

**EARNINGS MANAGEMENT AND
FORECAST ACCURACY:
A STUDY OF MALAYSIAN
INITIAL PUBLIC OFFERINGS**

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Declaration

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ABSTRACT

This thesis explores the link between earnings management and forecast accuracy in the context of Malaysian IPO's following a revision of the regulation on earnings forecast disclosure made in 1996. The study involves three different stages. The first stage examines the accuracy of earnings forecasts contained in the IPO prospectuses of Malaysian companies seeking listing from 1996 to December 2002. The second stage of study provides evidence of positive discretionary accrual in financial statements of IPO issuers in the year of IPO, and in the 3 year period following the IPO. Finally, a correlation study examines the link between earnings management and forecast error and other variables representing unexpected change in economic condition and company specific characteristics.

The results from the first stage of study indicate that Malaysian IPO companies on average have a negative forecast error, indicating positive bias in their forecast. Multivariate results indicate that regulation of earnings forecast disclosure has no significant impact on accuracy but that economic condition, management optimism, and auditor reputation have. The second stage, studying earnings management on a sample of IPO 1996, 1998 and 2000 regulated companies, provides evidence consistent with the prediction that managers of Malaysian IPO companies manage earnings upwards in the year of forecast issuance, or in the year the company make their forecasts. The study also provides evidence that managers continue to manage earnings during the period after listing, so long as there is continuing regulatory scrutiny.

The findings of the final stage of study provide evidence of a significant association between earnings management and the relative size and direction of forecast error, after controlling for other expected associations. The regression results reveal that earnings management of Malaysian IPO companies is associated with forecast error, the changes in economic condition represented by a recovery and crisis period, company age and management ownership.

The study makes a contribution in terms of understanding the nature of earnings management at the time of an IPO and in particular providing empirical evidence on the link between the forecast error and the extent of earnings management. The result shows that managers appear to manage earnings upwards significantly during the economic crisis and recovery period in order to match or come closer to the forecast made in the prospectus. In a highly concentrated ownership, the actions of IPO managers appear to be contrary to the assumption of agency theory. It is speculated that managers of IPO companies are managing their earnings upwards and reporting towards meeting their forecasts in order to manage their legitimacy and to establish their company's good reputation. This is because, as newly listed companies, they are under close market scrutiny and are under great pressure to meet the projections made to investors.

LIST OF ABBREVIATIONS AND ACRONYMS

AFE	Absolute forecast error
CEO	Chief Executive Officer
CFO	Chief Financial Officer
CLERP	Corporate Law Economic Reform Program
DA	Discretionary accrual
DCA	Discretionary current accruals
DS	DataStream
EM	Earnings management
FE	Forecast error
GAAP	Generally Accepted Accounting Principles
GDP	Growth domestic product
HK	Hong Kong
IPO	Initial Public Offerings
ITC	International Trade Commission
KLCI	Kuala Lumpur Composite Index
KLSE	Kuala Lumpur Stock Exchange
OLS	Ordinary least square
MER	Malaysia Economic Report
MIDF	Malaysian Industrial Development Finance Berhad
NZ	New Zealand
PPE	Plant, property and equipment
REV	Revenue
REC	Receivable
SC	Securities Commission
SD	Standard deviation
SEC	Securities Exchange Commission
SEO	Seasoned equity offerings
USM	Unlisted securities market
UK	United Kingdom
US	United States
VIF	Variance Inflation Factor

CHAPTER 1: INTRODUCTION, MOTIVATION, OBJECTIVES AND STRUCTURE OF THE THESIS

1.1 Introduction

Information asymmetry between management and potential investors is a major uncertainty for investors when deciding whether or not to subscribe to a new issue. Research on this subject and that of signalling, suggests forecasts disclosure can be useful in conveying news about company value (Pattel, 1976; Penman, 1980; Waymire, 1984; Lev and Penman, 1990). In view of the usefulness of IPO earnings forecasts, a crucial factor for investors is the accuracy or credibility of these earnings forecasts.

Because of the usefulness of forecast information for investment decisions, there have been a number of studies carried out on the accuracy, and factors associated with the accuracy, of IPO earnings forecasts disclosed in different countries. The accuracy of IPO earnings forecasts has been studied in Australia (Lee et al., 1993); Canada (Pedwell et al., 1994); France (Chahine, 2004); Hong Kong (Jaggi, 1997; Cheng and Firth 2000; and Chen et al., 2001); Malaysia (Mohammad et al., 1994; Jelic et al., 1998); New Zealand (Firth and Smith, 1992); Singapore (Firth et al., 1995); the UK (Dev and Webb, 1972); and a comparison of the UK, Australia and New Zealand (Keasey and McGuinness, 1991). Although much attention has been given to the study of the extent of accuracy, and company characteristics influencing management in the meeting of earnings forecasts, more research is needed to reveal those external factors which can influence accuracy, particularly within the regulated regimes of developing countries.

Earnings forecasts are hypothesised to be a signal of company value, and the accuracy of these forecasts may be used to explain post-listings returns. Firth (1998) suggests that earnings forecasts are a major signal of IPO value and that they are more important than other signalling mechanisms, such as retained share ownership of the entrepreneurs. However, in order for the forecasts to be useful, they need to be accurate. In recognition

of the importance of earnings forecasts for IPO value, the Securities Commission has made it mandatory that any prospectus issued by Malaysian companies should include an estimate of future profits of at least the current year. In 1996 the market came under additional regulatory intrusion, requiring promoters of companies in certain industries to provide a guarantee to achieve at least 90% of forecasted earnings made in the prospectuses¹.

Healey and Wahlen (1999) suggest that management's use of judgement in the reporting of financial information creates opportunities for earnings management. Therefore, it would be of interest to investors to know whether managers manage their reported earnings through the use of discretionary accruals.

1.2 Motivations of study

A previous study on Malaysian IPO forecast accuracy made by Jelic et al. (1998), covers the period from 1984 to 1995. The revised regulation introduced in 1996 (see Section 3.6 of Chapter 3) governing profit guarantees in IPOs, gives an opportunity to investigate whether a new regulation introduced to improve accuracy in forecast disclosure may also affect management behaviour in meeting the expectation of regulators. The Asian financial crisis of 1997-1998 (see Section 3.7 of Chapter 3) changed the landscape of the IPO market in Malaysia. These considerations provide the motivation to explore the impact of regulation that has applied to IPO forecasts since 1996, and the impact of the economic crisis that hit Malaysia in mid-1997.

In presenting financial reports within Generally Accepted Accounting Principles (GAAP), managers can use accounting judgement to make financial reports more informative for users. Managers can then use their knowledge about the business, and its opportunities, to select reporting methods, estimates, and disclosures that match the

¹ SC Prospectus Guidelines (SC, 1995)

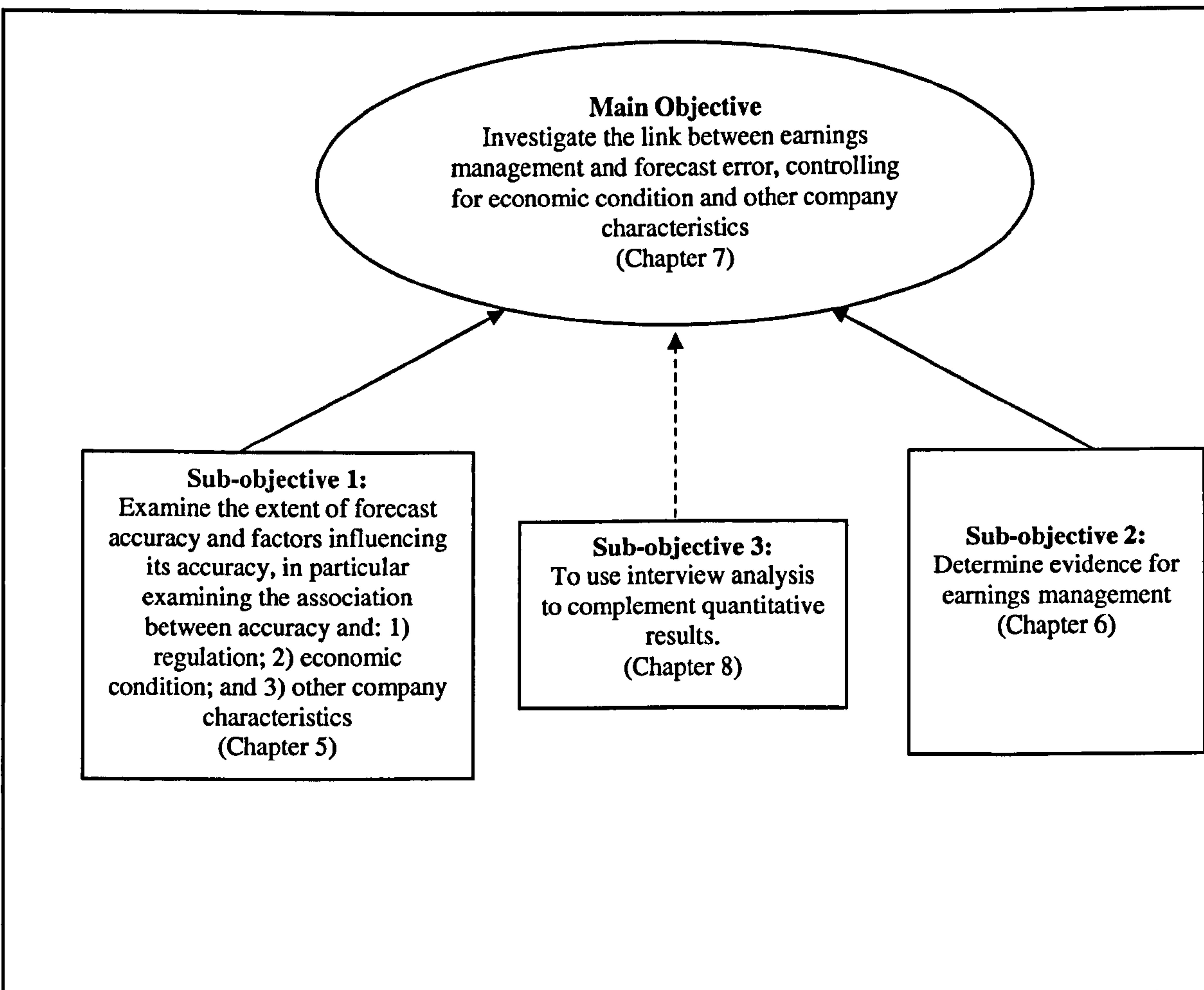
business economics of their company. However, because auditing is imperfect, management's judgement also creates opportunities for earnings management, whereby managers choose reporting methods and estimates which do not accurately reflect their company's underlying economics (Healy and Wahlen, 1999). This provides the motivation to look for evidence of earnings management in financial statements of IPO issuers in the year of the IPO. Jelic et al. (1998) in their study of forecast accuracy of Malaysian IPO companies suggests that further research can be undertaken to investigate whether managers have acted to improve accuracy by manipulating reported profits. The study of earnings management in different economic conditions also allows this research to observe whether the pattern of IPO companies' discretionary accruals is independent of changes in economic condition.

