firm size shows that there is a significant difference in DA between the Muslim and non-Muslim managed firms in the smallest group, i.e., the first quartile of the firm. There are no significant differences in either of the year subsamples.

The median of the DA is smaller for the Muslim managed firms for the food, beverage, and tobacco industry and the first quartile subsamples only while the DA is larger for the Muslim managed firms among the investment holding industry.

5.5.3 MULTIVARIATE ANALYSIS

As discussed previously, there are other factors that may affect the level of DA. Therefore, a multivariate analysis provides a more powerful test of H2. I have used two models when running the regression. Model 1 (i.e., equation 10 above) includes three control variables to control for the effect of management compensation plans, debt restrictions, and political costs. Model 2 (i.e. equation 11) includes an additional variable to control for the degree of discretion the manager has in choosing DA. The results of the tests using both the models are provided in Table 5.9 below.

The first regression model has a statistically significant value (F statistics = 2.468, p-value = 0.001), and the R-square is 13.2 percent. This indicates that the model can explain about 13 percent of the variation in DA. The MUSLIM variable is not statistically significant. The control variables are all statistically significant but DEBT and FSIZE have coefficients that have signs opposite to that predicted. This indicates that the DA is influenced by all the three control variables, but only MCOMP conforms to expectations.

The test variable for the earnings management hypothesis, i.e., the MUSLIM variable, is not significant. This indicates that DA is not influenced by the religion of the CEO of the firm. This is contrary to H2.

TABLE 5.8

RESULTS OF T-TESTS RUN ON THE SUBSAMPLES USING THE HEALY MODEL

Results of the t-tests and the nonparametric Mann-Whitney U tests for the earnings management hypothesis is further analysed by quartile based on firm size (panel A), year (panel B), and industry (panel C). It provides the mean and median for the Muslim and non-Muslim managed firm subsamples, t-value (and its significance in parentheses), and the Z-statistics of the Mann-Whitney U test (and its significance in parentheses). The t-test measures the difference in the mean of DA between the Muslim and the non-Muslim managed firms while the nonparametric Mann-Whitney U test measures the difference in the median of DA between the Muslim and the non-Muslim managed firms. Significance levels are based on one-tail tests.

	Mean		t-value	Median		Mann-Whitney U
	Muslim firms (Column 1)	Non-Muslim firms (Column 2)	(significance) (Column 3)	Muslim firms (Column 4)	Non-Muslim firms (Column 5)	test (significance) (Column 6)
Panel A: Firm size						
1ST quartile	-0.087	-0.056	-0.390 (0.349)	-0.096	0.009	-1.732 (0.042)
2nd quartile	-0.009	0.005	-0.383 (0.352)	-0.031	-0.006	-0.635 (0.263)
3rd quartile	-0.018	-0.033	0.283 (0.389)	0.020	-0.001	0.149 (0.441)
4th quartile	0.042	0.072	-0.342 90.367)	-0.006	0.013	-0.249 (0.402)
Panel B: Year						
1997	0.039	0.061	-0.432 (0.333)	0.002	0.018	-0.828 (0.204)
1998	-0.073	-0.075	0.041 (0.484)	-0.045	-0.022	-0.920 (0.179)
Panel C: Industry						
Building material	-0.075	-0.032	-0.035 (0.334)	-0.022	-0.002	-0.548 (0.292)
Consumer products	-0.035	-0.010	-0.418 (0.342)	-0.043	0.008	-0.926 (0.178)
Food, beverage & tobacco	-0.079	-0.010	-0.524 (0.301)	-0.072	-0.010	-1.365 (0.086)
Industrial products	0.038	-0.023	1.634 (0.091)	0.030	0.002	0.893 (0.186)
Investment holdings	0.038	-0.029	1.342 (0.100)	0.038	-0.036	1.270 (0.102)
Plantation	0.041	-0.175	1.037 (0.155)	0.009	0.042	-1.445 (0.149)
Properties	0.046	-0.089	0.521 (0.303)	-0.046	0.007	-1.362 (0.173)
Securities investment	-0.067	-0.037	-0.164 (0.880)	-0.168	-0.037	-0.517 (0.282)
Trading & services	-0.044	-0.008	-0.816 (0.212)	0.006	-0.008	0.122 (0.452)

TABLE 5.9

RESULTS OF THE OLS REGRESSION USING THE HEALY'S MODEL

There are two models in use. The first regression model is: $DA_t = \alpha_i + \beta_1 MUSLIM + \beta_2 MCOMP + \beta_3 DEBT + \beta_4 FSIZE + \beta_5 IND1 + ...+ \beta_{18} IND13 + \varepsilon$. The second regression model is: $DA_t = \alpha_i + \beta_1 MUSLIM + \beta_2 MCOMP + \beta_3 DEBT + \beta_4 FSIZE + \beta_5 IND1 + ...+ \beta_{18} IND13 + \beta_{19} ABSTA + \varepsilon_t$. The
The dependent variable, DA, in the regression is the discretionary accrual and is derived by dividing the difference in the firm's income before tax and net operating cash flow by lagged total assets. The test variable in the regression is MUSLIM and is a dichotomous measure equal to 1 if the firm is Muslim managed, otherwise 0. The other variables in the regression models are the control variables. MCOMP is a proxy for management compensation plan hypothesis and is a dichotomous measure equal to 1 for firms in first and last deciles of the return on assets in the sample firms, otherwise 0. DEBT is proxy for the debt hypothesis and is measured by the debt/equity ratio. FSIZE is a proxy for the firm's political cost hypothesis and is measured by natural log of sales. ABSTA is a control variable equal to the difference between the firm's income before tax and net operating cash-flow. IND1–IND13 are dummy variables used to represent the 14 industries in the sample. For economy, the coefficients for the industry variables are not tabulated below. The model is estimated using a sample of 294 firm-year observations during 1997 and 1998 related to firms listed on the KLSE continuously over the period 1980-1998 for the first model, and a sample of 292 firm-year observations during 1997 and 1998 related to firms listed on the KLSE continuously over the period 1980-1998. Note that the sample size in model 2 is reduced by 2 observations because the two observations were outliers.

	Predicted signs	Model I			Model 2		
		Coefficient	t-value (significance)	VIF	Coefficient	t-value (significance)	VIF
Intercept		-0.343	-2.891 (0.002)	-	-0.266	-2.533 (0.006)	-
MUSLIM	-	-0.016	-0.743 (0.229)	1.106	-0.026	-1.374 (0.085)	1.111
MCOMP	-	-0.112	-4.304 (0.000)	1.146	-0.102	-4.448 (0.000)	1.150
DEBT	+	-0.034	-2.298 (0.011)	1.205	-0.022	-1.738 (0.042)	1.215
FSIZE	-	0.017	2.682 (0.004)	1.515	0.0169	2.944 (0.002)	1.541
ABSTA	-	-	-	-	0.000	18.049 (0.000)	1.058
R-square				0.132			0.606
F-value				2.468			23.371
Significance				0.001			0.000
Number of observations				294			292

The second regression model has a statistically significant value (F-value = 23.371, p-value = 0.000), and the R-square is 60.6 percent. This indicates that the model can explain about 60 percent of the variation in DA. All the four variables are found to be statistically significant, but the signs of their coefficients are again all opposite to that predicted.

The test variable for the earnings management hypothesis, i.e., the MUSLIM variable, is found to be statistically significant at the ten percent level (one-tail) test with a negative sign. This indicates that DA is influenced by the religion of the CEO of the firm. Therefore, the result of this test supports H2.

5.5.3.1 MULTIVARIATE ANALYSIS USING SUBSAMPLES

I further estimate equation (10) on six different subsamples, i.e., based on (a) firms excluded from the Syariah Index, (b) firms included in the Syariah Index, (c) firms that have no change in the religious orientation of the CEO for five consecutive years, (d) firm groupings by quartiles of based firm size, (e) firms based on year, i.e., 1997 and 1998, and (f) firms based on industry classifications (industries that have less than 25 observations are omitted from these analyses).

As discussed in chapter 4, analysis of the subsamples of firms included in and excluded from the Syariah index are of interest because it contrasts behaviour in business that are and are not permissible to Islam. The analysis of the subsample of firms that have experienced no change in the religious orientation of the CEO for five consecutive years enables me to control for changes in the CEOs. The analysis by quartile based on firm size, industry, and year provide further insight into the sample. I report the results of the first three with full results and the other three in summary form only.

TABLE 5.10

RESULTS OF THE MULTIVARIATE REGRESSION ANALYSIS ON THE SUBSAMPLE OF FIRMS INCLUDED IN AND EXCLUDED FROM THE SYARIAH INDEX USING THE HEALY MODEL

The regression model used is: $DA_t = \alpha_i + \beta_1 MUSLIM + \beta_2 MCOMP + \beta_3 DEBT + \beta_4 FSIZE + \beta_5 IND1 + ...+ \beta_{18} IND13 + \varepsilon$. The dependent variable, DA, in the regression is the discretionary accrual and is derived by dividing the difference in the firm's income before tax and net operating cash flow by lagged total assets. The test variable in the regression is MUSLIM and is a dichotomous measure equal to 1 if the firm is Muslim managed, otherwise 0. The other variables in the regression models are the control variables. MCOMP is a proxy for management compensation plan hypothesis and is a dichotomous measure equal to 1 for firms in first and last deciles of the return on assets in the sample firms, otherwise 0. DEBT is proxy for the debt hypothesis and is measured by the debt/equity ratio. FSIZE is a proxy for the firm's political cost hypothesis and is measured by natural log of sales. IND1–IND13 are dummy variables used to represent the 14 industries in the sample. For economy, the coefficients for the industry variables are not tabulated below. Panel A provides the results of the model based on a sample of firms that are included in the Syariah Index of KLSE. The subsample consists of 170 firm-year observations during 1997 and 1998 related to 90 firms listed on the KLSE continuously over the period 1980-1998. Panel B provides the results of the model based on a sample of firms that are excluded from the Syariah Index of KLSE. The subsample consists of 120 firm-year observations during 1997 and 1998 related to firms listed on the KLSE continuously over the period 1980-1998.

Panel A: Subsample of the firms that are included in the Syariah Index of the KLSE.

	Predicted signs	Coefficient	t-value	Significance	Variance Inflation Factor
Intercept	?	-0.308	-1.624	0.053	-
MUSLIM	-	-0.000	-0.017	0.493	1.221
MCOMP	-	-0.153	-4.409	0.000	1.296
DEBT	+	-0.026	-1.177	0.121	1.282
FSIZE	-	0.014	1.615	0.054	1.529
Adjusted R—square		0.092			
F-value		2.098			
Significance		0.011			
Number of observations		170			

Panel B: Subsample of the firms that are excluded from the Syariah Index of the KLSE.

Intercept	?	-0.018	-0.132	0.448	-
MUSLIM	+/-	-0.025	-0.752	0.227	1.354
MCOMP	-	-0.065	-1.443	0.076	1.327
DEBT	+	-0.044	-1.966	0.026	1.637
FSIZE	-	0.017	1.448	0.076	2.255
Adjusted R—square		0.464			
F-value		7.444			
Significance		0.000			
Number of observations		120			

Table 5.10 below reports the results of the tests using subsample of firms included in the Syariah Index (panel A), and using subsample of firms excluded from the Syariah Index (panel B). Similar to chapter 4, if H2 holds, I expect that MUSLIM will be significant and negative in the Syariah subsample and not significant in the non-Syariah subsample because Muslims working in prohibited industries may be less devout or else they would not be working in that industry.

The regression model for the sample of firms included in the Syariah Index has a statistically significant value (F statistics = 2.098, p-value = 0.011) and the adjusted R-square is 9.2 percent. This indicates that the model can explain about 9 percent of the variation in DA. The MUSLIM variable is not statistically significant. MCOMP and FSIZE are statistically significant but the sign for FSIZE is opposite to that predicted. This indicates that the DA is influenced by management compensation plans as expected.

The test variable for the earnings management hypothesis, i.e., the MUSLIM variable, is not statistically significant. This indicates that DA is not influenced by the religion of the CEO of the firm. Therefore, the result of this test is contrary to H2.

The regression model for the sample of firms excluded from the Syariah Index is also statistically significant (F statistics = 7.444, p-value = 0.000) and the adjusted R-square is 46.4 percent. The MUSLIM variable is not statistically significant. All the three control variables are statistically significant at ten percent based on a one-tailed test but only MCOMP has its coefficient sign as predicted.

The test variable for the earnings management hypothesis, i.e., the MUSLIM variable, is not statistically significant. This indicates that DA is not influenced by the religion of the CEO of the firm. While this is consistent with

expectations, the combined results of panels A and B do not provide support for H2.

The results for the sample of firms that have no change in the religious orientation of the CEO for five consecutive years are provided in Table 5.11 below. The regression model is statistically significant (F statistics = 2.043, p-value = 0.010) and the adjusted R-square is 6.3 percent. All the three control variables are statistically significant but only MCOMP has its coefficient sign as that predicted.

MUSLIM is also not statistically significant. This indicates that DA is not influenced by the religion of the CEO of the firm, and is contrary to H2.

TABLE 5.11

RESULTS OF THE MULTIVARIATE REGRESSION ANALYSIS ON THE SUBSAMPLE OF FIRMS THAT HAVE NO CHANGE IN THE RELIGIOUS ORIENTATION OF THE CEO FOR FIVE CONSECUTIVE YEARS USING THE HEALY MODEL

The regression model used is: $DA_t = \alpha_i + \beta_1 MUSLIM + \beta_2 MCOMP + \beta_3 DEBT + \beta_4 FSIZE + \beta_5 IND1 + \ldots\ldots + \beta_{18} IND13 + \varepsilon$. The dependent variable, DA, in the regression is the discretionary accrual and is derived by dividing the difference in the firm's income before tax and net operating cash flow by lagged total assets. The test variable in the regression is MUSLIM and is a dichotomous measure equal to 1 if the firm is Muslim managed, otherwise 0. The other variables in the regression models are the control variables. MCOMP is a proxy for management compensation plan hypothesis and is a dichotomous measure equal to 1 for firms in first and last deciles of the return on assets in the sample firms, otherwise 0. DEBT is proxy for the debt hypothesis and is measured by the debt/equity ratio. FSIZE is a proxy for the firm's political cost hypothesis and is measured by natural log of sales. IND1 –IND 13 are dummy variables used to represent the 14 industries in the sample. For economy, the coefficients for the industry variables are not tabulated below. The subsample consists of 263 firm-year observations during 1997 and 1998 related to firms listed on the KLSE continuously over the period 1980-1998.

	Predicted signs	Coefficient	t-value	Significance	Variance Inflation Factor
Intercept	?	-0.367	-3.166	0.001	-
MUSLIM	-	-0.020	-0.948	0.172	1.109
MCOMP	-	-0.087	-3.410	0.001	1.150
DEBT	+	-0.032	-2.196	0.015	1.227
FSIZE	-	0.019	2.936	0.002	1.631
Adjusted R-square		0.063			
F-value		2.043			
Significance		0.010			
Number of observations		263			

The summaries of the results for the subsamples by year, quartiles based on size, and by industries are provided in Table 5.11 below. None of the tests run on the subsamples split by year, quartiles based on firm sizes, and industries support H2.

TABLE 5.12

SUMMARIES OF THE RESULTS OF THE OLS REGRESSIONS RUN ON THE SUBSAMPLES BY YEAR AND QUARTILES BASED ON FIRM SIZE USING THE HEALY MODEL

The following is the regression model: $DA_t = \alpha_i + \beta_1 MUSLIM + \beta_2 MCOMP + \beta_3 DEBT + \beta_4 FSIZE + \beta_5 IND + \ldots\ldots + \beta_{18} IND13 + \varepsilon$. The dependent variable, DA, in the regression is the discretionary accrual and is derived by dividing the difference in the firm's income before tax and net operating cash flow by lagged total assets. The test variable in the regression is Muslim and is a dichotomous measure equal to 1 if the firm is Muslim managed, otherwise 0. The other variables in the regression models are the control variables. MCOMP is a proxy for management compensation plan hypothesis and is a dichotomous measure equal to 1 for firms in first and last deciles of the return on assets in the sample firms, otherwise 0. DEBT is proxy for the debt hypothesis and is measured by the debt/equity ratio. FSIZE is a proxy for the firm's political cost hypothesis and is measured by natural log of sales. IND –IND13 are dummy variables used to represent the 14 industries in the sample. The table provides only the summary of the results. It shows the model's R-square, F-value, and the significance level as well as the t-value and the significance level for the MUSLIM variable. Panel A provides the summary of the results of the model based on year. Panel B provides the summary of the results of the subsamples on quartiles based of firm size. Panel C provides the summary of the results of the subsamples based on industries. The industry classifications that had less than 25 observations are omitted from the analyses.

Panel A: Regression analysis by quartile based on year

	N	Coefficient of Muslim variable	t-value of Muslim variable (significance)	R-square	F-value (significance)	Support/ not support the hypothesis
1997	153	-0.002	-0.075 (0.470)	0.118	1.067 (0.392)	Not supported
1998	143	-0.032	-1.149 (0.127)	0.326	3.553 (0.000)	Not supported

Panel B: Regression analysis by the quartiles based on firm sizes

1st quartile	75	-0.020	-0.260 (0.398)	0.429	2.772 (0.002)	Not supported
2nd quartile	73	-0.000	-0.015 (0.494)	0.196	1.538 (0.147)	Not supported
3rd quartile	74	-0.002	-0.028 (0.484)	0.133	0.604 (0.860)	Not supported
4th quartile	73	0.026	0.248 (0.403)	0.189	1.074 (0.398)	Not supported

Continuation of Table 5.12

	N	Coefficient of Muslim variable	T-value of Muslim variable (significance)	R-square	F-value (significance)	Support/ not support the hypothesis
Panel C: Regression analysis by industry						
Building material	26	-0.022	-0.222 (0.413)	0.321	2.483 (0.073)	Not supported
Food, bev, & tobacco	27	-0.153	-1.148 (0.132)	0.201	1.383 (0.272)	Not supported
Industrial products	34	0.049	0.910 (0.186)	0.230	2.165 (0.089)	Not supported
Plantation	51	-0.123	-0.966 (0.170)	0.109	1.441 (0.235)	Not supported
Properties	60	-0.011	-0.245 (0.404)	0.216	3.799 (0.009)	Not supported
Trading & services	24	-0.070	-1.317 (0.102)	0.265	1.712 (0.189)	Not supported

5.5.4 SUMMARY

The univariate tests performed on the DA computed using Healy's (1985) model show mixed results. The t-tests indicate no significant differences in the mean of DA between Muslim managed firms and non-Muslim managed firms, but the nonparametric test shows otherwise. In particular, the results of the nonparametric *Mann-Whitney U test*s find a significant difference in DA between Muslim and non-Muslim managed firms.

While a regression model with the variable ABSTA supports H2, all other regressions do not support H2. The other regressions include equation (11) run with (a) the full sample, (b) firms included in the Syariah Index, (c) firms excluded from the Syariah Index, (d) firms that have no change in the religious orientation of the CEO for five consecutive years, (e) subsamples split by quartiles based on firm size, and (f) subsamples split by year (i.e., 1997, and 1998).

5.6 RESULTS OF TESTS FOR EARNINGS MANAGEMENT USING THE DEANGELO MODEL

This section describes the research design using the DeAngelo model. The remainder of this section is presented in four subsections, namely section 5.6.1 discusses the changes in the sample and the descriptive statistics for the DA, section 5.6.2 discusses the results of the univariate analysis, section 5.6.3 discusses the results of the multivariate analysis, and lastly section 5.6.4 provides the summary for this section.

5.6.1 DESCRIPTIVE STATISTICS

The sample is reduced to 294 observations only and this reduction is from the non-Muslim managed firm observations. Thus, there are 197 observations of non-Muslim managed firms and 97 observations for Muslim managed firms (see the last row in each of the panel of Table 5.13).

Descriptive statistics for DA are presented in table 5.13 below. The mean and median of DA (equal to the changes in TA from the previous period in the DeAngelo model) are lower for the Muslim managed firms than non-Muslim managed firms. This indicates a possibility that Muslim managed firms have used more income-decreasing DA than the non-Muslim managed firms.

The Pearson's correlation table is omitted as the correlations are similar to that in section 5.5.1. The correlations for all variables are weak, the largest being -0.216 between DEBT and MCOMP. Thus, multicollinearity caused by *bi-variate* correlation should not be a problem when running regression using these variables.

5.6.2 UNIVARIATE ANALYSIS

I first examine whether DA differs between Muslim and non-Muslim managed firms on a univariate basis. Table 5.14 presents the results of using a parametric t-test and a nonparametric Mann-Whitney U test. The hypothesis for this section is the same as in the previous section and, thus, is omitted.

Both the t-test and the nonparametric Mann-Whitney U test show that there is no significant difference in DA between the Muslim and non-Muslim firms.

I run similar tests on the subsamples as was done in section 5.5.2. The results are provided in Table 5.15 below. The results of the t-tests indicate that there are some significant differences in DA between the Muslim managed firms and non-Muslim managed firms in four industries, i.e., building material, consumer products, food, beverage, and tobacco, and industrial products industries (see column 3 in panel C). The DA is smaller for the Muslim managed firms in three out of four industries which have statistically significant results, i.e., building material, consumer products, and food, beverage, and tobacco industries, while the DA is larger for the Muslim managed firms among the industrial products industry firms. The results of the second quartile (see column 3 in panel A) indicate similar findings as above and the DA is smaller for the Muslim managed firms. The results of the tests on year subsamples do not show any significant results.

The Mann-Whitney *U tests* indicates that that there are some significant differences in DA between the Muslim managed and non-Muslim managed firms in five industries, i.e., building material, food, beverage & tobacco, industrial products, plantation, and trading and services industries (see column 6 in panel C). The DA is

TABLE 5.13

DESCRIPTIVE STATISTICS OF THE VARIABLES

The descriptive statistics are based on a sample composed of 294 firm-year observations during 1997 and 1998 related to firms listed on the Kuala Lumpur Stock Exchange continuously over the period 1980-1998. Column 2, column 3, and column 4 respectively provide the means, medians, modes, standard deviations, minimum values, maximum values, and total number of observations for DA for (a) the full sample, (b)the non-Muslim managed firms, and (c) the Muslim managed firms. DA is the dependent variable and measures the discretionary accruals (in the case of DeAngelo model, DA is equal to the changes in total accrual from the previous period) of the observation concerned.

	Full sample (Column 2)	Non- Muslim managed firms (Column 3)	Muslim managed firms (Column 4)
Mean	0.030	0.035	0.018
Median	0.012	0.014	-0.002
Standard Deviation	0.24	0.250	0.232
Minimum	-1.408	-1.408	-0.949
Maximum	2.531	2.531	1.515
Number	294	197	97

TABLE 5.14

RESULTS OF THE UNIVARIATE TESTS BETWEEN DA AND MUSLIM USING THE DEANGELO MODEL

The results of the t-test, and nonparametric Mann-Whitney U test for the earnings management hypothesis using 97 Muslim managed firm-year observations and 197 non-Muslim managed firm-year observations is tabulated below. It provides the mean, t-value (and its significance in parentheses), and the Z-statistics of the Mann-Whitney U test (and its significance in parentheses). T-test measures the difference in the mean of DA between the Muslim and the non-Muslim managed firms. Mann-Whitney U test measures the difference in the median of DA between the Muslim and the non-Muslim managed firms.

	Mean	t-value (significance)	Median	Mann-Whitney U test (significance)
Muslim managed firms	0.018	-0.557	-0.002	-1.061
Non-Muslim managed firms	0.035	(0.289)	0.014	(0.144)

TABLE 5.15

RESULTS OF T-TESTS RUN ON THE SUBSAMPLES USING THE DEANGELO MODEL

Results of the t-tests and the nonparametric Mann-Whitney U tests for the earnings management hypothesis are further analysed by quartile based on firm size (see panel A), year (see panel B), and industry (see panel C). It provides the mean and median for the Muslim and non-Muslim managed firm subsamples, t-value (and its significance in parentheses), and the Z-statistics of the Mann-Whitney U test (and its significance in parentheses). T-test measures the difference in the mean of DA between the Muslim and the non-Muslim managed firms while the nonparametric Mann-Whitney U test measures the difference in the median of DA between the Muslim and the non-Muslim managed firms. Significance levels are based on one-tail test.

	Mean			Median		Mann-Whitney U
	Muslim firms (Column 1)	Non-Muslim firms (Column 2)	t-value (significance) (Column 3)	Muslim firms (Column 4)	Non-Muslim firms (Column 5)	test (significance) (Column 6)
Panel A: Firm size						
1ST quartile	-0.052	0.040	-0.977 (0.166)	-0.066	0.016	-1.069 (0.142)
2nd quartile	0.033	0.004	1.276 (0.103)	-0.000	0.004	-0.299 (0.383)
3rd quartile	0.019	0.052	-0.650 (0.259)	0.007	0.009	-0.594 (0.277)
4th quartile	0.060	0.004	0.468 (0.320)	0.004	0.026	-0.949 (0.172)
Panel B: Year						
1997	0.011	0.045	-0.911 (0.182)	-0.003	0.013	-1.451 (0.142)
1998	0.024	0.024	0.054 (0.479)	0.015	0.016	-0.128 (0.449)
Panel C: Industry						
Building material	-0.177	0.041	-2.409 (0.012)	-0.046	0.022	-2.313 (0.010)
Consumer products	-0.083	0.001	-1.759 (0.053)	-0.063	-0.008	1.080 (0.140)
Food, beverage & tobacco	-0.056	0.027	-1.427 (0.084)	-0.065	0.041	-1.334 (0.091)
Industrial products	0.070	0.004	2.118 (0.021)	0.064	-0.001	1.380 (0.084)
Investment holdings	0.078	0.030	1.142 (0.134)	0.041	0.026	1.121 (0.131)
Plantation	0.047	0.069	-0.295 (0.385)	0.014	0.040	-1.500 (0.067)
Properties	0.006	0.077	-0.676 (0.251)	-0.003	0.013	-0.954 (0.170)
Securities investment	0.162	0.121	0.473 (0.335)	0.100	0.121	-0.577 (0.282)
Trading & services	-0.003	0.003	-0.105 (0.459)	-0.022	0.009	-1.408 (0.080)

lower for the Muslim managed firms than the non-Muslim managed firms for all these industries. The analyses by the quartile of firm size and year do not show any significant results.

5.6.3 MULTIVARIATE ANALYSIS

As discussed previously, I have used two models when running the regression, i.e., Model 1 (i.e., equation 10 above), and Model 2 (i.e. equation 11). The results of the tests using both the models are provided in Table 5.16 below.

Both the regression models are statistically significant (F-statistics = 1.706 for model 1 and 1.633 for model 2, p-value = 0.042 for model 1 and 0.052 for model 2), and the R-square is 9.7 and 9.8 percent respectively for model 1 and 2. This indicates that both the models can explain about 10 percent of the variation in DA. Only FSIZE of the control variables is statistically significant in both the models but its coefficient has a positive value, which is opposite to that predicted. This indicates that the DA is influenced by firm's political cost in the direction opposite to that predicted.

The test variable for the earnings management hypothesis, i.e., the MUSLIM variable, is not statistically significant in both the models. This indicates that DA is not influenced by the religion of the CEO of the firm. Therefore, the results of these tests are contrary to H2.