Empirical research into the motives behind earnings management, and the influence of, for example changing economic conditions, showed that there are various reasons why companies managed their reported earnings (Jones,1991; Aharony, 1993; Friedlan, 1994; Navissi, 1999; Teoh et al., 1998a,b; Roosenboom et al., 2003, 2005; Jaggi et al., 2006). Later studies on earnings management looked for evidence on the factors that can be associated with earnings management behaviour (Peasnell et al., 2005; Davidson et al., 2005; Cheng and Warfield, 2005) in the UK, Australia and the US respectively. These studies focus mainly on testing the impact of corporate governance characteristics as a means of constraining earnings management behaviour in developed countries. They show that there is an opportunity to contribute to current knowledge by identifying other company specific-factors influencing earnings management, especially in a developing country. A more rigorous analysis, linking earnings management and forecast error with other company specific characteristics as control variables, will add to the existing literature of forecast accuracy and earnings management.

1.3 Research objectives

The main objective of this research study is, using statistical and interview methods, to explore the link between earnings management and forecast accuracy in the regulated regime of a developing market, and in doing so to make contribution to existing knowledge of this subject. The objectives, sub-objectives and respective chapters covering the objectives of the study are shown in Figure 1-1.

Figure 1-1: Objectives of research study



The objectives of the study are further explained as follows:

Main objective: To make a contribution to knowledge in exploring the link between earnings management and forecast error, controlling for economic condition and other company characteristics

The regulation for meeting at least 90% of forecasted earnings made in IPO prospectus (imposed by Securities Commission on IPO companies that became effective in January 1996), was expected to improve the accuracy of earnings forecasts made by companies. The new regulation was also expected to have an impact on the behaviour of companies when reporting their financial report. In expanding the contribution of the study of forecast accuracy and earnings management, this research attempts to examine whether companies engage in earnings management when reporting their income in order to meet the regulation. To achieve the main objective, an earnings management model is tested using OLS regression with dependent variable of discretionary accruals and independent variables of forecast error, economic conditions and corporate characteristics. The research is then split into two sub-objectives, outlined below.

Sub-objective 1: To evaluate the extent of forecast accuracy of mandatory earnings forecasts disclosure during the period of revised regulation and the period of financial crisis in mid-1997 in particular, to determine if there is a significant association between forecast accuracy and regulation, and economic conditions controlling for other corporate characteristics following the revised regulation in 1996 and economic crisis in 1997

The first sub-objective is to investigate the accuracy of management earnings forecasts issued by Malaysian IPO applicants companies following the revised regulation applied to all IPO forecasts since 1996. Comparisons are made to prior research by Jelic et al. (1998). The introduction of regulation requiring the substantial shareholders and promoters of companies in regulated industries to either opt for a moratorium to be

imposed on disposal of their shares in the applicant companies, or to provide a profit guarantee of 90% of the forecast earnings as stated in the prospectus, is expected to result in greater accuracy for regulated companies than for non-regulated companies. The accuracy of forecasts for regulated companies is compared with the results of non-regulated companies. The impact of economic condition will be examined, based on the results of forecast accuracy made by companies in three different economic periods. The findings will contribute towards assessing the effectiveness of regulation in improving forecast accuracy and understanding the impact of economic changes on accuracy in a developing country. Ordinary least square (OLS) regression analysis is used in determining the factors which may have significantly influenced the accuracy of forecast made in company prospectus

Sub-objective 2: To determine if there is evidence of earnings management in financial statements of IPO issuers in the year of IPO, and the subsequent regulated years

The second sub-objective is to determine if regulated IPO companies manage their earnings in meeting their earnings forecasts. This objective is met by empirical result of discretionary accruals for examined regulated companies in three economic conditions. The findings will contribute towards understanding the impact of regulation on earnings management behaviour.

Sub-objective 3: To use interview responses to complement results from quantitative analysis

Perception of influential market participants (company's management, financial analysts and regulator) are investigated to provide further insights into issues related to the behaviour of preparers, and the use and credibility of accounting information disclosed in the prospectuses. This specific objective is approached by conducting semi-structured interview research based on the above-mentioned research objectives. This investigation

allows for an extension of the conclusion that may be performed from the previous two objectives, and assessed using interview analysis.

1.4 Research questions and methods

The research questions of the study are formed based on the research objectives reported in Section 1.3 above. These research questions are presented in Table 1-1.

Table 1-1: Research objective, research question, and methods of investigation

Research objective	Research question	Methods of investigation
<p>Main objective: To make a contribution to knowledge in exploring the link between earnings management and forecast accuracy.</p>	<p>RQ1. Is there a significant association between discretionary accruals and the magnitude and direction of forecast error, controlling for other factors in the year the company make forecast?</p>	<p>Ordinary least square regression analysis with discretionary accruals as dependent variable.</p>
<p>Sub-objective 1: To evaluate the extent of forecast accuracy of mandatory earnings forecasts disclosure during the period of revise regulation and the period of financial crisis in mid 1997. In particular to examine the impact of regulation, economic condition and other corporate characteristics on forecast accuracy following the revised regulation in 1996 and economic crisis in 1997.</p>	<p>RQ2 (a). What is the extent of forecast accuracy? RQ2 (b). Is there a significant association between: 1) Forecast accuracy and regulation? 2) Forecast accuracy and economic condition? 3) Forecast accuracy and corporate characteristics?</p>	<p>1. Calculation of forecast error and absolute forecast error of examined companies. 2. OLS regression with absolute forecast error as dependent variable and regulation, economic condition and corporate characteristics as independent variables.</p>
<p>Sub-objective 2: To determine if there is evidence of earnings management in financial statements of IPO issuers in the year of IPO and the subsequent regulated years.</p>	<p>RQ3. Is there evidence of positive discretionary accruals in financial statements of IPO issuers in the year of issues?</p>	<p>Calculation of discretionary accruals and statistical testing for relevant years.</p>
<p>Sub-objective 3: To use interview responses in providing further insights to complement quantitative analysis.</p>	<p>RQ4. What are the perceptions of regulator and market participants on issues related to accuracy and earnings management?</p>	<p>Interview analysis.</p>

1.5 Methodology and method

This study adopts the positivist research paradigm using a hypothetico-deductive methodology to determine variables that are significant in influencing the level of accuracy of earnings forecast made by the management of Malaysian IPO companies. The deductive approach moves from a general statement to a conclusion of a particular study. It will focus on facts and look for a relationship between variables. It begins explicitly with a tentative hypothesis, or set of hypotheses, that form a theory, which could provide a possible answer or explanation for a particular problem, followed by observations to test the hypotheses. Hypotheses are developed based on prior empirical findings and theoretical framework. These hypotheses are tested using multiple regression analysis. Testing the hypotheses could provide proof of a relationship between 1) accuracy and company characteristics and 2) earnings management and forecast error.

A multivariate design method is chosen, because in this study I am testing a theory that relates regulation and company characteristics to forecast accuracy. Use of a multivariate design method will allow me to determine which company characteristics variable best explains forecast accuracy. This method is widely used in social and natural science research, and specifically in the studies investigating the relationship between independent and dependent variables.

The hypothetico-deductive method is the most suitable method for my research because I am testing a pre-determined hypothesis and the general theory in a specific set of samples. From the data collected, the relationship between data has been established based on factual or statistical evidence. This method offers a research design that can be scientifically tested, and which can easily be replicated in other contexts, as well as a mechanism for assuring validity of the results. With a sufficient number of samples (and based on experimental evidence), the results obtained can be generalised to other studies with similar economic conditions. In understanding the behaviour and perception of

market participants, data will be gathered from respondents using semi-structured, open-ended question interviews.