5.6.3.1 MULTIVARIATE ANALYSIS USING SUBSAMPLES

Similar to multivariate tests performed on the subsamples in section 5.5.3.1, I further estimate equation (10) on six different subsamples, i.e., based on (a) firms excluded from the Syariah Index, (b) firms included in the Syariah Index, (c) firms

TABLE 5.16

RESULTS OF THE OLS REGRESSIONS USING THE DEANGELO MODEL

There are two models in use. The first regression model is: $DA_t = \alpha_i + \beta_1 MUSLIM + \beta_2 MCOMP + \beta_3 DEBT + \beta_4 FSIZE + \beta_5 IND1 + ...+ \beta_{18} IND13 + \varepsilon$. The second regression model is: $DA_t = \alpha_i + \beta_1 MUSLIM + \beta_2 MCOMP + \beta_3 DEBT + \beta_4 FSIZE + \beta_5 IND1 + ...+ \beta_{18} IND13 + \beta_{19} ABSTA + \varepsilon_t$.
The dependent variable, DA, in the regression is the discretionary accrual and is derived by dividing the change in total accruals from the previous period by lagged total assets. The test variable in the regression is MUSLIM and is a dichotomous measure equal to 1 if the firm is Muslim managed, otherwise 0. The other variables in the regression models are the control variables. MCOMP is a proxy for management compensation plan hypothesis and is a dichotomous measure equal to 1 for firms in first and last deciles of the return on assets in the sample firms, otherwise 0. DEBT is proxy for the debt hypothesis and is measured by the debt/equity ratio. FSIZE is a proxy for the firm's political cost hypothesis and is measured by natural log of sales. ABSTA is a control variable used in the second model only and it is derived from the difference between the firm's income before tax and net operating cash flow. IND1–IND13 are dummy variables used to represent the 14 industries in the sample. For economy, the coefficients for the industry variables are not tabulated below. The model is estimated using a sample of 289 firm-year observations during 1997 and 1998 related to firms listed on the KLSE continuously over the period 1980-1998 for both the models.

	Predicted signs	Model 1			Model 2		
		Coefficient	t-value (significance)	VIF	Coefficient	t-value (significance)	VIF
Intercept		-0.212	-2.673 (0.004)	-	-0.205	-2.545 (0.056)	-1.120
MUSLIM	-	-0.017	-1.135 (0.128)	1.115	-0.016	-1.086 (0.139)	1.124
MCOMP	-	-0.006	-0.319 (0.375)	1.123	-0.005	-0.300 (0.386)	1.214
DEBT	+	0.004	0.404 (0.343)	1.202	0.005	0.469 (0.320)	1.528
FSIZE	-	0.009	2.063 (0.020)	1.483	0.008	1.914 (0.028)	1.090
ABSTA	-	-	-	-	0.000	0.672 (0.251)	
R-square			0.097			0.098	
F-value			1.706			1.633	
Significance			0.042			0.052	
Number of observations			289			289	

TABLE 5.17

RESULTS OF THE MULTIVARIATE REGRESSION ANALYSIS ON THE SUBSAMPLE OF FIRMS INCLUDED IN AND EXCLUDED FROM THE SYARIAH INDEX USING THE DEANGELO MODEL

The regression model used is: $DA_t = \alpha_i + \beta_1 MUSLIM + \beta_2 MCOMP + \beta_3 DEBT + \beta_4 FSIZE + \beta_5 IND1 + ...+ \beta_{18} IND13 + \varepsilon$. The dependent variable, DA, in the regression is the discretionary accrual and is derived by dividing the difference in the firm's income before tax and net operating cash flow by lagged total assets. The test variable in the regression is MUSLIM and is a dichotomous measure equal to 1 if the firm is Muslim managed, otherwise 0. The other variables in the regression models are the control variables. MCOMP is a proxy for management compensation plan hypothesis and is a dichotomous measure equal to 1 for firms in first and last deciles of the return on assets in the sample firms, otherwise 0. DEBT is proxy for the debt hypothesis and is measured by the debt/equity ratio. FSIZE is a proxy for the firm's political cost hypothesis and is measured by natural log of sales. IND1–IND13 are dummy variables used to represent the 14 industries in the sample. For economy, the coefficients for the industry variables are not tabulated below. Panel A provides the results of the model based on a sample of firms that are included in the Syariah Index of KLSE. The subsample consists of 170 firm-year observations during 1997 and 1998 related to 90 firms listed on the KLSE continuously over the period 1980-1998. Panel B provides the results of the model based on a sample of firms that are excluded from the Syariah Index of KLSE. The subsample consists of 120 firm-year observations during 1997 and 1998 related to firms listed on the KLSE continuously over the period 1980-1998.

Panel A: Subsample of the firms that are included in the Syariah Index of the KLSE

	Predicted signs	Coefficient	t-value	Significance	Variance Inflation Factor
Intercept	?	-0.370	-3.106	0.001	-
MUSLIM	-	-0.044	-2.231	0.014	1.197
MCOMP	-	-0.007	-0.321	0.374	1.243
DEBT	+	0.017	0.841	0.201	1.276
FSIZE	-	0.018	1.172	0.122	1.484
R—square			0.184		
F-value			2.161		
Significance			0.008		
Number of observations			170		

Panel B: Subsample of the firms that are excluded from the Syariah Index of the KLSE

	Predicted signs	Coefficient	t-value	Significance	Variance Inflation Factor
Intercept	?	-0.022	-0.215	0.415	-
MUSLIM	+/-	-0.000	-0.026	0.490	1.433
MCOMP	-	-0.008	-0.296	0.384	1.329
DEBT	+	0.008	0.584	0.281	1.600
FSIZE	-	-0.006	-0.889	0.188	2.245
R—square			0.324		
F-value			3.030		
Significance			0.000		
Number of observations			118		

that have no change in the religious orientation of the CEO for five consecutive years, (d) firm groupings by quartiles of based firm size, (e) firms based on year, i.e., 1997 and 1998, and (f) firms based on industry classifications. The industry classifications that had less than 25 observations are omitted from the last analyses. I report the results of the first three with full results and the other three in summary form only.

Table 5.17 below reports the results of the tests using subsample of firms included in the Syariah Index (panel A) and using subsample of firms excluded from the Syariah Index (panel B).

The regression model for the sample of firms included in the Syariah Index is statistically significant (F statistics = 2.161, p-value = 0.008) and the R-square is 18.4 percent. This indicates that the model can explain about 18 percent of the variation in DA. The MUSLIM variable is statistically significant. FSIZE is statistically significant, but its coefficient sign is positive which is opposite to that predicted. This indicates that firm with high political costs take income increasing accruals.

The test variable for the earnings management hypothesis, i.e., the MUSLIM variable, is found to be statistically significant and in the direction predicted. This indicates that DA is influenced by the religion of the CEO of the firm. Therefore, the result of this test supports H2.

The regression model for the sample of firms excluded from the Syariah Index is statistically significant (F statistics = 3.030, p-value = 0.000) and the R-square is 32.4 percent. This indicates that the model can explain about 32 percent of the variation in DA. The MUSLIM variable is found to be statistically not significant also as expected.

Together, the results in Table 5.17 provide evidence that is consistent with H2– i.e., consistent with the assumption that Muslim managers working in prohibited industries are less devout than Muslim managers working in accepted industries,

I find that the latter take lower accruals than their non-Muslim counterparts while there is no difference in the accruals of Muslim and non-Muslim managers in the prohibited industries.

The result of the test on the sample of firms that have no change in the religious orientation of the CEO for five consecutive years is provided in Table 5.18 below. The regression model is statistically significant (F statistics = 1.980, p-value = 0.013) and the R-square is 12 percent. This indicates that the model can explain about 12 percent of the variation in DA. FSIZE is statistically significant but its coefficient has a positive value, which is opposite to that predicted.

The test variable for the earnings management hypothesis, i.e., the MUSLIM variable, is found to be statistically significant at ten percent one-tail test level. This indicates that DA is influenced by the religion of the CEO of the firm. Therefore, the result of this test supports H2.

The summaries if the results of the tests on the subsample by year, quartiles based on firm size, and industries are provided in Table 5.19 below.

The results of (a) 1997, (b) the first quartile, i.e., the smallest firms group, (c) two industries, i.e., food, beverage, and tobacco, and plantation, support H2. All other results do not support H2.

TABLE 5.18

RESULTS OF THE MULTIVARIATE REGRESSION ANALYSIS ON THE SUBSAMPLE OF FIRMS THAT HAVE NO CHANGE IN THE RELIGIOUS ORIENTATION OF THE CEO FOR FIVE CONSECUTIVE YEARS USING THE DEANGELO MODEL

The regression model used is: $DA_t = \alpha_i + \beta_1 MUSLIM + \beta_2 MCOMP + \beta_3 DEBT + \beta_4 FSIZE + \beta_5 IND_1 + \ldots\ldots + \beta_{18} IND13 + \varepsilon$. The dependent variable, DA, in the regression is the discretionary accrual and is derived by dividing the difference in the firm's income before tax and net operating cash flow by lagged total assets. The test variable in the regression is MUSLIM and is a dichotomous measure equal to 1 if the firm is Muslim managed, otherwise 0. The other variables in the regression models are the control variables. MCOMP is a proxy for management compensation plan hypothesis and is a dichotomous measure equal to 1 for firms in first and last deciles of the return on assets in the sample firms, otherwise 0. DEBT is proxy for the debt hypothesis and is measured by the debt/equity ratio. FSIZE is a proxy for the firm's political cost hypothesis and is measured by natural log of sales. IND1–IND13 are dummy variables used to represent the 14 industries in the sample. For economy, the coefficients for the industry variables are not tabulated below. The subsample consists of 265 firm-year observations during 1997 and 1998 related to firms listed on the KLSE continuously over the period 1980-1998.

	Predicted signs	Coefficient	t-value	Significance	Variance Inflation Factor
Intercept	?	-0.246	-3.092	0.001	-
MUSLIM	-	-0.023	-1.566	0.060	1.116
MCOMP	-	-0.021	-1.194	0.117	1.115
DEBT	+	0.002	0.212	0.416	1.235
FSIZE	-	0.012	2.683	0.004	1.605
R—square			0.120		
F-value			1.980		
Significance			0.013		
Number of observations			265		

5.6.4 SUMMARY

The univariate tests performed on the CEOs of the firms show mixed results. T-tests indicate no significant differences in the mean of DA between the Muslim managed firms and the non-Muslim managed firms, but the nonparametric test shows otherwise. In particular, the result of the nonparametric *Mann_Whitney U test* finds a significant difference in DA between the Muslim and non-Muslim managed firms. Thus, the latter test provides support for H2.

TABLE 5.19

SUMMARIES OF THE RESULTS OF THE TESTS RUN ON THE SAMPLES BY YEAR AND QUARTILES BASED ON FIRM SIZE USING THE DEANGELO MODEL

The following is the regression model: $DA_t = \alpha_i + \beta_1 MUSLIM + \beta_2 MCOMP + \beta_3 DEBT + \beta_4 FSIZE + \beta_5 IND1 + \ldots\ldots + \beta_{18} IND13 + \varepsilon$. The dependent variable, DA, in the regression is the discretionary accrual and is derived by dividing the difference in the firm's income before tax and net operating cash flow by lagged total assets. The test variable in the regression is Muslim and is a dichotomous measure equal to 1 if the firm is Muslim managed, otherwise 0. The other variables in the regression models are the control variables. MCOMP is a proxy for management compensation plan hypothesis and is a dichotomous measure equal to 1 for firms in first and last deciles of the return on assets in the sample firms, otherwise 0. DEBT is proxy for the debt hypothesis and is measured by the debt/equity ratio. FSIZE is a proxy for the firm's political cost hypothesis and is measured by natural log of sales. IND1–IND13 are dummy variables used to represent the 14 industries in the sample. For economy, the coefficients for the industry variables are not tabulated below. The table provides only the summary of the results. It shows the model's R-square, F-value, and the significance level as well as the t-value and the significance level of the Muslim variable.
Panel A provides the summary of the results of the model based on year. Panel B provides the summary of the results of the subsamples on quartiles based of firm size. Panel C provides the summary of the results of the subsamples based on industries. The industry classifications that had less than 25 observations are omitted from the analyses.

Panel A: Regression analysis by quartile based on year

	N	Coefficient of Muslim variable	t-value of Muslim variable (significance)	R-square	F-value (significance)	Support/ not support the hypothesis
1997	141	-0.03	-3.113 (0.001)	0.324	3.470 (0.000)	Supported
1998	134	-0.008	-0.381 (0.352)	0.178	1.486 (0.112)	Not supported

Panel B: Regression analysis by the quartiles based on firm sizes

1st quartile	73	-0.111	-2.259 (0.014)	0.316	1.616 (0.093)	Supported
2nd quartile	70	0.008	0.399 (0.346)	0.171	1.217 (0.299)	Not supported
3rd quartile	72	-0.008	-0.215 (0.416)	0.225	1.184 (0.312)	Not supported
4th quartile	73	-0.019	-0.662 (0.256)	0.195	1.100 (0.377)	Not supported

Panel C: Regression analysis by industry

Building material	25	-0.058	-1.135 (0.135)	0.106	0.509 (0.673)	Not supported
Food, bev, & tobacco	25	-0.188	-3.196 (0.003)	0.464	4.328 (0.011)	Supported
Industrial products	33	0.023	0.745 (0.232)	0.346	3.709 (0.015)	Not supported
Plantation	51	-0.084	-1.929 (0.030)	0.132	1.752 (0.155)	Supported
Properties	59	-0.000	-0.002 (0.499)	0.139	2.187 (0.083)	Not supported
Trading & services	24	-0.083	-1.196 (0.124)	0.230	1.415 (0.267)	Not supported
Building material	25	-0.058	-1.135 (0.135)	0.106	0.509 (0.673)	Not supported

While the overall sample does not support the earnings management hypothesis, analysis of the subsamples provides some support for H2. The regressions that support the earnings management hypothesis are (a) firms included in and excluded from the Syariah Index, (b) firms that have no change in the religious orientation of the CEO for five consecutive years, (c) the first quartile, i.e., the smallest group of firms, (d) year 1997, and (e) two industries.

5.7 Results Of Tests For Earnings Management Using The Jones Model

This section describes the research design using the Jones model. The remaining of this section is presented in four subsections, namely section 5.7.1 discusses the sample size and descriptive statistics, section 5.7.2 discusses the resultsof the univariate analysis, section 5.7.3 discusses the results of the multivariate analysis, and lastly section 5.7.4 provides the summary for this section.

5.7.1 Sample size and Descriptive Statistics

The sample size is reduced to 198 firm-year observations. The number of observations of Muslim managed firms is reduced from 97 (in the Healy and DeAngelo models) to 69 and from 197 for the non-Muslim managed firms in the DeAngelo model to 129. The reason for the reduction in the number of observations is that I need to have at least ten consecutive years of prior year data to estimate the firm-specific parameters established in the model.

Descriptive statistics for DA are presented in Table 5.20 below. The mean of DA is higher for the Muslim managed firms than non-Muslim managed firms while the median is lower.

The Pearson's correlation matrix is omitted because it is similar to that discussed in section 5.4.1.

5.7.2 UNIVARIATE ANALYSIS

As in section 5.6.2, I first examine whether DA differs between Muslim and non-Muslim managed firms on a univariate basis. Table 5.21 presents the results of using a parametric t-test and a nonparametric Mann-Whitney U test.

Both the t-test and the nonparametric Mann-Whitney U test show that there is no significant difference in DA between the Muslim and non-Muslim managed firms.

I analyse the differences further by subsample, i.e., by quartiles based on firm size, year, and by industry. The results are provided in Table 5.22 below. The results of the t-tests indicate that there are some significant differences in DA between the Muslim managed firms and non-Muslim managed firms in three industries, i.e.,

TABLE 5.20

DESCRIPTIVE STATISTICS FOR DA AS COMPUTED USING THE JONES MODEL

The descriptive statistics are based on a sample composed of 198 firm-year observations during 1997 and 1998 related to firms listed on the Kuala Lumpur Stock Exchange continuously over the period 1980-1998. Column 2, column 3, and column 4 respectively provide the means, medians, modes, standard deviations, minimum values, maximum values, and total number of observations for (a) the full sample, (b) the non-Muslim managed firms, and (c) the Muslim managed firms.

	Full Sample (Column 2)	Non-Muslim managed firms (Column 3)	Muslim managed firms (Column 4)
Mean	0.057	0.053	0.064
Median	0.012	0.020	-0.015
Standard Deviation	0.418	0.445	0.364
Minimum	-1.559	-1.559	-0.786
Maximum	2.874	2.874	1.569
Number	198	129	69

TABLE 5.21

RESULTS OF THE UNIVARIATE TESTS BETWEEN DA AND MUSLIM USING THE JONES MODEL

The results of the t-test, and nonparametric Mann-Whitney U test for the earnings management hypothesis using 69 Muslim managed firm-year observations and 129 non-Muslim managed firm-year observations is tabulated below. It provides the mean, t-value (and its significance in parentheses), and the Z-statistics of the Mann-Whitney U test (and its significance in parentheses). T-test measures the difference in the mean of DA between the Muslim and the non-Muslim managed firms. Mann-Whitney U test measures the difference in the median of DA between the Muslim and the non-Muslim managed firms.

	Mean	t-value (significance)	Median	Mann-Whitney U test (significance)
Muslim managed firms	0.064	0.176 (0.431)	-0.015	-0.368 (0.357)
Non-Muslim managed firms	0.053		0.020	

consumer products, food, beverage, and tobacco, and securities investment industries (see column 3 in panel C), but DA is larger for the Muslim managed firms in all these three industries. The results of the first and the third quartiles (see column 3 in panel A) indicate similar findings as above but the DA for the Muslim managed firms is smaller for the first quartile only. The results of the tests on year subsamples do not show any significant results.

The *Mann-Whitney U test* indicates that that there are some significant differences in DA between the Muslim managed and non-Muslim managed firms in five industries, i.e., building material, food, beverage & tobacco, industrial products, plantation, and securities investment industries (see column 6 in panel C), but DA is smaller for the Muslim managed firms in two industries only, i.e., plantation and securities investment industries. The analyses by quartile based on firm size and years are consistent with the results of t-tests, i.e. only the results of the first and the third quartiles show significant results but DA for the Muslim managed firms is smaller only in the first quartile.

TABLE 5.22

RESULTS OF T-TESTS RUN ON THE SUBSAMPLES USING THE JONES MODEL

Results of the t-tests and the nonparametric Mann-Whitney U tests for the earnings management hypothesis is further analysed by quartile based on firm size (see panel A), year (see panel B), and industry (see panel C). It provides the mean and median for the Muslim and non-Muslim managed firm subsamples, t-value (and its significance in parentheses), and the Z-statistics of the Mann-Whitney U test (and its significance in parentheses). T-test measures the difference in the mean of DA between the Muslim and the non-Muslim managed firms while the nonparametric Mann-Whitney U test measures the difference in the median of DA between the Muslim and the non-Muslim managed firms. Significance levels are based on one-tail test

	Mean		t-value	Median		Mann-Whitney U
	Muslim firms (Column 1)	Non-Muslim firms (Column 2)	(significance) (Column 3)	Muslim firms (Column 4)	Non-Muslim firms (Column 5)	test (significance) (Column 6)
Panel A: Firm size						
1ST quartile	-0.173	0.014	-1.412 (0.084)	-0.146	0.013	-2.611 (0.005)
2nd quartile	0.101	0.089	0.077 (0.470)	-0.008	0.040	-0.426 (0.335)
3rd quartile	0.114	0.748	-1.854 (0.035)	0.067	0.008	2.021 (0.022)
4th quartile	0.112	0.127	-0.105 (0.459)	-0.035	0.012	-0.215 (0.415)
Panel B: Year						
1997	0.084	0.133	-0.284 (0.389)	0.021	0.021	0.159 (0.437)
1998	0.043	0.373	-0.763 (0.224)	-0.023	0.016	-0.391 (0.348)
Panel C: Industry						
Building material	0.152	-0.092	1.246 (0.121)	0.152	-0.046	1.719 (0.043)
Consumer products	0.709	0.018	2.189 (0.028)	0.648	0.067	0.756 (0.225)
Food, beverage & tobacco	0.393	-0.056	2.067 (0.028)	0.221	-0.062	2.038 (0.021)
Industrial products	-0.057	-0.015	-0.739 (0.234)	-0.029	0.026	-15.00 (0.067)
Investment holdings	0.001	-0.028	0.345 (0.368)	0.013	-0.046	0.210 (0.417)
Plantation	0.074	0.301	-1.257 (0.109)	-0.015	0.026	-1.737 (0.041)
Properties	-0.005	0.075	-0.378 (0.354)	-0.020	0.044	-1.000 (0.159)
Securities investment	0.075	-0.033	1.556 (0.072)	0.083	0.018	1.828 (0.034)
Trading & services	-0.081	-0.005	-0.988 (0.214)	-0.081	-0.005	-0.775 (0.439)

5.7.3 MULTIVARIATE ANALYSIS

I have used two models when running the regression, i.e., Model 1 (i.e., equation 10 above) and Model 2 (i.e. equation 11). The results of the tests using both the models are provided in Table 5.23 below.

The first regression model is not statistically significant (F statistics = 1.169, p-value = 0.294) and the R-square is 10.1 percent. Only MCOMP of the control variables is statistically significant, and its coefficient is negative as expected. This indicates that firms that are above or below the bounds of the bonus plan were more likely to take income decreasing accruals.

The test variable for the earnings management hypothesis, i.e., the MUSLIM variable, is not statistically significant. This indicates that DA is not influenced by the religion of the CEO of the firm. Therefore, the result of this test is contrary to H2.

The second regression model has a statistically significant value (F-value = 8.611, p-value = 0.000) and the R-square is good, i.e., 47.1 percent. MCOMP is statistically significant at ten percent level and ABSTA is statistically significant at a one percent level. The coefficients of both the variables with significant results are negative. This indicates that the DA is influenced by the firm's management compensation plan and the absolute value of TA as expected.

The test variable for the earnings management hypothesis, i.e., the MUSLIM variable, is not statistically significant. This indicates that DA is not influenced by the religion of the CEO of the firm. Therefore, the result of this test does not support H2.

TABLE 5.23

RESULTS OF THE OLS REGRESSION USING THE JONES MODEL

There are two models in use. The first regression model is: $DA_t = \alpha_i + \beta_1 MUSLIM + \beta_2 MCOMP + \beta_3 DEBT + \beta_4 FSIZE + \beta_5 IND1 + ...+ \beta_{18} IND13 + \varepsilon$. The second regression model is: $DA_t = \alpha_i + \beta_1 MUSLIM + \beta_2 MCOMP + \beta_3 DEBT + \beta_4 FSIZE + \beta_5 IND1 + ...+ \beta_{18} IND13 + \beta_{19} ABSTA + \varepsilon_t$. The dependent variable, DA, in the regression is the discretionary accrual and is derived by dividing the change in total accruals from the previous period by lagged total assets. The test variable in the regression is MUSLIM and is a dichotomous measure equal to 1 if the firm is Muslim managed, otherwise 0. The other variables in the regression models are the control variables. MCOMP is a proxy for management compensation plan hypothesis and is a dichotomous measure equal to 1 for firms in first and last deciles of the return on assets in the sample firms, otherwise 0. DEBT is proxy for the debt hypothesis and is measured by the debt/equity ratio. FSIZE is a proxy for the firm's political cost hypothesis and is measured by natural log of sales. ABSTA is a control variable used in the second model only and it is derived from the difference between the firm's income before tax and net operating cash flow. IND1–IND13 are dummy variables used to represent the 14 industries in the sample. For economy, the coefficients for the industry variables are not tabulated below. The model is estimated using a sample of 198 firm-year observations during 1997 and 1998 related to firms listed on the KLSE continuously over the period 1980-1998 for both the models.

	Predicted signs	Model 1			Model 2		
		Coefficient	t-value (significance)	VIF	Coefficient	t-value (significance)	VIF
Intercept		-0.080	-0.339 (0.368)	-	-0.016	-0.078 (0.469)	-
MUSLIM	-	0.030	0.655 (0.257)	1.242	0.030	0.759 (0.225)	1.252
MCOMP	-	-0.100	-1.839 (0.034)	1.236	-0.063	-1.351 (0.089)	1.244
DEBT	+	-0.026	-0.698 (0.243)	1.324	-0.007	-0.224 (0.412)	1.328
FSIZE	-	0.005	0.321 (0.374)	1.846	0.004	0.310 (0.379)	1.893
ABSTA	-	-	-	-	0.000	11.038 (0.000)	1.100
R-square			0.101			0.471	
F-value			1.169			8.611	
Significance			0.294			0.000	
Number of observations			194			193	

5.7.3.1 MULTIVARIATE ANALYSIS USING SUBSAMPLES

I further estimate equation (10) on six different subsamples as performed on the Healy and DeAngelo models. As before, I discuss the results of the first three with full results and the other three in summary form only.

Table 5.24 below reports the results of the tests using the subsample of firms included in the Syariah Index (panel A) and using the subsample of firms excluded from the Syariah Index (panel B).

The regression model for the sample of firms included in the Syariah Index is not statistically significant (F statistics = 1.024, p-value = 0.439) and the R-square is 15 percent. MCOMP is statistically significant, and its coefficient sign is negative as expected. MUSLIM variable is not statistically significant. Thus, DA is not different for Muslim and non-Muslim managers, which is contrary to H2.

The regression model for the sample of firms excluded from the Syariah Index is statistically significant (F statistics = 1.814, p-value = 0.048) and the R-square is 30.5 percent. FSIZE is the only control variable that is statistically significant. This indicates that large firms took income decreasing accruals as expected. The MUSLIM variable is not statistically significant as expected. However, the two subsamples represent a joint test, and since MUSLIM did not conform with expectations in panel A, it is difficult to draw any conclusion based on Table 5.24.

The result of the test on the sample of firms that have no change in the religious orientation of the CEO for five consecutive years is provided in Table 5.25 below.

TABLE 5.24

RESULTS OF THE MULTIVARIATE REGRESSION ANALYSIS ON THE SUBSAMPLE OF FIRMS INCLUDED IN AND EXCLUDED FROM THE SYARIAH INDEX USING THE JONES MODEL

The regression model used is: $DA_t = \alpha_i + \beta_1 MUSLIM + \beta_2 MCOMP + \beta_3 DEBT + \beta_4 FSIZE + \beta_5 IND\ IND1 + ...+ \beta_{18}\ IND13 + \varepsilon$. The dependent variable, DA, in the regression is the discretionary accrual and is derived by dividing the difference in the firm's income before tax and net operating cash flow by lagged total assets. The test variable in the regression is MUSLIM and is a dichotomous measure equal to 1 if the firm is Muslim managed, otherwise 0. The other variables in the regression models are the control variables. MCOMP is a proxy for management compensation plan hypothesis and is a dichotomous measure equal to 1 for firms in first and last deciles of the return on assets in the sample firms, otherwise 0. DEBT is proxy for the debt hypothesis and is measured by the debt/equity ratio. FSIZE is a proxy for the firm's political cost hypothesis and is measured by natural log of sales. IND1–IND13 are dummy variables used to represent the 14 industries in the sample. For economy, the coefficients for the industry variables are not tabulated below. Panel A provides the results of the model based on a sample of firms that are included in the Syariah Index of KLSE. The subsample consists of 110 firm-year observations during 1997 and 1998 related to 90 firms listed on the KLSE continuously over the period 1980-1998.
Panel B provides the results of the model based on a sample of firms that are excluded from the Syariah Index of KLSE. The subsample consists of 83 firm-year observations during 1997 and 1998 related to firms listed on the KLSE continuously over the period 1980-1998.