The study involves three different stages. The first stage examines the accuracy of earnings forecasts contained in the IPO prospectuses of Malaysian companies seeking listing over the period January 1996 to December 2002. The second stage of study seeks to find evidence of positive discretionary accrual in the financial statements of IPO issuers in the year of IPO and in the three year period following the IPO. Finally, a correlation study examines the link between earnings management and forecast error and other variables representing unexpected change in economic conditions and company specific characteristics.

This study uses primary and secondary sources of data from published accounts stock market data. Research on primary sources consists of an examination of company prospectuses and annual reports published by those companies listed on the Bursa Malaysia. Data from secondary sources was obtained from DataStream database. Opinions from influential market participant were sought through semi-structured interviews.

The examined companies consist of companies listed on the main board and second board of Bursa Malaysia² in year 1996 to 2002, subject to the availability of prospectuses, and annual reports. For reasons of comparability, and consistent with other research studies (Jelic et al., 1998, Chan et al. 1996, Jaggi, 1997, Cheng and Firth, 2000, Brown et al., 2000, Lonkani and Firth, 2005), financial and financial related companies are excluded from the sample. The final number of companies examined for the forecast accuracy study is 242 (see Table 4-1 in Chapter 4), with 104 companies scrutinised for earnings management study (see Table 4-9 in Chapter 4).

² Formerly known as Kuala Lumpur Stock Exchange (KLSE)

Interviews were used in order to gain further insights into understanding the importance of forecasts accuracy made by IPO companies, and the factors affecting these. Interviews findings were used as an external validation to back up the quantitative findings. Interviewees consisted of those market participants who were in a position to influence forecast made in the prospectus, i.e. company directors, regulator, and financial analyst.

1.6 Contribution to knowledge

This study contributes to knowledge in the following aspects.

Firstly, it provides empirical evidence regarding the link between the magnitude and direction of forecast error and the extent of earnings management. A more rigorous analysis than that of Jaggi et al. (2006), one which incorporates other variables of changes in economic condition and company specific characteristics using OLS regression, allows for a more sophisticated exploration of the interrelationship among a set of variables. The analysis therefore provides information about the model as a whole, and the relative contribution of each of the variables that make up the model. This will provide a better insight into the factors associated with earnings management. The findings present an extension which fills a gap in the literature of forecast accuracy and earnings management.

Secondly, it provides empirical evidence regarding the affect which external factors of regulation and economic conditions have on forecast accuracy. Contrary to expectations, evidence of a non-significant association between regulation and accuracy contributes to further understanding the impact of unexpected economic change (which outweighed any impact of regulation). The change, from a positive forecast error in the pre-crisis period to a negative forecast error in the crisis and recovery period, is due in significant measure to economic conditions. The findings of significant income

increasing earnings management during the period of economic crisis and recovery, contributes to knowledge in providing evidence on the association of earnings management and changes in economic condition which have not been tested before. This contributes to the existing literature in terms of research design, showing that a researcher planning an investigation of management skills in forecast accuracy should take account of the economic conditions arising between the date of the forecast and the date of reporting the first actual results.

Thirdly, contrary to agency theory and prior evidence provided in developed countries, this study finds that there is a positive association between earnings management and management ownership. The findings confirm expectations that, in a highly-concentrated ownership company, managers are motivated to manage the earnings upwards in order to influence the stock price and to establish the company's good reputation. These findings are supported by results from the interview analysis, which suggested that meeting the earnings forecast is very important for the purpose of maintaining the company's reputation and share price. The findings imply that reputation cost and legitimacy theory provide an alternative explanation for earnings management behaviour in Malaysian IPO companies.

Fourthly, contrary to expectations, this study finds that regulation on earnings forecast disclosure has no significant impact on the accuracy of forecast made in IPO company prospectus. This has an important implication for the regulator, as it would appear that regulation did not have the reforming effect intended.

Fifthly, results from the interviews with market participants and regulator allow a more comprehensive understanding of the relationship between forecast accuracy and companies' earnings management behaviour in a developing, regulated capital market. Moreover, these results contribute to our understanding of related issues, such as credibility of forecast, implication of regulation, factors contributing to meeting the forecast and perception of preparers on the importance of meeting the forecast made

(thereby contributing towards extending ideas on those factors influencing forecast accuracy and earnings management behaviour, which may not be captured in the statistical model). Interview analysis results also help to explain and interpret what happened and relate this with theory - filling the gap and providing evidence which cannot be captured from quantitative evidence.

Finally, in terms of research method, the study contributes to knowledge relating to the importance of having a stable control group. A robustness test of the control group indicates that the composition of companies has an influence on the coefficient of the control group. Changing the composition of the control group leads to a very different result, depending on whether the selected control group has outlier properties or not. The finding of this study indicate that in developing earnings management model parameters, it is important for the researcher to check for outliers in the control group, which may affect the results and interpretation of the study.

1.7 Limitations of study

The main limitations of the empirical study are as follows:

1. The study is limited by the very specific context of the research, namely initial public offerings, not directly applicable to other context. The examined companies are subject to availability of companies' prospectuses and annual report.
2. This research is limited by the period and sample studied. In the regression model examining factors affecting forecast accuracy, companies that do not have data for all the variables used in the estimation are excluded.
3. A comparison on earnings management practices cannot be made between regulated and non-regulated IPO companies. This is because most of Malaysian IPO

companies for the period of study are regulated companies (see Table 6-2 in Section 6.5 for the number and percentage of regulated companies included in the analysis).

4. The assumption is that companies of comparable risk profile make IPOs, irrespective of economic condition. It is possible that a crisis situation would cause some sponsors to be more risk averse when making an IPO and would, therefore, wait for improved conditions. Brailsford et al. (2004), in their analysis of the time series behaviour of the initial public offering, report that a bullish stock market leads to an increase in the number of new issues. This indicates issuers responding to favourable economic conditions.

5. A study of the effect of corporate governance variable (board structure) cannot be made because the company did not disclose the category of members of the board. The corporate governance disclosure regulation became effective on Malaysian companies only from the year 2001.

1.8 Organisation of the thesis

This thesis, including the introductory chapter, is organised into 9 chapters. Specifically, the 9 chapters of this thesis are concerned with areas outlined as follows:

Chapter one sets out the motivation and objectives of the thesis. The main research objectives and specific research questions are formulated. The methodology adopted and method used to answer the research questions are summarised. The contribution and the limitations of the thesis are highlighted. Finally, the organisation of the thesis is reported.

Chapter two presents the theoretical and empirical background of this research. It discusses relevant theoretical frameworks that generate expectations for managerial

motives for earnings management in corporate annual report after the initial public offerings (see Section 2.2 of Chapter 2). The chapter summarises the findings in relation to the factors influencing forecast accuracy (see Section 2.3.1 of Chapter 2) and the different motives for earnings management (see Section 2.5 of Chapter 2). Particular consideration is given to reviewing studies of earnings management around a public issue (see Section 2.6 of Chapter 2). This chapter concludes with areas where research on forecast accuracy and earnings management of IPO companies can be further extended (see Section 2.8 of Chapter 2).

Chapter three presents an overview of the Malaysian economic environment and regulatory framework for initial public offering, specifically on earnings forecast disclosure. The discussion is focused on three different economic periods, namely a pre-crisis period, an economic crisis period and an economic recovery period (see Section 3.7 of Chapter 3). It also discusses the regulatory changes on earnings forecast disclosure in company prospectus that have taken place in January 1996 (see Section 3.5 and Section 3.6 of Chapter 3). This chapter highlights those aspects of the economic and regulatory environment which are expected to have an impact on the forecast accuracy, and on management behaviour in the reporting of their actual earnings.

Chapter four describes the methodology adopted and the method used to answer the research questions outlined in Section 1.4 of Chapter 1. The study involves three different stages. The first stage examines the accuracy of earnings forecasts contained in the IPO prospectuses of Malaysian companies seeking listing over the period January 1996 to December 2002 (see Chapter 5). The second stage of study seeks to find evidence of positive discretionary accrual in financial statements of IPO issuers in the year of IPO and in the three years period following the IPO (see Chapter 6). Finally, a correlation study examines the link between earnings management and forecast error and other variables representing unexpected change in economic condition and company-specific characteristics (see Chapter 7).

Sample selection and data collection are discussed (see Section 4.2.1 for forecast accuracy study; Section 4.3.2.2 for earnings management study; Section 4.4.1 for relating forecast error and earnings management study). The chapter defines forecast accuracy and earnings management (see Section 4.2.2 and Section 4.3.1 of Chapter 4), and the research hypotheses for the forecast accuracy study are formulated (see Section 4.2.3 of Chapter 4). Formulations of hypotheses for earnings management study, and for relating forecast error and earnings management, are discussed in Sections 4.3.1.2 and 4.4.2.2 of Chapter 4 respectively. A discussion of the statistical techniques used to test the hypotheses in all three studies is provided (see Section 4.7 of Chapter 4). Finally, a discussion on interview method, analysis of interview findings and selection of interviewees is provided (see Section 4.8 of Chapter 4).

Chapter five evaluates the extent of forecast accuracy made in IPO company prospectuses. The first stage examines the magnitude and direction of error. It involves the calculation of absolute forecast error and forecast error (see Section 5.3 of Chapter 5). The second stage seeks to identify the association between dependent variables of forecast accuracy and independent variables of external and company-specific characteristics. Statistical univariate and multiple regression analysis results are presented (see Section 5.5, Section 5.6 and Section 5.7 of Chapter 5). Discussion of results and explanations for observed findings are provided in Section 5.8 of Chapter 5.