Panel A: Subsample of the firms included in the Syariah Index of the KLSE

	Predicted signs	Coefficient	t-value	Significance	Variance Inflation Factor
Intercept	?	-0.337	-1.243	0.109	-
MUSLIM	-	-0.004	-0.076	0.470	1.407
MCOMP	-	-0.084	-1.673	0.049	1.314
DEBT	+	-0.001	0.038	0.485	1.557
FSIZE	-	0.016	1.212	0.115	1.999
R—square		0.150			
F-value		1.024			
Significance		0.439			
Number of observations		110			

Panel B: Subsample of the firms that are excluded from the Syariah Index of the KLSE

	Predicted signs	Coefficient	t-value	Significance	Variance Inflation Factor
Intercept	?	0.526	1.304	0.099	-
MUSLIM	+/-	-0.014	-0.174	0.431	1.488
MCOMP	-	-0.026	-0.205	0.419	1.771
DEBT	+	0.012	0.172	0.432	1.613
FSIZE	-	-0.048	-1.529	0.066	2.921
R—square		0.305			
F-value		1.814			
Significance		0.048			
Number of observations		83			

TABLE 5.25

RESULTS OF THE MULTIVARIATE REGRESSION ANALYSIS ON THE SUBSAMPLE OF FIRMS THAT HAVE NO CHANGE IN THE RELIGIOUS ORIENTATION OF THE CEO FOR FIVE CONSECUTIVE YEARS USING THE JONES MODEL

The regression model used is: $DA_t = \alpha_i + \beta_1 MUSLIM + \beta_2 MCOMP + \beta_3 DEBT + \beta_4 FSIZE + \beta_5 IND1 + \ldots\ldots + \beta_{18} IND13 + \varepsilon$. The dependent variable, DA, in the regression is the discretionary accrual and is derived by dividing the difference in the firm's income before tax and net operating cash flow by lagged total assets. The test variable in the regression is MUSLIM and is a dichotomous measure equal to 1 if the firm is Muslim managed, otherwise 0. The other variables in the regression models are the control variables. MCOMP is a proxy for management compensation plan hypothesis and is a dichotomous measure equal to 1 for firms in first and last deciles of the return on assets in the sample firms, otherwise 0. DEBT is proxy for the debt hypothesis and is measured by the debt/equity ratio. FSIZE is a proxy for the firm's political cost hypothesis and is measured by natural log of sales. IND1–IND13 are dummy variables used to represent the 14 industries in the sample. For economy, the coefficients for the industry variables are not tabulated below. The subsample consists of 265 firm-year observations during 1997 and 1998 related to firms listed on the KLSE continuously over the period 1980-1998.

	Predicted signs	Coefficient	t-value	Significance	Variance Inflation Factor
Intercept	?	-0.149	-0.651	0.516	-
MUSLIM	-	0.004	0.081	0.936	1.251
MCOMP	-	-0.085	-1.586	0.115	1.244
DEBT	+	-0.007	-0.188	0.851	1.383
FSIZE	-	0.009	0.628	0.531	1.857
R—square			0.093		
F-value			0.998		
Significance			0.463		
Number of observations			183		

The regression model is not statistically significant (F statistics = 0.998, p-value = 0.463) and the R-square is 9.3 percent. MCOMP is statistically significant and has a negative coefficient. Contrary to H2, MUSLIM is not statistically significant.

The summaries if the results of the tests on the subsample by year, quartiles based on firm size, and industries are provided in Table 526 below. Only the result of the first quartile, i.e., the smallest firms group, supports H2. All other test results do not support H2.

TABLE 5.26

SUMMARIES OF THE RESULTS OF THE TESTS RUN ON THE SAMPLES BY YEAR AND QUARTILES BASED ON FIRM SIZE USING JONES MODEL

The following is the regression model: $DA_t = \alpha_i + \beta_1 MUSLIM + \beta_2 MCOMP + \beta_3 DEBT + \beta_4 FSIZE + \beta_5 IND1 + ...+ \beta_{18} IND13 + \varepsilon$. The dependent variable, DA, in the regression is the discretionary accrual and is derived by dividing the difference in the firm's income before tax and net operating cash flow by lagged total assets. The test variable in the regression is Muslim and is a dichotomous measure equal to 1 if the firm is Muslim managed, otherwise 0. The other variables in the regression models are the control variables. MCOMP is a proxy for management compensation plan hypothesis and is a dichotomous measure equal to 1 for firms in first and last deciles of the return on assets in the sample firms, otherwise 0. DEBT is proxy for the debt hypothesis and is measured by the debt/equity ratio. FSIZE is a proxy for the firm's political cost hypothesis and is measured by natural log of sales. IND1 –IND13 are dummy variables used to represent the 14 industries in the sample. For economy, the coefficients for the industry variables are not tabulated below. The table provides only the summary of the results. It shows the model's R-square, F-value, and the significance level as well as the MUSLIM variable's t-value and the significance level. Panel A provides the summary of the results of the model based on year. Panel B provides the summary of the results of the subsamples on quartiles based of firm size. Panel C provides the summary of the results of the subsamples based on industries. The industry classifications that had less than 25 observations are omitted from the analyses.

Panel A: Regression analysis by quartile based on year

	N	Coefficient of Muslim variable	T-value of Muslim variable (significance)	R-square	F-value (significance)	Support/ not support the hypothesis
1997	94	0.005	0.158 (0.438)	0.192	1.061 (0.407)	Not supported
1998	91	-0.038	-0.747 (0.229)	0.190	1.086 (0.383)	Not supported

Panel B: Regression analysis by the quartiles based on firm sizes.

1st quartile	49	-0.270	-2.303 (0.014)	0.491	2.119 (0.036)	Supported
2nd quartile	47	0.055	0.420 (0.338)	0.093	0.371 (0.951)	Not supported
3rd quartile	49	0.045	0.934 (0.178)	0.141	0.552 (0.854)	Not supported
4th quartile	49	0.321	2.384 (0.012)	0.361	1.370 (0.221)	Not supported

Panel C: Regression analysis by industry

Building material	12	0.200	1.228 (0.130)	0.617	2.817 (0.110)	Not supported
Food, bev, & tobacco	17	0.587	1.759 (0.052)	0.314	1.375 (0.300)	Not supported
Industrial products	25	-0.035	-0.643 (0.264)	0.195	1.211 (0.337)	Not supported
Plantation	36	-0.104	-0.804 (0.211)	0.076	0.639 (0.638)	Not supported
Properties	37	0.014	0.150 (0.441)	0.258	2.784 (0.043)	Not supported

5.7.4 SUMMARY

The univariate tests performed using the Jones model shows no difference in DA between the Muslim and non-Muslim managed firms. Overall, the sample does not support the earnings management hypothesis. However, an analysis on the subsample provides some further insight into the results. Only one regression test supports the earnings management hypothesis, i.e., the first quartile representing the smallest group of firms. All other test results are in contrary to H2.

5.8 RESULTS OF TESTS FOR EARNINGS MANAGEMENT USING THE MODIFIED JONES MODEL

This section describes the research design using the Modified Jones model. The remainder of this section is presented in four subsections, namely section 5.8.1 discusses the changes in the sample and descriptive statistics for the DA, section 5.8.2 discusses the results of the univariate analyses, section 5.8.3 discusses the results of the multivariate analyses, and lastly section 5.8.4 provides the summary for this section.

5.8.1 SAMPLE SIZE AND DESCRIPTIVE STATISTICS

The sample size for this model is 198 which is the same as the sample used in section 5.7.1. The number of observations for Muslim managed firms is 69, and for non-Muslim managed firms, there are 129 observations. Descriptive statistics for DA are presented in Table 5.27. The mean and median of DA for the Muslim managed firms are lower than the non-Muslim managed firms.

I omit the Pearson's correlation matrix for the independent variables because it is similar to that discussed in section 5.5.2.

TABLE 5.27

DESCRIPTIVE STATISTICS FOR DA AS COMPUTED USING THE MODIFIED JONES MODEL

The descriptive statistics are based on a sample composed of 198 firm-year observations during 1997 and 1998 related to firms listed on the Kuala Lumpur Stock Exchange continuously over the period 1980-1998. Column 2, column 3, and column 4 respectively provide the means, medians, modes, standard deviations, minimum values, maximum values, and total number of observations for (a) the full sample, (b) the non-Muslim managed firms, and (c) the Muslim managed firms.

	Full Sample (Column 2)	Non-Muslim managed firms (Column 3)	Muslim managed firms (Column 4)
Mean	0.166	0.218	0.068
Median	0.012	0.018	-0.012
Standard Deviation	1.746	2.148	0.365
Minimum	-1.559	-1.559	-0.786
Maximum	2.874	2.874	1.569
Number	198	129	69

5.8.2 UNIVARIATE ANALYSIS

I examine whether DA differs between Muslim and non-Muslim managed firms on a univariate basis. Table 5.28 presents the results of using a parametric t-test, and a nonparametric Mann-Whitney U test. Both the t-test and the nonparametric Mann-Whitney U test show that three is no significant difference between the Muslim and non-Muslim managed firms.

I analyse the sample further by splitting it into subsamples based on quartiles of firm size, year, and by industry. The results are provided in Table 5.29 below. The results of the t-tests indicate that there are some significant differences in DA between the Muslim managed firms and non-Muslim managed firms in seven industries, i.e., building material, consumer products, food, beverage, and tobacco, industrial products, plantation, properties, and securities investment industries (see column 3 in panel C). Of these seven industries, only one industry, i.e., properties, has lower DA for the Muslim managed firms.

TABLE 5.28

RESULTS OF THE UNIVARIATE TESTS BETWEEN DA AND MUSLIM USING THE MODIFIED JONES MODEL

The results of the t-test, and nonparametric Mann-Whitney U test for the earnings management hypothesis using 69 Muslim managed firm-year observations and 129 non-Muslim managed firm-year observations is tabulated below. It provides the mean, t-value (and its significance in parentheses), and the Z-statistics of the Mann-Whitney U test (and its significance in parentheses). T-test measures the difference in the mean of DA between the Muslim and the non-Muslim managed firms. Mann-Whitney U test measures the difference in the median of DA between the Muslim and the non-Muslim managed firms.

	Mean	t-value (significance)	Median	Mann-Whitney U test (significance)
Muslim managed firms	0.068	-0.575	-0.012	-0.730
Non-Muslim managed firms	0.218	(0.283)	0.018	(0.432)

The results of the first three quartiles (see column 3 in panel A) indicate similar findings as above but the DA is smaller for the Muslim managed firms for the first quartile only. The results of the tests on the year subsamples do not show any significant results.

The Mann-Whitney U test indicates that there are some significant differences in DA between the Muslim managed and non-Muslim managed firms in five industries. Of these five industries, only two industries, i.e., industrial products and plantation industries, have smaller DA for the Muslima managed firms as compared to the non-Muslim managed finns. The results of the first quartile, i.e., the smallest group of firms, indicate similar findings and the DA is smaller for the Muslim managed firms. The results of the tests on the year subsamples do not show any significant results.

TABLE 5.29

RESULTS OF T-TESTS RUN ON THE SUBSAMPLES USING THE MODIFIED JONES MODEL

Results of the t-tests and the nonparametric Mann-Whitney U tests for the earnings management hypothesis is further analysed by quartile based on firm size (see panel A), year (see panel B), and industry (see panel C). It provides the mean and median for the Muslim and non-Muslim managed firm subsamples, t-value (and its significance in parentheses), and the Z-statistics of the Mann-Whitney U test (and its significance in parentheses). T-test measures the difference in the mean of DA between the Muslim and the non-Muslim managed firms while the nonparametric Mann-Whitney U test measures the difference in the median of DA between the Muslim and the non-Muslim managed firms. Significance levels are based on one-tail test.

	Mean		t-value (significance) (Column 3)	Median		Mann-Whitney U test (significance) (Column 6)
	Muslim firms (Column 1)	Non-Muslim firms (Column 2)		Muslim firms (Column 4)	Non-Muslim firms (Column 5)	
Panel A: Firm size						
1ST quartile	-0.156	-0.021	-1.102 (0.069)	-0.120	0.010	-2.092 (0.009)
2nd quartile	0.122	0.030	1.296 (0.051)	0.010	0.040	-0.650 (0.129)
3rd quartile	0.072	0.020	0.855 (0.100)	0.030	0.020	0.328 (0.186)
4th quartile	0.152	0.115	0.264 (0.198)	-0.030	0.000	-0.390 (0.175)
Panel B: Year						
1997	0.093	0.080	0.165 (0.218)	0.020	0.020	0.100 (0.230)
1998	0.042	0.016	0.825 (0.103)	-0.020	0.010	-0.348 (0.182)
Panel C: Industry						
Building material	0.150	-0.085	1.336 (0.052)	0.150	-0.045	1.826 (0.017)
Consumer products	0.710	0.019	2.189 (0.014)	0.650	0.070	0.756 (0.113)
Food, beverage & tobacco	0.374	0.043	2.313 (0.009)	0.290	-0.060	2.051 (0.010)
Industrial products	-0.059	0.021	-2.054 (0.013)	-0.030	0.035	-2.082 (0.010)
Investment holdings	0.001	-0.028	0.345 (0.184)	0.010	-0.045	0.210 (0.209)
Plantation	0.074	0.301	1.257 (0.055)	-0.020	0.025	-1.737 (0.021)
Properties	-0.006	0.062	-0.665 (0.003)	-0.005	0.030	-0.505 (0.154)
Securities investment	0.075	-0.050	1.720 (0.027)	0.080	0.000	1.940 (0.013)
Trading & services	-0.085	-0.005	-0.988 (0.107)	-0.085	-0.005	-0.775 (0.110)

TABLE 5.30

RESULTS OF THE OLS REGRESSION USING MODIFIED JONES'S MODEL

There are two models in use. The first regression model is: $DA_t = \alpha_i + \beta_1 MUSLIM + \beta_2 MCOMP + \beta_3 DEBT + \beta_4 FSIZE + \beta_5 IND1 + \ldots\ldots + \beta_{18} IND13 + \varepsilon$. The second regression model is: $DA_t = \alpha_i + \beta_1 MUSLIM + \beta_2 MCOMP + \beta_3 DEBT + \beta_4 FSIZE + \beta_5 IND1 + \ldots\ldots + \beta_{18} IND13 + \beta_{19} ABSTA + \varepsilon_t$ The dependent variable, DA, in the regression is the discretionary accrual and is derived by dividing the change in total accruals from the previous period by lagged total assets. The test variable in the regression is MUSLIM and is a dichotomous measure equal to 1 if the firm is Muslim managed, otherwise 0. The other variables in the regression models are the control variables. MCOMP is a proxy for management compensation plan hypothesis and is a dichotomous measure equal to 1 for firms in first and last deciles of the return on assets in the sample firms, otherwise 0. DEBT is proxy for the debt hypothesis and is measured by the debt/equity ratio. FSIZE is a proxy for the firm's political cost hypothesis and is measured by natural log of sales. ABSTA is a control variable used in the second model only and it is derived from the difference between the firm's income before tax and net operating cash flow. IND1–IND13 are dummy variables used to represent the 14 industries in the sample. For economy, the coefficients for the industry variables are not tabulated below. The model is estimated using a sample of 198 firm-year observations during 1997 and 1998 related to firms listed on the KLSE continuously over the period 1980-1998 for both the models.

	Predicted	Model 1			Model 2		
	signs	Coefficient	t-value (significance)	VIF	Coefficient	t-value (significance)	VIF
Intercept		-0.192	-1.057 (0.146)	-	-0.076	-0.311 (0.378)	-
MUSLIM	-	0.023	0.651 (0.258)	1.227	0.074	1.576 (0.059)	1.235
MCOMP	-	-0.056	-1.345 (0.090)	1.194	-0.127	-2.317 (0.011)	1.188
DEBT	+	-0.032	-1.119 (0.133)	1.326	-0.021	-0.548 (0.292)	1.335
FSIZE	-	0.014	1.269 (0.103)	1.863	0.008	0.544 (0.294)	1.930
ABSTA	-	-	-	-	0.000	8.811 (0.000)	4.366
R-square			0.133			0.412	
F-value			1.568			6.928	
Significance			0.077			0.000	
Number of observations			197			196	

5.8.3 MULTIVARIATE ANALYSIS

I have run two regressions, i.e., Model 1 (i.e., equation 10 above) and Model 2 (i.e. equation 11). The results of the tests using both the models are provided in Table 5.30 above.

The first regression model is statistically significant (F statistics = 1.568, p-value = 0.077) and the R-square is 13.3 percent. Only MCOMP of the control variables is statistically significant at a ten percent level based on a one-tailed test. Its coefficient is negative as predicted. MUSLIM variable is not statistically significant, which is contrary to H2.

The second regression model has a statistically significant value (F-value = 6.928, p-value = 0.000) and the R-square is 41.2 percent. MCOMP and ABSTA are statistically significant as before. The MUSLIM variable is statistically significant at a ten percent level based on a one-tail test. Consistent with H2, Muslim managed firms had lower DA than non-Muslim managed firms.

5.8.3.1 MULTIVARIATE ANALYSIS USING SUBSAMPLES

Similar to the previous sections, I estimate equation (10) using six different subsamples, i.e., based on (a) firms excluded from the Syariah Index, (b) firms included in the Syariah Index, (c) firms that have no change in the religious orientation of the CEO for five consecutive years, (d) firm groupings by quartiles of based firm size, (e) firms based on year, i.e., 1997 and 1998, and (f) firms based on industry classifications (where 25 observations or more observations are available). I discuss the results of the first three with full results and the other three in summary form only.

TABLE 5.31

RESULTS OF THE MULTIVARIATE REGRESSION ANALYSIS ON THE SUBSAMPLE OF FIRMS INCLUDED IN AND EXCLUDED FROM THE SYARIAH INDEX USING THE MODIFIED JONES MODEL

The regression model used is: $DA_t = \alpha_i + \beta_1 MUSLIM + \beta_2 MCOMP + \beta_3 DEBT + \beta_4 FSIZE + \beta_5 IND\ IND1 + ...+ \beta_{18}\ IND13 + \varepsilon$. The dependent variable, DA, in the regression is the discretionary accrual and is derived by dividing the difference in the firm's income before tax and net operating cash flow by lagged total assets. The test variable in the regression is MUSLIM and is a dichotomous measure equal to 1 if the firm is Muslim managed, otherwise 0. The other variables in the regression models are the control variables. MCOMP is a proxy for management compensation plan hypothesis and is a dichotomous measure equal to 1 for firms in first and last deciles of the return on assets in the sample firms, otherwise 0. DEBT is proxy for the debt hypothesis and is measured by the debt/equity ratio. FSIZE is a proxy for the firm's political cost hypothesis and is measured by natural log of sales. IND1–IND13 are dummy variables used to represent the 14 industries in the sample. For economy, the coefficients for the industry variables are not tabulated below. Panel A provides the results of the model based on a sample of firms that are included in the Syariah Index of KLSE. The subsample consists of 110 firm-year observations during 1997 and 1998 related to 90 firms listed on the KLSE continuously over the period 1980-1998.
Panel B provides the results of the model based on a sample of firms that are excluded from the Syariah Index of KLSE. The subsample consists of 83 firm-year observations during 1997 and 1998 related to firms listed on the KLSE continuously over the period 1980-1998.

Panel A: Subsample of the firms that are included in the Syariah Index of the KLSE

	Predicted signs	Coefficient	t-value	Significance	Variance Inflation Factor
Intercept	?	-0.405	-1.234	0.110	-
MUSLIM	-	0.087	1.479	0.071	1.400
MCOMP	-	-0.117	-1.939	0.028	1.246
DEBT	+	0.023	0.476	0.318	1.634
FSIZE	-	0.011	0.690	0.246	1.924
R—square			0.232		
F-value			1.910		
Significance			0.031		
Number of observations			110		

Panel B: Subsample of the firms that are excluded from the Syariah Index of the KLSE

	Predicted signs	Coefficient	t-value	Significance	Variance Inflation Factor
Intercept	?	0.087	0.364	0.358	-
MUSLIM	+/-	-0.055	-1.213	0.115	1.490
MCOMP	-	0.092	1.317	0.097	1.746
DEBT	+	0.015	0.416	0.340	1.577
FSIZE	-	-0.009	-0.456	0.325	3.279
R—square			0.322		
F-value			1.897		
Significance			0.037		
Number of observations			83		

Table 5.31 above reports the results of the tests using subsample of firms included in the Syariah Index (panel A) and using subsample of firms excluded from the Syariah Index (panel B).

The regression model for the sample of firms included in the Syariah Index is statistically significant (F statistics = 1.910, p-value = 0.031) and the R-square is 23.2 percent. MCOMP is statistically significant with a negative sign. MUSLIM variable is statistically significant at a ten percent level.

The regression model for the sample of firms excluded from the Syariah Index is statistically significant as well (F statistics = 1.897, p-value = 0.037). The R-square is 32.2 percent. This indicates that the model can explain about 32 percent of the variation in DA. MCOMP is statistically significant at a ten percent level. MUSLIM variable is not statistically significant. As previously discussed, the two panels represent a joint test. In this case, the significant result for MUSLIM in panel A combined with the insignificant result for MUSLIM in panel B provide support for the earnings management hypothesis.

The result of the test on the sample of firms that have no change in the religious orientation of the CEO for five consecutive years is provided in Table 5.32 below. The regression model is not statistically significant (F statistics = 1.284, p-value = 0.210). The R-square is 12.3 percent. None of the control variables or MUSLIM are statistically significant. The latter result is contrary to H2.

The summaries if the results of the tests on the subsample by year, quartiles based on firm size, and industries are provided in Table 5.33 below. The results of the first quartile, i.e., the smallest firms group, and plantation industry support H2. All other results of the tests do not support H2.

5.8.4 SUMMARY

The univariate tests performed on the CEOs of the firms show no difference in DA between the Muslim and non-Muslim managed firms. In the multivariate tests, model 2, i.e., the model with four control variables, supports the earnings management hypothesis while model 1 does not. The joint test based on Syariah and non-Syariah firms supports H2 as do the regression tests for the subsample based on the first quartile of firm size and the plantation industry subsample.

TABLE 5.32

RESULTS OF THE MULTIVARIATE REGRESSION ANALYSIS ON THE SUBSAMPLE OF FIRMS THAT HAVE NO CHANGE IN THE RELIGIOUS ORIENTATION OF THE CEO FOR FIVE CONSECUTIVE YEARS USING THE MODIFIED JONES MODEL

The regression model used is: $DA_t = \alpha_i + \beta_1 MUSLIM + \beta_2 MCOMP + \beta_3 DEBT + \beta_4 FSIZE + \beta_5 IND1 + \ldots\ldots + \beta_{18} IND13 + \varepsilon$. The dependent variable, DA, in the regression is the discretionary accrual and is derived by dividing the difference in the firm's income before tax and net operating cash flow by lagged total assets. The test variable in the regression is MUSLIM and is a dichotomous measure equal to 1 if the firm is Muslim managed, otherwise 0. The other variables in the regression models are the control variables. MCOMP is a proxy for management compensation plan hypothesis and is a dichotomous measure equal to 1 for firms in first and last deciles of the return on assets in the sample firms, otherwise 0. DEBT is proxy for the debt hypothesis and is measured by the debt/equity ratio. FSIZE is a proxy for the firm's political cost hypothesis and is measured by natural log of sales. IND1–IND13 are dummy variables used to represent the 14 industries in the sample. For economy, the coefficients for the industry variables are not tabulated below. The subsample consists of 173 firm-year observations during 1997 and 1998 related to firms listed on the KLSE continuously over the period 1980-1998.

	Predicted signs	Coefficient	t-value	Significance	Variance Inflation Factor
Intercept	?	-0.215	-1.175	0.121	-
MUSLIM	-	-0.008	-0.216	0.415	1.268
MCOMP	-	-0.054	-1.263	0.104	1.256
DEBT	+	-0.009	-0.290	0.386	1.404
FSIZE	-	0.014	1.283	0.101	1.936
R—square			0.123		
F-value			1.284		
Significance			0.210		
Number of observations			173		

TABLE 5.33

SUMMARIES OF THE RESULTS OF THE TESTS RUN ON THE SAMPLES BY YEAR AND QUARTILES BASED ON FIRM SIZE USING THE MODIFIED JONES MODEL

The following is the regression model: $DA_t = \alpha_i + \beta_1 MUSLIM + \beta_2 MCOMP + \beta_3 DEBT + \beta_4 FSIZE + \beta_5 IND1 + ...+ \beta_{18} IND13 + \varepsilon$. The dependent variable, DA, in the regression is the discretionary accrual and is derived by dividing the difference in the firm's income before tax and net operating cash flow by lagged total assets. The test variable in the regression is Muslim and is a dichotomous measure equal to 1 if the firm is Muslim managed, otherwise 0. The other variables in the regression models are the control variables. MCOMP is a proxy for management compensation plan hypothesis and is a dichotomous measure equal to 1 for firms in first and last deciles of the return on assets in the sample firms, otherwise 0. DEBT is proxy for the debt hypothesis and is measured by the debt/equity ratio. FSIZE is a proxy for the firm's political cost hypothesis and is measured by natural log of sales. ABSTA is a control variable used in the second model only and it is derived from the difference between the firm's income before tax and net operating cash flow. IND1–IND13 are dummy variables used to represent the 14 industries in the sample. For economy, the coefficients for the industry variables are not tabulated below. The table provides only the summary of the results. It shows the model's R-square, F-value, and the significance level as well as the t-value and the significance level of the MUSLIM variable. Panel A provides the summary of the results of the model based on year. Panel B provides the summary of the results of the subsamples on quartiles based of firm size. Panel C provides the summary of the results of the subsamples based on industries. The industry classifications that had less than 25 observations are omitted from the analyses.

Panel A: Regression analysis by quartile based on year

	N	Coefficient of Muslim variable	T-value of Muslim variable (significance)	R-square	F-value (significance)	Support/ not support the hypothesis
1997	97	0.008	0.254 (0.400)	0.229	1.379 (0.170)	Not supported
1998	94	0.009	0.155 (0.438)	0.220	1.356 (0.187)	Not supported

Panel B: Regression analysis by the quartiles based on firm sizes

1st quartile	47	-0.184	-2.092 (0.024)	0.442	1.634 (0.121)	Supported
2nd quartile	45	0.034	0.659 (0.257)	0.199	0.845 (0.590)	Not supported
3rd quartile	47	0.026	0.509 (0.307)	0.111	0.316 (0.985)	Not supported
4th quartile	51	0.142	1.376 (0.089)	0.274	1.074 (0.410)	Not supported

Panel C: Regression analysis by industry

Plantation	37	-0.246	-1.349 (0.095)	0.119	1.081 (0.382)	Supported
Properties	35	0.025	0.272 (0.394)	0.314	3.439 (0.020)	Not supported

5.9 CHAPTER SUMMARY

The results of the univariate tests on the association between DA and MUSLIM are mixed. T-tests run on these variables using all the four models for estimating DA, i.e., the Healy, DeAngelo, Jones, and Modified Jones models, indicate consistently that there is no difference in DA between the Muslim and non-Muslim managed firms.