Chapter six investigates evidence of earnings management in the financial statements of IPO issuers in the year of IPO. Sample description and the reason for the chosen sample are presented. A discussion is provided of the estimation of the coefficients for the control group (see Section 6.3 of Chapter 6). The hypothesis for earnings management is formulated in Section 6.4 of Chapter 6. The result is presented and an interpretation of the findings is discussed (see Section 6.5.1 and Section 6.5.2 of Chapter 6).

Chapter seven examines the link between earnings management and forecast error and other variables representing unexpected change in economic condition and corporate-

specific characteristics. The chapter develops hypotheses to be tested (see Section 7.3 of Chapter 7). Univariate analysis between variables and multivariate analysis to explore the relationship between dependent and independent variables are presented (see Section 7.6 and Section 7.7 of Chapter 7). The findings are analysed and interpreted in the context of Malaysia's economic environment, regulation and consistency with prior studies (see Section 7.7.3 and Section 7.8 of Chapter 7).

Chapter eight analyses responses to interview questions which sought the opinions and perceptions of influential market participants related to disclosure and accuracy of forecasts and earnings management. Interview findings are used to find evidence that may support or challenge the quantitative research findings and to help with the interpretation of the statistical results. Interviews provide insights that may help in designing future research.

Chapter nine presents the main conclusion of the thesis. The contributions of the study are again highlighted (see Section 9.4 of Chapter 9). Implications of findings are discussed in Section 9.5 and limitations of the study are highlighted in Section 9.6 of Chapter 9. Lastly, suggestions for future research are made.

CHAPTER 2: REVIEW OF THEORETICAL FRAMEWORKS AND EMPIRICAL EVIDENCE ON MANAGEMENT EARNINGS FORECAST AND EARNINGS MANAGEMENT.

2.1 Introduction

Previous studies have examined the accuracy of forecasts of initial public offerings (IPOs) and identified some company characteristics that determine the accuracy of forecasts. Overall, the findings of these studies indicate that forecast accuracy differs from country to country and from one time period to another. Since managers can use accounting judgement within Generally Accepted Accounting Principles (GAAP) in presenting financial reports to users, there is research interest in asking whether companies engage in earnings management when reporting their income to meet the forecast made in the prospectus. This chapter reviews relevant theories and empirical literature on earnings forecast disclosure and earnings management in different contexts, in order to set the framework and expectations for the hypotheses to be developed later in the thesis. It also presents a review of empirical studies, which will assist in identifying gaps where research in this area can be extended. The literature review contributes to formulation of the research questions (outlined in Section 1.4 of Chapter 1), anticipation of expectations for hypotheses formation (Chapter 4, Chapter 6, and Chapter 7), and planning of the research design (Chapter 4). Discussion of prior research also helps in the interpretation of findings to be presented in later chapters.

This chapter is organised as follows: Section 2.2 reviews theoretical frameworks that have been used to explain earnings forecasts and earnings management. Empirical studies on forecast accuracy are discussed in Section 2.3. Section 2.4 discusses empirical studies on earnings management in relation to the different measurements used and the evaluation of earnings management model. Earnings management in different contexts is discussed in Section 2.5. Empirical studies of earnings management in the context of IPOs are discussed in Section 2.6. Section 2.7 discusses factors associated

with earnings management. Section 2.8 summarises and concludes the chapter by identifying areas in this thesis where research on earnings forecasts and earnings management in IPOs is expanded.

2.2 Theories of earnings management

2.2.1 Agency theory

Agency theory predicts that low managerial ownership implies poor alignment of interests between management and shareholders (Jensen and Meckling, 1976), and that managers have incentives to pursue non-value maximising behaviour. When ownership is diffuse, as is typical in the US and the UK, agency conflicts arise between outside shareholders and managers who own an insignificant amount of equity in the companies. The most important conflict arises from the fact that as a manager's ownership claim falls, so too does his incentive to devote significant effort to searching for new profitable ventures (Jensen and Meckling, 1976). To remedy the adverse consequences arising from the separation of ownership and control (Jensen and Meckling, 1976), various mechanisms such as increasing managerial ownership are employed by companies. Theoretically, as managers own more shares, they are more likely to act in the interest of shareholders.

From an incentive-alignment perspective, as Jensen and Meckling (1976) suggest, as the manager's shareholdings increases, it helps motivate managers to work in the interests of shareholders, thereby reducing agency costs. However, it may be argued that high managerial ownership may not necessarily lead to reduced agency conflicts. In contrast, a manager who controls a substantial fraction of the firm's equity may have enough voting power or influence generally to guarantee his employment with the firm at an attractive salary. Fan and Wong (2005) discussed the view that high managerial

ownership gives rise to a conflict of interest between a controlling owner and minority shareholders. The degree of ownership concentration affects the nature of contracting, prompting a potential conflict of interest between owner-manager and minority shareholders. The entrenchment hypothesis predicts that when ownership is sufficiently concentrated, with effective control, the managers may be able to use the firm to further their own interests rather than the interests of shareholders. Morck et al. (1988) claim that management are likely to make investment decisions to maximise the (inside) owner's wealth rather than that of outside shareholders. In Malaysia and Asia (excluding Japan), concentrated ownership is the norm (Thilainathan, 1999). With a greater percentage of shares owned by the managers, they are exposed to a greater level of risk. Since the managers' wealth is sensitive to their firms' stock prices, managers (as agents for themselves) will therefore act in such a way that will maximise their future benefits. This sensitivity can lead managers to focus on short-term stock prices, creating incentives for earnings management to influence the selling or purchase price. A higher stock price benefits the managerial owners because they can receive more cash on sale of stocks. Additionally, with a higher stock price, the new investors have to pay proportionally more for the same amount as the managerial owners. This leads to a reduced dilution of ownership for the existing ownership (Erickson and Wang, 1999). Jensen (2005) argued that the securities market can sometimes create and aggravate conflicts of interest between managers and owners rather than resolve them. As the capital market will punish the entire company if the managers miss analysts' forecasts³, the only way for a manager to meet those expectations is to manage earnings. This conflict of interest is especially severe in countries with poor legal protection and other external governance mechanisms (such as takeover) (La Porta, 1998).

Criticism of agency theory relies on certain assumptions underlying the model, which emphasise the avoidance of responsibilities by subordinates as self-interested behaviour. The theory assumes that agents prefer not to exert effort or take desired actions and, as a

³ For negative earnings surprises the stock price falls on average by -5.04% more during the quarter than a size matched portfolio (Skinner and Sloan, 2002).

consequence, need to be compensated financially to induce them to take actions that will benefit the firm. The assumption underlying this theory has been commented on by a number of authors (e.g. Kaplan, 1984; Band, 1992; Ashton, 1991; and Ogden, 1993). On the contrary, Kaplan (1984) suggests that in practice, managers generally work extremely hard and do not seem to have much effort aversion. Ashton (1991) sees the issue of motivation as a critical weakness of the agency model. He comments that the assumption that the agent only works for financial incentives embraces a “very simplistic model of motivation”. These authors were not suggesting that there was no divergence between managers’ and shareholders’ interests, but commenting on the degree to which the conflict of interest between managers and owners has been overestimated in the agency literature. Moreover, management often experience a number of other constraints and financial incentives to perform effectively in addition to the financial incentives that may be specified in their contracts. The threats of takeover and bankruptcy (Ogden, 1993), market discipline (e.g., the managerial labour market) (Fama, 1980) and the inclusion of expert outsiders on the board of directors may serve to reinforce the desired mutuality of managers serving the interests of owners as well as their own self interest. Band (1992) criticised agency theory for failing to recognise the fact that the management (principal) also consists of human beings. Therefore, they too may act for their own benefit at the expense of other shareholders.

In the Malaysian situation, with high concentration of ownership, there is an almost perfect alignment of interest between the owner and manager. This is because the manager and the owner are frequently the same people. However, when ownership is concentrated to a level at which an owner obtains effective control of the firm, the nature of the agency problem shifts away from manager-shareholder conflicts to conflicts between the controlling owner (who is also the manager) and minority shareholders. The agent, who should work for both controlling and minority principals, is working exclusively for controlling shareholders. On the one hand, Jensen and Meckling (1976) theorise that stock ownership held by management should reduce agency problems because the more stock management owns, the stronger their motivation to work to raise

the value of the company's stock. On the other hand, the extent of firm ownership held by management can motivate them to inflate stock values artificially by managing reporting to maximise their wealth.

The power of an owner-manager to take advantage of minority shareholders may be moderated when an independent board monitors his actions. These independent directors are legally bound in their fiduciary duty to monitor the owner-manager. They also have incentives to build reputations as expert monitors who limit the expropriation of minority shareholders (Fama and Jensen, 1983). However, independent boards are not easily established in IPO companies, especially in highly concentrated ownership companies. Band (1992) commented that the effectiveness of this mechanism depends on the relative power of the CEO and the board of directors. Because boards are usually dominated by company management and their associates, they often function as a 'rubber stamp' for managerial decisions. He argued that, even when the board is staffed by a majority of outside directors, the board of directors functions on information provided by the CEO. This may limit the effectiveness of governance mechanism suggested by agency theory.

2.2.1.1 Agency theory - empirical evidence in developed market

Warfield et al. (1995) in a study of the United States show managerial ownership is positively related to informativeness of earnings and inversely related to the magnitude of discretionary accounting accruals. This is consistent with Jensen and Meckling's (1976) agency theory. The finding of increased discretionary accruals adjustments when managerial ownership is low, is consistent with strategic accounting choice behaviour by managers to relieve or relax the behavioural constraints imposed in accounting-based contracts, which are used to discourage managers from non-value maximising actions.

A later study by Peasnell et al. (2005) examines whether the incidence of earnings management by UK companies depends on board monitoring. Their test focuses on situation where the incentives for manipulations are high, i.e. where companies earnings threshold is greater than or equal to zero, or the earnings threshold is greater than or equal to last year's earnings. Results indicate that a high percentage of management ownership is significantly associated with lower income-increasing discretionary accruals in order to avoid reporting losses and earnings reductions. They also find that a high proportion of outside board members is significantly associated with lower discretionary accruals. The results for management ownership are consistent with the view that whenever managerial and shareholder interests are more closely aligned there is less earnings management. The results for board structure suggest that monitoring by outside directors contributes to the containment of earnings management.

2.2.1.2 Agency theory - empirical evidence in developing market

The conflict of interest between controlling managers and minority shareholders under various levels of concentration of ownership has also been studied in countries outside the US⁴. Yeo et al. (2002), when examining companies listed on the Stock Exchange of Singapore, categorised companies with management ownership less than or equal to 25% as low levels of management ownership, and companies whose management ownership is greater than 25% as high level management ownership. They found that companies with a low level of management ownership have a significantly negative association between ownership and income increasing discretionary accruals, i.e. when management ownership is low, there is poor alignment of interest between management and shareholders. In such cases, managers, therefore have an incentive to use accounting choice in order to manage earnings upwards. This is consistent with both Jensen and Meckling's (1976) agency theory and the findings reported by Warfield et al.

⁴ Fan et al. (2005) examines the agency conflicts between controlling owner and the minority shareholders in eight East Asian Countries for the period from 1994 to 1996. The study provides evidence of how firms' agency conflicts between majority and minority shareholders affect their choice of auditor and of the auditors' decisions on audit fees and audit opinions.

(1995). However, a test on companies categorised as being high level management ownership (i.e. ownership greater than 25%) document a significant positive association between ownership and discretionary accruals (Yeo et al., 2002). These findings indicate that, the higher the management ownership above the 25% level, then the greater the income-increasing discretionary accruals. They suggested that when ownership is sufficiently concentrated, managers have incentives to pursue self-interest, non-value maximising actions, including earnings management consistent with Morck et al. (1988).

In a situation where companies have high managerial ownership, like Malaysia, the problem is a conflict between managerial-owner, the non-managerial existing owner, and between the managerial-owner and new investors. Managers have incentives to manipulate earnings in order to maintain the company reputation and the value of their investment in the company. It is a problem of managerial-owner try to create benefit to themselves at the expense of other investors (especially new investors). A manager's wealth is sensitive to the short-term stock price, which can motivate managers with high equity ownership to increase the short-term stock price. Given that the capital market uses current earnings to predict future earnings when pricing firm equity, these managers are expected to use their accounting discretion to manage earnings in order to keep the short-term stock price high (Stein, 1989). The increase in short-term stock price will benefit the managerial-owner and existing non-managerial owners in terms of more cash received from the sale of stocks, but not to the benefit of new investors. This means new investors are paying a higher price for their shares in company. With higher stock price paid by new investors, it will minimise the dilution of voting power and control of existing ownership, particularly manager-stockholders. Managers are therefore manipulating the market as well as protecting their job.

2.2.2 Signalling theory

Due to asymmetric information between IPO insiders and potential investors, another theory that may provide an explanatory framework for IPO research is signalling theory. Theoretical research into the use of signalling devices in IPOs is well established, including support for forecast disclosure as a signal of value (Clarkson et al., 1994). Leland and Pyle (1977), for example, have demonstrated that the level of shareholdings retained by the entrepreneur can perfectly reveal his private information. Titman and Trueman (1986) and Simunic and Stein (1987) demonstrate that the quality of auditor chosen serves as a strong signal, or certification, that the company going public is a good company. Trueman (1986) suggests that the manager will be as willing to release bad news as he is to release good news. His incentive comes from his desire to provide a signal to investors of his ability to anticipate future changes. This is consistent with Patell (1976), Penman (1980) and Waymire (1984), who demonstrate that the average stock price change at the time of forecast disclosure will be positive, and that the positive stock price change may be due, at least in part, to information conveyed by the act of forecast release itself. Brau et al. (2005) model that an insider who commits to a long lock-up is an indicator of firm quality. Teoh et al. (1998) suggest that a history of strong earnings signals future strong performance.

The information signalling hypothesis predicts that managers make accounting choices to reveal their expectations regarding a firm's future cash flow stream. Subramanyam (1996) provides evidence consistent with the notion that managers employ their accounting discretion to signal future performance. For example, managers engaged in large-scale investment programmes are hypothesised to face powerful incentives to signal expected future cash flow benefits by selecting income-increasing accounting accruals in the current period to avoid the likelihood of managerial replacement because of reduced current period reported earnings (Weisbach, 1988). Young (1998) provides support for the view that managers employ their accounting discretion to signal expected future cash flow performance.

Existing literature suggests that managers of IPOs can choose from a number of signals to convey private information to investors about company value (Hughes, 1986; Datar et al., 1991). A key premise of signalling theory is that for signals to be credible, they must be costly (in order to prevent mimicking (Hughes, 1986)). Hughes' bivariate signalling model in which communication of inside information by direct disclosure is used by investors to infer firm value, provides theoretical support for the view that cost factors affect the choice of signals. He suggests managers will select the least costly combination of two signals when there are two unknown parameters.

Grossman (1981) demonstrates that, in the market for goods and services, the provision of a guarantee or a warranty contract induces truthful disclosure when actual quality is observable ex post. The threatened penalty will induce truthful disclosure from the entrepreneur if it is of sufficient size and is perceived to be credible (Hughes, 1986). A penalty imposition means the manager pre-commits to pay the penalty for poor outcomes and therefore bears the risk of poor outcomes (even though he has been induced to tell the truth).

2.2.3 Reputation costs theory

Companies in a regime of mandatory earnings forecasts disclosure may have a greater cost associated with disclosure. The disclosure regulation is likely to encourage IPO companies to issue more optimistic forecasts, sending positive signals to the market so that the IPO proceeds may be maximised. Earnings forecast error can impose costs by impairing management's reputation for accuracy. Inaccurate forecasts give the appearance of company instability and high risk. It may be assumed that security and reputation are in some way dependent on reported profits. In adjusting earnings to reach forecasted targets, managers are presumably attempting to establish positive reputations in order to, for example, raise the company's stock price. Some support for the reputation costs hypothesis is evident in studies by Kasznik (1999). Kasznik (1999) documents evidence that managers use positive discretionary accruals to manage

reported earnings upwards, when earnings would otherwise fall below management's forecasts. Teoh et al. (1998) find evidence that IPO companies managed their earnings upwards in the first post-IPO year. Teoh et al (1998) suggested that IPO companies which are under great pressure to meet the projections made to investors at the beginning of issue marketing⁵, are managing their earnings in their first year post-IPO to safeguard their reputation for reliability; to maintain the goodwill of investors, investment bankers, and analysts and to avoid lawsuits by shareholders after a shortfall in post-IPO earnings.

2.2.4 Litigation costs theory

Skinner (1994) finds that the threat of litigation potentially alters firms' disclosure behaviour. Lowry and Shu (2002) find support for their hypothesis that firms with high litigation risk under-price their IPOs by a greater amount as a form of insurance effect and that higher under-pricing lowers expected litigation costs. The litigation costs theory predicts that management have incentives to disclose bad news early in order to protect against shareholder litigation. Kasznik (1999) argue that managers who voluntarily issue annual earnings forecasts, manage their reported earnings toward their forecasts, fearing litigation costs associated with stock price changes and the loss of reputation for accuracy. An earnings reversal immediately after the offering, and the associated price drop, could precipitate lawsuits against the company and its managers (Francis et al., 1994; Skinner, 1994). Although litigation risk in terms of lawsuits may only apply to developed countries like the US and the UK, litigation risk is proxied by the change in stock price for a developing market (Francis et al., 1994). This motivates managers to use aggressive reporting policies after the IPO.

⁵ The prospectus of US IPOs does not include earnings projections due to possible legal repercussions.

2.2.5 Political costs theory

Another explanation for earnings management behaviour is provided by the political costs theory. The theory of political costs states that, to the extent a company is subject to potential wealth transfers in the political process, its management is hypothesised to adopt a procedure or make accounting choices that reduce the transfer (Watts and Zimmerman, 1986; Hagerman and Zmijewski, 1979). Previous research suggested that political costs are highly dependent on company size and has relied on company size as a proxy variable. Hagerman and Zmijewski (1979) suggested the costs imposed on the corporations are a function of their size, because smaller companies are less visible and therefore less subject to political wealth redistributions. The size proxy assumes that larger companies are more politically sensitive than small companies, and therefore face differential incentives in the choice of accounting procedures (Watts and Zimmerman, 1986). Thus, large firms will have an incentive to choose accounting procedures which reduce net income in order to avoid publicity. This particular hypothesis is consistent with the results of Watts and Zimmerman (1978).