The nonparametric Mann-Whitney U tests run on the same variables show mixed results. The tests using the Healy and DeAngelo models of estimating DA indicate that there are significant differences in DA between the Muslim and non-Muslim managed firms, but the tests run using the Jones and Modified Jones models of estimating DA indicate that there is no difference.

I have also run a series of regressions on eight types of sample using each of the four measures of DA. The eight samples and models are (a) the full sample using three control variables in the regression model, i.e., management compensation plan, debt restrictions, and political costs, (b) the full sample using four control variables in the regression model, i.e., the three mentioned in (a) plus the absolute value of TA, (c) firms included in the Syariah Index, (d) firms excluded from the Syariah Index, (e) firms that have no change in the religious orientation of the CEO for five consecutive years, (f) firm groupings by quartiles of based on firm size, (g) firms based on year, i.e., 1997 and 1998, and (h) firms based on industry classifications. The subsample of firms based on industry classifications that had less then 25 observations are not included in the analyses. I have provided the full results for the first five samples and these results are discussed in detail, while the results for the remaining three samples are presented in summary form.

The findings from the univariate and multivariate tests are summarized below. Overall, the findings do not support H2. Out of 24 possible tests (not including

the firm size, year, and industry analyses), H2 is supported in only six of these tests. The findings for the 24 tests are summarized below:

TEST	HEALY MODEL	DEANGELO MODEL	JONES MODEL	MODIFIED JONES MODEL
T-test	Not supported	Not supported	Not supported	Not supported
Mann-Whitney	SUPPORTED	Not supported	Not supported	Not supported
The whole sample using 3 control variables	Not supported	Not supported	Not supported	Not supported
The whole sample using 4 control variables	SUPPORTED	Not supported	Not supported	SUPPORTED
The firms included in/excluded from the Syariah Index (joint test)	SUPPORTED	Not supported	Not supported	SUPPORTED
The firms that have no changes in CEO for 5 consecutive years	Not supported	SUPPORTED	Not supported	Not supported

The results of the tests on the subsamples based on quartiles of firm size, industry and year are also mixed.

There are a few possible reasons that could explain the results of no effect of religion on the management accounting choices decisions among Malaysian firms. First, it is possible that Muslim managers are less devoted to their religion and adhere less to the teachings of Islam. Probably, the managers are Western trained as the mainstream education system in Malaysia is similar to the British education system and religious teachings are incorporated as a minor subject.

Second, it is possible that both Muslim and non-Muslim managers are influenced by Islamic teachings as both the groups are exposed to the same

Malaysian business environment where, as discussed in chapter 3, Islamic influence is widespread.

Third, it is possible that the test is not robust enough to capture the effect of religion. The proxy used to MUSLIM variable, i.e., the religious orientation of the CEOs of the firms based on their names, may not be an accurate measure of religion. It would be better if future research analyses the depth of the manager's devotion in measuring MUSLIM. Last, it is possible that there are omitted variables that need to be included in the model.

The next chapter provides the concluding remarks.

CHAPTER 6
CONCLUDING REMARKS

6.0 INTRODUCTION

In this chapter, I (a) provide the summary to the study, (b) present the main findings, (c) discuss the implications of the study, (d) assess the contributions of the research project, (e) identify the limitations of the study, and (f) offer suggestions for further research in this area. This final chapter has four more sections. Section 6.1 presents a summary of the study and its main findings. Section 6.2 discusses the implications of the study's findings and considers the study's contribution to the literature. Section 6.3 identifies the limitations of the study, and the last section examines potential areas for further research.

6.1 SUMMARY OF THE STUDY AND MAIN CONCLUSIONS

The aim of this study is to examine the effect of religious orientation of managers on the earnings management behaviour and capital structure of the firm. Specifically, I examine whether the discretionary accruals and debt-equity ratios differ between Muslim managed and non-Muslim managed firms in Malaysia.

Prior studies examining factors affecting earnings management and capital structure have focused on economic determinants only. Prior studies on earnings management have focused on three determinants that affect managers' accounting decisions, i.e., management compensation plans, debt restrictions, and political costs, while prior studies on capital structure have focused on six determinants that affect firms' debt-equity ratios, i.e., tax rate, firm size, cost of financial distress, firm growth, cost of borrowing, and industry class. These studies have not considered other non-economic determinants.

In my study, I attempt to extend this research by examining whether the religious orientation of the managers, specifically Muslim or non-Muslim, has any influence on earnings management behaviour of managers and the capital structure of the firms. I discuss the role of Islam in depth before developing two hypotheses. I review Islam teachings and the five basic principles of Islam. Islam is a religion that does not separate religious deeds from politics, economics or social affairs. Islam encourages individuals to be involved in business but, at the same time, clearly lays down the law governing permissible and forbidden trade.

I select Malaysia as the setting for my tests and discuss the influence of Islam on the Malaysian business environment. The influences of Islam on the banking and insurance industries are clearly visible where Islamic products that avoid the involvement of usury are available to Muslim customers. Also, while there are no laws that favour Islam in Malaysian stock market, Islam plays an important role. This is evident with the computation of Syariah Index (an index computed based on companies that run businesses permitted under Islam) by the KLSE. In other industries, Muslims would be expected to voluntarily adhere to Islamic business practices.

I develop two hypotheses, i.e., the earnings management hypothesis and the debt hypothesis. The debt hypothesis predicts that the Muslim managed firms use less interest bearing debt and preference shares than the non-Muslim managed firms. I use both univariate and multivariate analyses to test the hypotheses. The results of the debt hypothesis can be summarised as follows. The univariate tests and the multivariate test show that the MUSLIM variable is not statistically significant. This indicates that the MUSLIM does not exert any influence on the firms' debt/equity ratios. Thus, Muslim managers and non-Muslim managers behave alike when issuing debt capital.

The second hypothesis is the earnings management hypothesis. This hypothesis predicts that the Muslim managed firms are less likely to manage earnings than the non-Muslim managed firms. I use similar univariate and multivariate analyses to study the effect of Islam. I run the test using four different models, namely the Healy's model, the DeAngelo's model, the Jones model, and the Modified Jones model.

The earnings management hypothesis predicts an inverse relationship between managers with an Islamic religious orientation and earnings management. The empirical results can be summarised as follows. MUSLIM (i.e., the hypothesised variable) is significant in (a) two of eight univariate tests and (b) five of 16 multivariate tests. Thus, on balance, the earnings management hypothesis is not supported.

6.2 Implications Arising And Contribution To The Literature

This study has two major conclusions. First, I find that Islam does not exert any influence on the capital structure of Malaysian firms. Second, I find that there is no difference between the earnings management of Muslim and non-Muslim managed firms. Together, it appears that Muslim managers and non-Muslim managers in Malaysia behave similarly.

On one hand, the results may reflect that religion does not influence behaviour, i.e., there are no results because there is no effect to detect. Alternatively, the test may not have the power to detect the phenomena for some of the limitations identified in section 6.3 below. In addition, there is also a possibility that both Muslim and non-Muslim managers are influenced by Islamic teaching since Islam permeates Malaysian society. Thus, it is possible that both groups take lower accruals than

their Western counterparts. A comparative study between managers in Malaysia and a Western country (e.g., New Zealand) could shed further light on this possibility.

This study contributes to the existing literature in several ways. First, my study has investigated the effect a non-economic motive, i.e., religion, on capital structure and earnings management practices. In line with the growing interest in research in behavioural finance, this study recognises that decision-making cannot be explained only by economic motives. Moreover, because the positive accounting research is mature, it is unlikely that researchers will uncover any new insight unless a broader view is taken. Thus, this study opens up new avenues for future research linking earnings management practices to other non-economic influences (e.g., culture and psychological factors).

Second, previous studies on earnings management have primarily been carried out in Western countries (primarily in the US), but very little is known about the validity of these theories in non-Western environments. This study examines the capital structure decisions and earnings management practices in Malaysia. Thus, this study enriches the literature on the economic incentives affecting managers outside Western countries. This by itself is an important contribution.

Third, it provides a comprehensive test of the relationship between accruals and the three determinants of opportunistic earnings management practices. Prior studies have generally investigated accruals by focusing on each of the three determinants separately. My study investigates the effect of these three determinants collectively and, in doing so, reduces the possibility of omitted variables. Thus, this approach could be used in future research where researchers want to examine new determinants (e.g., non-economic motives) in a relatively controlled environment.

Fourth, my study is a non-event based study. Previous studies are based on an occurrence of an event (e.g., violation of a debt covenant) while my study is not aligned to any special event. It is normal for any individuals, including managers, to react to certain changes in the business environment. Thus, my study contributes to the literature by examining the impact of an on-going or permanent influence on managerial behaviour (i.e., the manager's religious beliefs).

6.3 LIMITATIONS OF THE STUDY

The conclusions drawn from this study are constrained by five caveats. First is the measurement error in operationalising the MUSLIM variable. For example, MUSLIM is measured dichotomously. This treats all managers as having the same degree of devoutness to their religion. However, in reality, some managers – whether Muslim or non-Muslim – will have stronger beliefs and be more likely to follow religious doctrine than other managers who adhere to the same religion.

Likewise, the sample is split into Muslim and non-Muslim groups only. As the other faiths are lumped into one group (i.e., non-Muslim), it is possible that this creates a confounding effect on the results. For example, non-Muslim managers of one religion (e.g., Christians) may use more or less accruals than another group of non-Muslim managers (e.g., Hindus). This would introduce noise into the MUSLIM variable and reduce the power of the tests.

The second caveat also related to measurement errors is that the model used to test for earnings management contains several simplifying assumptions. The non-discretionary portion of accruals is seen as being determined by the change in sales and the fixed asset balance. However, this is overly simplistic and other factors (e.g., intangible assets) might affect nondiscretionary accruals as well. Likewise, the models developed to detect earnings management (which are consistent with

most previous studies) use simple time-series process. However, it is possible that these simple models are not robust enough to capture the complex process by which accruals are generated.

The third caveat is the possibility of measurement error related to the control variables, e.g., MCOMP, DEBT, and FSIZE. For example, firm size has been widely criticized as a proxy for political costs (e.g., Cahan, 1992). Also, unlike Healy (1985), MCOMP does not incorporate the exact parameters of the bonus plans.

The fourth caveat is related to omitted variables in regression models. For example, Becker *et al.* (1998) find that auditor quality has an impact on discretionary accruals. Xie *et al.* (2002) find board composition has an impact on accruals. Teoh *et. al.* (1998a) find that firms making seasoned equity offers are more likely to manage earnings. Thus, a more complete model of the factors influencing accruals might be needed to detect the effect of religion.

The fifth caveat is related to the generalisability of the results. For example, the sample omits financial institutions so the results cannot be extended to this sector. Likewise, as the first study in this area, it is not clear if the results can be generalised to other countries where Islam is the predominant religion (e.g., Saudi Arabia, Egypt).

6.4 SUGGESTIONS FOR FUTURE RESEARCH

Based on this study, there are many avenues for future research. First, the comparison of countries with different religious backgrounds would complement this study. For example, a comparative study between a country that Islamic

orientation (such as Malaysia) and a country that has a Christian orientation (such as the US) might provide a more pronounced difference between the two religions.

Second, future studies could employ a multidisciplinary approach. For example, an earnings management study focusing on other cultural dimensions identified by Hofstede's (1980) would allow an examination of a broader set of non-economic factors. For example, a study incorporating the power-distance dimension would allow researchers to investigate whether more authoritarian cultures have more or less incentive to manage earnings.

Lastly, future research could benefit by more refinement of the religion variable. While I initially attempted to measure the devoutness of Muslim and non-Muslim managers in Malaysia by questionnaire, I had to abandon this approach because of a very low response rate. However, a continuous measure of religion would provide a more powerful and robust test so future researchers might want to reconsider this approach.

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APPENDIX A

LIST OF SAMPLE FIRMS

No.	Company Name	Industry
1	ADVANCE SYNERGY BHD	Investment Holdings
2	AJINOMOTO (MALAYSIA) BHD	Food, Beverage & Tobacco
3	ALUMINIUM COMPANY OF MALAYSIA BHD	Industrial Products
4	AMALGAMATED INDUSTRIAL STEEL BHD	Building Material
5	AMSTEEL CORPORATION BHD	Building Material
6	ANSON PERDANA BHD	Properties
7	ANTAH HOLDINGS BHD	Investment Holdings
8	AOKAM PERDANA BHD	Building Material
9	ARAB-MALAYSIAN CORPORATION BHD	Investrnent Holdings
10	ARUS MURNI CORPORATION BHD	Trading & Services
11	ASIA PACIFIC LAND BHD	Properties
12	ASIAN PAC HOLDINGS BHD	Securities Investment
13	ASIATIC DEVELOPMENT BHD	Plantation
14	AUSTRAL AMALGAMATED TIN BHD	Properties
15	AUSTRAL ENTERPRISES BHD	Plantation
16	AYER HITAM TIN DREDGING M'SIA BHD	Properties
17	AYER MOLEK RUBBER CO BHD, THE	Plantation
18	BANDAR RAYA DEVELOPMENTS BHD	Properties
19	BATU KAWAN BHD	Plantation
20	BERJAYA GROUP BHD	Investment Holdings
21	BERJAYA SPORTS TOTO BHD	Gaming
22	BERJUNTAI TIN DREDGING BHD	Mining
23	BOLTON BHD (BOLTON PROPERTIES)	Properties
24	BOUSTEAD HOLDINGS BHD	Investment Holdings
25	BRITISH AMERICAN TOBACCO (M) BERHAD	Food, Beverage & Tobacco
26	BUKIT KATIL RESOURCES BHD	Plantation
27	C.I.HOLDINGS BHD	Building Material
28	CAMERLIN GROUP BHD	Building Material
29	CARLSBERG BREWERY MALAYSIA BHD	Food, Beverage & Tobacco
30	CEMENT INDUSTRIES OF MALAYSIA BHD	Building Material
31	CHEMICAL COMPANY OF MALAYSIA BHD	Industrial Products
32	CHIN TECK PLANTATIONS BHD	Plantation
33	CHOCOLATE PRODUCTS (MALAYSIA) BHD	Food, Beverage & Tobacco
34	CONSTRUCTION AND SUPPLIES HOUSE BHD	Building Material
35	CSM CORPORATION BHD	Food, Beverage & Tobacco
37	DATUK KERAMAT HOLDINGS BHD	Trading & Services
38	DMIB BHD	Industrial Products