Watts and Zimmerman (1986) acknowledged that company size is a noisy proxy for political costs. Subsequent studies test alternative proxies such as industry political environment to represent the extent of political costs. For example, Jones (1991) finds that discretionary accruals are income-decreasing in the year of import relief investigations by the United States International Trade Commission (ITC). The ITC is interested in earnings before taxes as one of the measures of injury to a company, so a company claiming injury by foreign competition has an incentive to reduce its reported earnings. Similarly, Key (1997) examines the behaviour of managers of cable companies in the cable industry during periods of Congressional scrutiny. Her evidence is consistent with managerial incentives to mitigate the effects of political scrutiny and potential industry regulation.

Han and Wang (1998) investigate accruals of oil companies during the 1990 Persian Gulf crisis when gasoline prices rose sharply. They find that oil and gas companies likely to profit from the associated rise in gasoline prices, used income-decreasing accruals to reduce reported earnings. They attribute this behaviour to an attempt to reduce political costs. Watts and Zimmerman (1986) maintain that reported profits attract the attention of the public and politicians and hypothesise that consumer product companies with rapid product price increases are more politically susceptible than other companies and therefore more likely to change accounting procedures to reduce reported profits. A similar finding was reported by Cahan (1992), where managers in companies investigated for monopoly-related violations would have an incentive to use accounting procedures which would produce abnormally low levels of income.

This section has provided an overview of some of the theories which are relevant in explaining management earnings forecast disclosure and earnings management behaviour. Although, with a greater percentage of ownership, there is a stronger alignment between the interest of the owner and the manager, the owner-managers have a greater incentive to manage their reported earnings upwards in order to maintain their reputation for reliability. This is very important, as it will provide a good signal to the market. Owner-managers are motivated to give a good signal in order to maintain a high market value for their investment to the company.

The next section reviews empirical studies on earnings forecast and earnings management behaviour and finally seeks to identify factors that can be associated with earnings management.

2.3 Empirical studies on earnings forecast accuracy

Forecast accuracy may be measured as the difference between a forecast and the actual outcome. In previous studies (e.g.; Chapple et al., 2005; Lonkani and Firth, 2005;

Hartnett and Romcke, 2000; Cheng and Firth, 2000; Jelic et al., 1998; Chan et al. 1996; Firth and Smith, 1992; Keasey and McGuinness, 1991), two methods are applied. The mean absolute forecast error is a measure of relative size of the difference (how near the predictions were to the actual profits) and the mean forecast error is a measure of the relative size and direction of the difference (bias in forecasting).

Prior research has suggested that earnings forecasts provide important information to investors (Berlinger and Robbins, 1986), especially in relation to companies that are newly listed on a stock exchange (Firth and Smith, 1992). Therefore, the earnings forecast is arguably the single most important signal of company valuation given in the prospectus (Firth, 1998). Additionally, Kim and Ritter (1999) find that profits forecasts do a much better job in signalling IPO value than historical earnings. However, an obvious concern about the forecasts of a company's future earnings is their accuracy and bias. In order for the earnings forecast to be useful, it needs to be accurate. Jog and McConomy (2003), in their study of Canadian companies, found that companies including optimistic forecasts in their prospectuses are penalised significantly in the market place, relative to other forecasters and non-forecasters companies. While investors can evaluate the past forecasting accuracy of existing listed companies, there is usually no comparable historical data for IPOs (Firth and Smith, 1992).

The accuracy of IPO earnings forecasts has been studied in a number of countries: Australia (Lee et al., 1993); Canada (Pedwell et al., 1994); France (Chahine, 2004); Hong Kong (Jaggi, 1997; Cheng and Firth 2000; and Chen et al., 2001); Malaysia (Mohammad et al., 1994; Jelic et al., 1998); New Zealand (Firth and Smith, 1992); Singapore (Firth et al., 1995); UK (Dev and Webb, 1972); and a comparison of UK, Australia and New Zealand (Keasey and McGuinness, 1991). Dividend forecasts have been found to be more accurate than earnings forecasts in Australia (Brown et al., 2000), and this is consistent with the findings of Dimovski and Brooks (2005), i.e. that companies forecasting zero dividends, and companies not making a dividend forecast, did not pay a dividend in the forthcoming year.

Table 2-1 summarises the results of these previous studies on absolute forecast error and forecast error in IPO prospectuses, showing the considerable range of magnitude and direction of forecast error in different countries at different times. Studies in Australia (Lee et al., 1993; Hartnett and Romcke, 2000; Chapple et al., 2005), Canada (Pedwell et al., 1994; McConomy, 1998) and New Zealand (Firth and Smith, 1992) show large forecast errors. Studies on Asian IPO markets have found relatively small forecast errors. Chan et al., (1996), Jaggi, (1997) reported that the earnings forecasts of Hong Kong companies are comparatively more accurate than the IPO forecasts from other countries, such as Australia, Canada, and New Zealand. Cheng and Firth (2000) also find that the forecasts made by Hong Kong IPO companies are more accurate than the IPO forecasts from other countries. Studies report mean absolute forecast error of 18%, 12.8%, and 9.9% for listings in Hong Kong respectively.

While some South East Asian countries issue earnings forecasts on a voluntary basis, some, such as Malaysia and Singapore, require disclosure of earnings forecasts in the IPO prospectuses. Studies in Malaysia reported mixed results. Mohamad et al. (1994) find low to moderate forecast errors, while a later study by Jelic et al. (1998) finds somewhat larger errors. Jelic et al. (1998) have examined the accuracy of earnings forecasts included in the IPO prospectuses of Malaysian companies and find that, on average, the mean forecast error is +33%, while the absolute forecast error is 55%. Firth et al. (1995), who examined forecast accuracy of 114 Singapore IPO prospectuses for the period of 1980 to 1993, report a mean absolute forecast error of 20% and a mean signed forecast error of +10%. Although their finding would appear to indicate that earnings forecasts provided in Singaporean IPO prospectuses are more accurate than those made in Australia, UK and Malaysia, a direct comparison cannot be made because the study was carried out at a different time, with different economic conditions.

US companies rarely include earnings forecasts in the IPO prospectuses on a voluntary basis and the US Securities and Exchange Commission (SEC) does not require earnings

forecasts to be included in the IPO prospectuses. Several studies have been conducted to investigate whether the IPO companies manipulate their earnings during the pre-IPO period. The findings of these studies show that the US companies generally engage in upward manipulation of reported earnings during the pre-IPO period, in order to send positive signals to the market (e.g. Friedlan, 1994; Teoh et al., 1998a and 1998b; DuCharme et al., 2001).

Studies have been conducted to examine whether the issuance of earnings forecasts by US companies on a voluntary basis during the non-IPO period would result in manipulation of reported earnings. It has been reported that the forecast-issuing companies generally engage in earnings manipulation to reduce forecast error. Kasznik (1999) finds that companies generally use positive discretionary accruals to reduce forecast error. The motivation for reducing the forecast error is generally to avoid costs associated with potential legal actions by shareholders should the reported earnings deviate considerably from the forecasted earnings (e.g. Skinner, 1994; Frankel et al., 2002; Teoh et al., 1998b, Baginski et al., 2002).

Table 2-1: Summary of results of previous studies for companies with voluntary prospectus earnings forecast disclosure regulation

study	country	period	sample	Forecast error (%)	Absolute forecast error (%)	Min Forecast error (%)	Max Forecast error (%)
Dev and Webb(1972)	UK	1968-1969	212	112	NR	46.6	196.4
Mak (1989)	New Zealand	1983-1987	71	NR	100	NR	NR
Keasey and Mc Guinness(1991)	UK	1984-1986	121	5	11	NR	NR
Firth and Smith (1992)	New Zealand	1983-1986	89	-92*	328*	-12393.	3047
Lee et al. (1993)	Australia	1976-1989	98	21.4*	42.5*	4082.8	83025
Pedwell et al. (1994)	Canada	1983-1997	112	-28.8*	39.3*	-501.3	101.3
Mohammad et al. (1994)	Malaysia	1984 - 1988	65	9.34	27.91	NR	NR
Firth et al (1995)	Singapore	1980 - 1993	114	10.40	20.11	NR	NR
Chan et al (1996)	Hong Kong	1990-1992	110	NR	18	NR	NR
Jaggi (1997)	Hong Kong	1990-1994	161	6.5	12.79	-147.82	63.96
Jelic et al.(1998)	Malaysia	1988 - 1995	124	33.37	54.91	-136.17	4110.53
McConomy (1998)	Canada	1983-1994	107	75.5***	189.0***	NR	NR
Chen and Firth(1999)	China	1991-1996	532	21.92	40.12	NR	NR
Cheng and Firth (2000)	Hong Kong	1992-1995	154	9.89	9.89	0.00	60.61
Hartnett and Romcke (2000)	Australia	1991-1996	123	-30.35	88.29	-2918.5	1025
Brown et al. (2000)	Australia	1984-1997	156	NR	11.43	NR	NR
Chen et al. (2001)	HK	1993-1996	162	9.94	21.96	NR	NR
Chahine (2004)	France	1996-1998	168	-19.3	NR	NR	NR
Chapple et al. (2005)	Australia	1998-2002	214	373.7	406.2	NR	NR
Lonkani and Firth (2005)	Thailand	1992-1996**	128	-6.58	33.21	-152	298.41

* After deleting outliers NR = Not reported in the paper.

** Earnings forecasts were compulsory from 1992, *** Results are based on 107 reviewed forecasts.

2.3.1 Factors associated with forecast accuracy

Studies on earnings forecasts have also sought to explain the factors associated with forecast accuracy. Dev and Webb (1972, p.36) concluded:

“ It was anticipated when this investigation was started, that it would lead to some positive appreciation of factors influencing the accuracy of prospectus earnings forecasts... although an estimate of the accuracy has been determined, the major factors associated with forecasting errors have not. ”

Table 2-2 shows the company characteristics tested in prior studies. Size and forecast horizons are those most frequently reported to be statistically significantly associated with the accuracy of prospectus earnings forecast. Ferris and Hayes (1977) in their study of 279 IPO companies listed on the London or provincial stock exchange found that, of three variables tested (size, general economic conditions, and length of the forecast period), only the length of the forecast period was significantly associated to forecast accuracy. The negative association between the length of the forecast period and absolute forecast error was, however, counter to their intuition. Their explanation for this was that the possibility of greater opportunity for management to exercise discretion in maintenance and capital expenditure decisions that enabled the actual and predicted results to be more closely aligned. Later studies for New Zealand by (Mak, 1989), Canada (Pedwell et al., 1994), Singapore (Firth et al., 1995), Australia (Brown et al., 2000; Chapple et al., 2005) and Thailand (Lonkani and Firth, 2005) found a significant positive association between forecast horizon and absolute forecast error, which was consistent with their expectations.

Size is one other factor frequently reported in previous studies as having a statistically significant association with forecast accuracy. Studies in New Zealand (Firth and Smith, 1992) and Thailand (Lonkani and Firth, 2005), reported a statistically significant positive association between size and absolute forecast error. Such findings are opposite

to their expectations. The positive association between size and absolute forecast error was explained as a result of difficulties in predicting the profits from the investment of the new issue proceeds. Other studies in Singapore (Firth et al., 1995) and Australia (Brown et al., 2000; Chapple et al., 2005) found a result consistent with their expectation. A significant negative association was explained as resulting from greater control over market settings, which makes the companies less susceptible to economic fluctuations. Consequently they find it easier to achieve the target profits. Larger companies may also tend to monitor more and respond to more external influences than smaller firms.

Apart from forecast horizon and size, auditor reputation was also found to be significant in influencing the accuracy of forecast made in company prospectuses of Canada (Pedwell et al., 1994), Hong Kong (Cheng and Firth, 2000) and Australia (Brown et al., 2000; Chapple et al., 2005). A significant positive association between auditor and absolute forecast error reported by Pedwell et al. (1994) contradicts results reported in Hong Kong and Australia. This positive association is explained by management having less scope to manipulate income in the direction of forecasted income in the presence of a high quality auditor. The result is consistent with Davidson and Neu (1993). Other studies found no significant association between auditor and forecast accuracy.

However, relatively few studies consider the impact of external forces, such as changes in economic conditions and regulation over a period of time. The exceptions are Pedwell et al. (1994) for Canadian IPOs, and Chan et al. (1996) and Cheng and Firth (2000) on Hong Kong, who investigated the impact of changes in economic conditions on forecast accuracy. As a measure of economic condition, Pedwell et al. (1994) and Cheng and Firth (2000) took the change in the stock exchange index and Chan et al. (1996) took quarterly GDP growth. Both studies find economic condition has a significant positive association with accuracy, which indicates that the greater the change in economic condition, the greater the forecast error.

Despite the difference in the measurement used to measure the change in economic condition, the results show that this variable has a significant association in every study. The significance of economic condition variables in all prior studies suggest that this variable should be considered when planning research into forecast accuracy. This variable is discussed further in Section 4.2.3.3 in formulating the research hypotheses of this thesis. Table 2-2 and 2-3 shows internal and external factors tested in prior studies and explanations of significant associations.

Table 2-2: Determinants of prospectus earnings forecast error investigated in prior studies

Study	Country	Age	Size	Fzon	Ind	Econ	Lev	Aud	Unw	risk	Ered	Moship	Evar	Indx	R ² %	Adj R ² (%)
Ferris and Hayes (1977)	London		+	-**		-										
Keasey and McGuines (1991)				+					-**			+			7.0	NR
Firth and Smith (1992)	N.Z	-	+***	+			+	+							21.9	NR
Pedwell et.al (1994)	Canada	-**	-	+***		+***		+***	-	+					30.9	26.1
Mohammad et.al (1994)	Malaysia	-	-	+			-**	+							17.1	NR
Firth et al. (1995)	Singapore	+	-**	+***			-	+							NR	15.4
Chan et.al. (1996)	HK		+	+	-	+**	-	+					+		14.8	NR
Jaggi (1997)	HK	-**	-	+	-		-	-							5	NR
Jelic et.al. (1998)	Malaysia	-*	-	+	+**		-	+			+***	-			17.9	12.1
Cheng and Firth (2000)	HK	-	+	+			+	-**	+***	+			+	+*** *	NR	11.6
Hartnett and Romcke	Australia		-		+***			-***				+			34.1	27.5

(2000)																				
Brown et al. (2000)	Australia	-	-***	+***															NR	25.0
Chen et al. (2001)	HK	+	-*	+	-														NR	1.6
Lonkani and Firth (2005)	Thailand	-	+**	+**															NR	2.0
Chapple et al. (2005)	Australia	-	-***	+***															NR	15.9

Key:
 *** 1 % significant level, ** 5 % significant level, * 10% significant level, + Positive coefficient, - Negative coefficient
 Fzon - Forecast horizon
 Ind - Industry
 Econ - Economic condition
 Lev - leverage
 Aud - Auditor
 Unw - Underwriter
 Ered - earning reduction
 Moship -Management ownership
 Evar - earnings variability
 Indx - Market index
 NR - Not reported

Table 2-3: Empirical studies of forecast accuracy and explanation of significant variables

No	Study	Country	Year	Sample	Independent variables (Statistically significant)	Comment / explanation	Non-significant variables
1	Ferris and Hayes (1977)	UK	1970-1973	279	1. Forecast horizon [-]	Longer horizon provides opportunity for management to exercise discretion in maintenance and capital expenditure decision.	Size Economic condition
2	Keasey and McGuinness (1991)	UK (USM)	1984-1986	121	1. Underwriter [-]	1. High quality agents with high reputational capital at stake, present more conservative estimates of future earnings.	Age Size Industry Economic condition Auditor Earnings variability Equity retained
3	Firth and Smith (1992)	New Zealand	1983-1986	89	1. Size [+]	1. More difficult to predict the earnings from the investment of the new issue proceeds	Age Forecast horizon Leverage Auditor reputation
4	Pedwell et al. (1994)	Canada	1983-1997	112	1. Forecast horizon [+] 2. Industry ⁶ [+] 3. Auditor reputation [+]	1. Longer forecast horizon resulted in greater uncertainties and more difficult forecasts. 2. The more variable are the economic conditions, the more difficult it is to forecast accurately. 3. Management ability to manipulate income in the direction of forecasted income is decreased with the presence of a high quality auditor (Davidson and Neu, 1993).	Age Size Underwriter reputation risk
5	Mohammad	Malaysia	1984 -	65	1. Leverage [-]	1. Companies with higher level of	Age

⁶ The variable INDUSTRY is used to measure the variability in the economic condition. It is measured as the absolute change in the specific TSE industry index over the forecast interval.

	et al. (1994)		1988					leverage are required to provide earnings forecasts more regularly by creditors thus improve the ability to forecast profits.	Size Forecast horizon Auditor reputation
6	Firth et al (1995)	Singapore	1980 - 1993	114			1. Forecasting period [+] 2. Size [-]	1. Longer period, high uncertainties and greater forecast error. 2. Larger companies have greater control over market settings and make them less susceptible to economic fluctuations.	Age Leverage Auditor
7	Chan et al. (1996)	Hong Kong	1990- 1992	110			1. Economic condition [+]	1. The accuracy of earnings forecast deteriorate with increasing fluctuations in economic condition	Size Forecast horizon Industry Leverage Auditor reputation Past profit variability
8	Jaggi (1997)	Hong Kong	1990- 1994	161			1. Age [-]	1. Older companies have a better appreciation of market environment. Younger companies are more enthusiastic to provide a better picture of future performance.	Size Forecast horizon Industry Leverage Auditor reputation
9	Jelic et al.(1998)	Malaysia	1988 - 1995	124			Industry [+] Earnings reduction [+]	1. Companies in certain industries are more sensitive to economic cycles; thus forecasting may be more difficult. 2. Managers may be reluctant to forecast a decline in earnings.	Age Size Forecast horizon Leverage Auditor reputation
10	Cheng and Firth (2000)	Hong Kong	1992- 1995	154			1. Auditor [-] 2. Underwriter [+] 3. Economic condition[+]	1. High reputation auditor has a greater quantity of skilled manpower combined with their screening devices in accepting assignments. 2. Underwriter result is contrary to expectation probably because the list of prestige underwriters may not represent the truly prestige firms. 3. Greater fluctuation in economy	Age Size Forecast horizon Leverage Risk Past profit variability