39	DUTCH BABY MILK INDUSTRIES (M) BHD	Food, Beverage & Tobacco
40	EASTERN & ORIENTAL BHD	Properties
41	FA PENINSULAR BHD	Investment Holdings
42	FACB RESORTS BHD	Properties
43	FCW HOLDINGS BHD	Industrial Products
44	FEDERAL FLOUR MILLS BHD	Food, Beverage & Tobacco
45	FIMA CORPORATION BHD	Properties
46	FRASER & NEAVE HOLDINGS BHD	Food, Beverage & Tobacco
47	GADEK (MALAYSIA) BHD	Consumer Products
48	GENERAL CORPORATION BHD	Construction
49	GENTING BHD	Gaming
50	GEORGE TOWN HOLDINGS BHD	Retailing
51	GLENEALY PLANTATIONS (M) BHD	Plantation
52	GOLDEN HOPE PLANTATIONS BHD	Plantation
53	GOPENG BHD	Building Material
54	GULA PERAK BHD	Plantation
55	GUTHRIE ROPEL BHD	Plantation
56	HAP SENG CONSOLIDATED BHD	Trading & Services
57	HEXZA CORP BHD	Industrial Products
58	HICOM HOLDINGS BHD	Industrial Products
59	HONG LEONG INDUSTRIES BHD	Consumer Products
60	HONG LEONG PROPERTIES BHD	Properties
61	HUME INDUSTRIES (MALYSIA) BHD	Building Material
62	I-BHD	Consumer Products
63	IGB CORPORATION BHD	Properties
64	INCH KENNETH KAJANG RUBBER PLC	Plantation
65	INNOVEST BHD	Properties
66	INSAS BHD	Securities Investment
67	IOI CORPORATION BHD	Plantation
68	IOI PROPERTIES BHD	Properties
69	JAYA TIASA HOLDINGS BHD	Industrial Products
70	JOHAN HOLDINGS BHD	Trading & Services
71	KAMUNTING CORPORATION BHD	Trading & Services
72	KECK SENG (MALAYSIA) BHD	Building Material
73	KELANAMAS INDUSTRIES BHD	Food, Beverage & Tobacco
74	KEMAYAN CORPORATION BHD	Properties
75	KHONG GUAN HOLDINGS MALAYSIA BHD	Food, Beverage & Tobacco
76	KIAN JOO CAN FACTORY BHD	Industrial Products
77	KINTA KELLAS PUBLIC LTD CO	Trading & Services
78	KLUANG RUBBER CO (M) BHD	Plantation
79	KRAMAT TIN DREDGING BHD	Building Material
80	KUALA LUMPUR INDUSTRIES HOLDING BHD	Properties
81	KUALA LUMPUR KEPONG BHD	Plantation
82	KUALA SIDIM BHD	Plantation
83	KUCHAI DEVELOPMENT BHD	Mining

84	KULIM (M) BHD	Plantation
85	KUMPULAN EMAS BHD	Trading & Services
86	LARUT CONSOLIDATED BHD	Properties
87	LIEN HOE CORPORATION BHD	Properties
88	LINGUI DEVELOPMENTS BHD	Plantation
89	LION CORPORATION BHD	Building Material
90	MAGNUM CORPORATION BHD	Gaming
91	MALAYAN CEMENT BHD	Building Material
92	MALAYAN FLOUR MILLS BHD	Food, Beverage & Tobacco
93	MALAYAN UNITED INDUSTRIES BHD	Investment Holdings
94	MALAYAWATA STEEL BHD	Building Material
95	MALAYSIAN AIRLINE SYSTEM BHD	Transportation
96	MALAYSIAN GENERAL INVESTMENT CORP. BHD	Securities Investment
97	MALAYSIAN MOSAICS BHD	Trading & Services
98	MALAYSIAN OXYGEN BHD	Industrial Products
99	MALAYSIAN PLANTATIONS BHD	Trading & Services
100	MALAYSIAN RESOURCES CORPORATION BHD	Investment Holdings
101	MALAYSIAN TOBACCO COMPANY BHD	Food, Beverage & Tobacco
102	MATSUSHITA ELECTRIC CO (M) BHD	Consumer Products
103	MBF HOLDINGS BHD	Investment Holdings
104	MCB HOLDINGS BERHAD	Properties
105	MEGA FIRST CORPORATION BHD	Mining
106	MENANG CORPORATION (M) BHD	Properties
107	MENTAKAB RUBBER CO (M) BHD	Plantation
108	MMC ENGINEERING GROUP BHD	Trading & Services
109	MUDA HOLDINGS BHD	Industrial Products
110	MUI PROPERTIES BHD	Properties
111	MULPHA INTERNATIONAL BHD	Trading & Services
112	MULTI-PURPOSE HOLDINGS BHD	Investment Holdings
113	MYCOM BHD	Gaming
114	NEGARA PROPERTIES (M) BHD	Properties
115	NEGRI SEMBILAN OIL PALMS BHD	Plantation
116	NEW STRAITS TIMES PRESS (M) BHD, THE	Publishing & Media
117	NORTH BORNEO CORPORATION BHD, THE	Plantation
118	ORIENTAL HOLDINGS BHD	Consumer Products
119	PALMCO HOLDINGS BHD	Industrial Products
120	PAN MALAYSIA CORPORATION BHD	Building Material
121	PAN MALAYSIA INDUSTRIES BHD	Trading & Services
122	PANGLOBAL BHD	Properties
123	PARAMOUNT CORPORATION BHD	Properties
124	PARIT PERAK HOLDINGS BHD	Plantation
125	PELANGI BHD	Properties
126	PERLIS PLANTATIONS BHD	Food, Beverage & Tobacco
127	PETALING GARDEN BHD	Properties

128	PETALING TIN BHD	Mining
129	PILECON ENGINEERING BHD	Construction
130	PJ DEVELOPMENT HOLDINGS BHD	Construction
131	PROMET BHD	Construction
132	RAHMAN HYDRAULIC TIN BHD	Mining
133	RENONG BHD	Investment Holdings
134	RIVERVIEW RUBBER ESTATES BHD	Plantation
135	SARAWAK ENTERPRISE CORPORATION BHD	Investment Holdings
136	SATERAS RESOURCES (MALAYSIA) BHD	Properties
137	SCB DEVELOPMENTS BHD	Properties
138	SEAL INCORPORATED BHD	Industrial Products
139	SELANGOR DREDGING BHD	Properties
140	SELANGOR PROPERTIES BHD	Properties
141	SETRON (MALAYSIA) BHD	Consumer Products
142	SHELL REFINING CO (F.O.M) BHD	Industrial Products
143	SIME UEP PROPERTIES BHD	Properties
144	SIN HENG CHAN (MALAYA) BHD	Food, Beverage & Tobacco
145	SITT TATT BHD	Industrial Products
146	SJA BERHAD	Transportation
147	SOUTH MALAYSIA INDUSTRIES BHD	Properties
148	SPK SENTOSA CORPORATION BHD	Properties
149	SUNGEI BAGAN RUBBER COMPANY	Plantation
150	SUNWAY HOLDINGS INCORPORATED BHD	Construction
151	TAIPING CONSOLIDATED BHD	Properties
152	TALAM CORPORATION BHD	Properties
153	TAN CHONG MOTOR HOLDINGS BHD	Consumer Products
154	TANJONG PLC	Gaming
155	TASEK CORPORATION BHD	Building Material
156	TDM BHD	Plantation
157	TECHNOLOGY RESOURCES INDUSTRIES	Trading & Services
158	TONGKAH HOLDINGS BHD	Industrial Products
159	TRACTORS MALAYSIA HOLDINGS BHD	Industrial Products
160	TRONOH MINES MALAYSIA BHD	Mining
161	UAC BHD	Building Material
162	UNIPHONE TELECOMMUNICATIONS BHD	Trading & Services
163	UNITED ENGINEERS (M) BHD	Construction
164	UNITED MALACCA RUBBER ESTATES BHD, THE	Plantation
165	UNITED PLANTATIONS BHD	Plantation
166	WESTMONT LAND (ASIA) BHD	Plantation
167	WIJAYA BARU GLOBAL BHD	Industrial Products
168	WORLDWIDE HOLDINGS BHD	Properties
169	WTK HOLDINGS BHD (SAMANDA HOLDINGS)	Industrial Products
170	YEO HIAP SENG (M) BHD	Food, Beverage & Tobacco

APPENDIX B

RESULTS OF MULTIVARIATE REGRESSION ANALYSIS FOR THE DEBT HYPOTHESIS USING TOP THREE MANAGERS AS A PROXY FOR MUSLIM

The following is the regression model: DEBT = β_0 + β_1 MUSLIM + β_2 NOL + β_3 SIZE + β_4 Z-SCORE + β_5 GROWTH + β_6 COLLATERAL + β_7 IND1 +..... +β_{19} IND13 + ε. The dependent variable, DEBT, in the regression is the debt/equity ratio which is measured by dividing book value of preference shares and debt to the value of book value of preference shares, debt, and market value of equity. The test variable in the regression is MUSLIM and is a dichotomous measure equal to 1 if a majority of the top three managers in a firm are Muslims, otherwise 0. The control variables are NOL, SIZE, ZSCORE, GROWTH, COLLATERAL, and IND. NOL is a dummy variable equal to 1 if the firm has any losses carried forward, otherwise 0. SIZE is measured by the natural log of sales. ZSCORE is computed by the modified Z-score formula of 3.3(EBIT/ASSET) + 1.0(REV/ASSET) +1.4(RE/ASSET) + 1.2(WC/ASSET). GROWTH is measured by market value of equity to book value of equity. COLLATERAL is computed by dividing net property, plant and equipment divided with the total assets. IND1–IND13 are dummy variables used to represent the 14 industries in the sample. For economy, the coefficients for the industry variables are not tabulated below The model is estimated using a sample of 943 firm-year observations related to firms listed on the KLSE continuously over the period 1987-1998. Significance levels are based on one-tail tests.

	Predicted signs	Coefficient	t-value	Significance	Variance Inflation Factor
Intercept	?	-0.280	-4.186	0.000	-
MUSLIM	-	0.020	1.113	0.129	1.100
NOL	-	0.213	12.167	0.000	1.099
SIZE	+	0.036	9.258	0.000	1.401
Z-SCORE	+	-1.002	-1.424	0.078	1.166
GROWTH	-	-0.000	-2.491	0.007	1.068
COLLATERAL	+	-0.019	-1.126	0.130	1.156
R—square			0.292		
Adjusted R-square			0.277		
F-value			20.004		
Significance			0.000		
Durbin-Watson Statistics			1.830		
Number of observations			943		
Support for hypothesis			NOT SUPPORTED		

APPENDIX C

RESULTS OF MULTIVARIATE REGRESSION ANALYSIS FOR THE DEBT HYPOTHESIS USING CEO AS A PROXY FOR MUSLIM AND TOBIN-Q AS A PROXY FOR FIRM GROWTH

The result of the multivariate regression analysis. The following is the regression model: $DEBT = \beta_0 + \beta_1$ MUSLIM $+ \beta_2$ NOL $+ \beta_3$ SIZE $+ \beta_4$ Z-SCORE $+ \beta_5$ GROWTH $+ \beta_6$ COLLATERAL $+ \beta_7$ IND1 $+ \ldots . + \beta_{19}$ IND13 $+ \varepsilon$. The dependent variable, DEBT, in the regression is the debt/equity ratio which is measured by dividing book value of preference shares and debt to the value of book value of preference shares, debt, and market value of equity. The test variable in the regression is MUSLIM and is a dichotomous measure equal to 1 if the firm is Muslim managed, otherwise 0. The control variables are NOL, SIZE, ZSCORE, GROWTH, COLLATERAL, and IND. NOL is a dummy variable equal to 1 if the firm has any losses carried forward, otherwise 0. SIZE is measured by the natural log of sales. ZSCORE is computed by the modified Z-score formula of 3.3(EBIT/ASSET) + 1.0(REV/ASSET) +1.4(RE/ASSET) + 1.2(WC/ASSET). GROWTH is measured using the approximate q-ratio defined by Chung and Pruitt (1994); The approximate q-ratio is computed by taking the total book value of preferred stock and market value of equity and book value of long term debt and book value of net short term liabilities divided by total assets. COLLATERAL is computed by dividing net property, plant and equipment divided with the total assets. IND –IND13 are dummy variables used to represent the 14 industries in the sample. For economy, the coefficients for the industry variables are not tabulated below The model is estimated using a sample of 1595 firm-year observations related to firms listed on the KLSE continuously over the period 1987-1998. Significance levels are based on one-tail tests.

	Predicted signs	Coefficient	t-value	Significance	Variance Inflation Factor
Intercept	?	-0.040	-0.557	0.289	-
MUSLIM	-	0.012	1.066	0.143	1.084
NOL	-	0.108	8.817	0.000	1.107
SIZE	+	0.016	5.047	0.000	1.352
Z-SCORE	+	-0.000	-1.704	0.045	1.035
GROWTH	-	-0.000	-3.790	0.000	1.394
COLLATERAL	+	0.002	2.434	0.008	1.344
R—square			0.152		
Adjusted R-square			0.141		
F-value			14.820		
Significance			0.000		
Durbin-Watson Statistics			1.108		
Number of observations			1595		
Support for hypothesis			NOT SUPPORTED		