11	Hartnett and Romcke (2000)	Australia	1991-1996	123	<p>1. Industry [+] 2. Float motive [+] 3. Audit Quality [-]</p>	<p>resulted in more difficulties in forecasting.</p> <p>1. Unexpected industry economic activity results in greater forecast error. 2. Different floats motive have different uncertainties of future earnings arising from the float, which influence the forecast error.</p>	<p>Size Equity retained Subscription price premiums Range of activities Degree of internationalisation</p>
12	Brown et al. (2000)	Australia			<p>1. Size [-] 2. Forecast horizon [+] 3. Auditor [-] 4. Management ownership [-]</p>	<p>1. Large companies have more control over market setting, enjoy comparative economies of scale and more diversified; make the earnings less volatile and thus more predictable. 2. Shorter forecast horizon makes the prediction of the full year's earnings easier. 3. Reputation effects can signal the quality of its financial statements 4. High ownership managers' forecasts are more accurate as they will suffer more from the decline in stock prices due to inaccurate forecasts.</p>	<p>Age Leverage Underwriter Past profit variability</p>
13	Chen et al. (2001)	Hong Kong	1993-1996	160	<p>1. % of shares owned by outsiders (OWN) [+]</p>	<p>1. Finding is opposite to expectation. They expect a negative relationship because with greater proportion of outsiders, the greater is the chance of litigation if the forecasts are inaccurate.</p>	<p>Age Size Forecast horizon Industry Leverage Auditor Underwriter Past profit variability</p>
14	Lonkani and Firth	Thailand	1992-1996**	128	<p>Size [+] Forecast horizon [+]</p>	<p>1. Result is opposite to expectation 2. Longer horizon time make it more</p>	<p>Age Leverage</p>

	(2005)								
15	Chapple et al. (2005)	Australia	1998-2002	214	Size [-] Forecast horizon [+] Auditor [-] Underwriter [-]	The results for all significant variables are consistent with their expectation.	difficult to forecast accurately.	Past profit variability	CLERP Act [-] Age

2.4 Empirical studies on earnings management

2.4.1 Introduction

Two definitions of earnings management may be found in the literature. Healy and Wahlen (1999) define earnings management as occurring when managers use judgement in financial reporting and in structuring transactions to alter financial reports, either to mislead some stakeholders about the underlying economic performance of the company or to influence contractual outcomes that depend on reported accounting numbers. Levitt (1998) defines earnings management as practices by which 'earnings reports reflect the desires of management rather than the underlying financial performance of the company'. Without violating accounting rules, managers can use judgement to make accounting reports more informative, or to manage its reported earnings.

There are many ways managers can exercise judgement in financial reporting. Judgement is exercised in choosing among acceptable methods for reporting the same economic transactions such as depreciation methods and/or inventory evaluation methods. Judgement is also required in working capital management such as inventory levels, the timing of inventory shipments or purchases and receivable policies. Managers also exercise judgement in deferring expenditures such as research and development, advertising and maintenance. These judgements affect cost allocations and net revenues of the company.

Dechow and Skinner (2000) distinguish between choices that are fraudulent and those that comprise aggressive but acceptable methods of accounting discretion. However, in the absence of objective evidence of intent, it is difficult to distinguish earnings management intended to mislead from a legitimate exercise of accounting discretion. Opportunities to manage earnings arise because generally accepted accounting principles (GAAP) allow for flexibility and judgement on the part of management to select

reporting methods, estimates and disclosures that match firms' underlying economics (Vinciguerra and O'Reilly-Allen, 2004).

2.4.2 Measuring earnings management

Studies of earnings management have focused on the manipulation of earnings through accruals. There are various models that use accrual based measures to detect earnings management including the Jones (1991) model and some variants of this.

2.4.2.1 The Jones Model

Earnings management can be achieved in various ways, such as the use of accruals, change in accounting methods and changes in capital structure (Jones, 1991). Jones' study focused on total accruals as the source of earnings management, which she defined as the change in noncash working capital. Specifically, Jones used the ordinary least square (OLS) regression using the longest time series data available for the variables included in the regression. The model assumed that discretion is not exercised over revenue in either the estimation period or the event period⁷.

The change in revenue (ΔREV) and plant, property and equipment (PPE) are included in the regression as a control for non-discretionary accruals related to changes in operating performance and the level of depreciation (Jones, 1991). The coefficient estimates obtained from the ordinary least squares regression is used, along with data from the event year t to estimate the total accruals for the estimation or event period⁸. The difference between total accruals and non-discretionary accrual, both deflated by total assets, represents the estimated discretionary accruals.

$$^7 \frac{TACC_{it}}{TA_{it-1}} = \alpha_i [1/TA_{it-1}] + \beta_{1i} [\Delta REV_{it}/TA_{it-1}] + \beta_{2i} [PPE_{it}/TA_{it-1}] + \epsilon_{it}$$

$$^8 \frac{TACC_{it}}{TA_{it-1}} = a_i [1/TA_{it-1}] + b_{1i} [\Delta REV_{it}/TA_{it-1}] + b_{2i} [PPE_{it}/TA_{it-1}] + \epsilon_{it}$$

Previous researchers have discussed the weaknesses of the Jones model. First, the problem of survivorship bias arises due to the use of time series data from the pre-event period to estimate the coefficient. Second, the time series approach also assumes that the parameter estimates generated are stationary. Third, this model treats revenues as entirely non-discretionary. Therefore, if earnings were managed by shifting revenues from future periods, the change in revenue would be endogenous to the model. Dechow et al. (1995) discuss the model inability to capture the impact of sales based manipulation, since changes in sales are assumed to give rise to non-discretionary accruals, causing the estimate of earnings management to be biased toward zero.

2.4.2.2 *The modified Jones model*

Dechow et al. (1995) consider a modification of the Jones model to eliminate its tendency to measure discretionary accruals with error due to an inability to capture the impact of sales-based manipulation during the estimation/event period, for each sample firm. The modified Jones model is identical to the original Jones model, the exception being that the change in receivables (ΔREC) is subtracted from change in revenue in the event period⁹. This modified Jones model explicitly assumes that change in credit sales in the event period may be affected by earnings management. Earnings management is most likely to occur when revenues are overstated by inflating sales at the end of the year involving overstatement of accounts receivable.

Beneish (1997) finds that cash sales are rarely manipulated. This is based on the reasoning that it is easier to manage earnings by exercising discretion over revenue on credit sales than it is to manage earnings by exercising discretion over the recognition of revenue on cash sales (Dechow et al. 1995). In the test to evaluate the ability of

⁹
$$\text{TACC} = \alpha_1 [1/\text{TA}_{it-1}] + \alpha_2 [\Delta \text{REV}_{it} - \Delta \text{REC}_{it}] / \text{TA}_{it-1} + \alpha_3 \text{PPE}_{it} / \text{TA}_{it-1}$$

alternative models to detect earnings management, Dechow et al. (1995) found that a modified Jones model provides the most powerful test of earnings management.

2.4.2.3 The modified Jones model in cross section

In an effort to minimise the effects of survivorship bias in a time series study, DeFond and Jiambalvo (1994) employ a cross-sectional version of the Jones model. Teoh et al. (1998), in their attempt to improve the original standard Jones model, use the working capital component of total accruals (current accruals) in examining whether seasoned equity issuers can raise reported earnings by altering discretionary accruals. This cross-sectional version of the modified Jones model reduces the problems of survivorship bias, as only two consecutive years' data are required. This version of the model also estimates coefficient in a given year thus avoiding the assumption of stationary coefficients in the time series version.

Later studies of earnings management use another variation of the modified cross-sectional version of the Jones model. Teoh et al. (1998a, 1998b) for example not only decomposed accruals by managers' control (discretionary accruals and non-discretionary accruals) but also decomposed them by time period (current and long term accruals). Teoh et al. (1998) show that most of the variation in total accruals is driven by current accruals. Beneish (1998) also found the current accrual model more appealing because managing earnings via depreciation is transparent because the effect of changes in useful lives or depreciation methods is required disclosure. Young (1999) suggested that depreciation-based manipulation is relatively transparent. Beneish (1998) and Young (1999) points out that depreciation offers limited potential as a tool for systematic earnings management since consistent changes in depreciation policy would attract the attention of auditor. Roosenboom et al. (2003) and Peasnell et al. (2005) in their study of earnings management of Dutch and UK IPOs also use current accruals or working capital accruals as a measure of earnings management.

The following section discusses prior studies evaluating the accrual-based earnings management model.

2.4.3 Studies evaluating the accrual-based earnings management model.

Several research studies evaluate the ability of alternative accrual-based models to detect earnings management. Dechow et al. (1995) compare the variants of the Jones model with earlier models and find that a modified version of the model developed by Jones (1991) provides the most powerful test of earnings management. Young (1999) also evaluates five different accrual-based models in their systematic measurement error. His result shows that the modified Jones model has the lowest level of predictable measurement error, with the explicit attempt to control for non-discretionary accruals related to sales growth and the level of depreciable assets.

Peasnell et al. (2000) use simulation procedures that allow for three different form of earnings management. In their study to assess the power to detect accrual management using cross sectional estimation procedures, they indicate that a working capital accrual measure has a higher power to detect systematic earnings management than a total accruals measure. Comparing the Jones model, the modified Jones model and their own margin model, they find that the modified Jones model is more powerful in detecting revenue-based manipulation, whereas the margin model is better able to detect non bad-debt expense manipulations. Peasnell et al. (2000) suggest that deciding which abnormal accruals model to use depends on the form that earnings management is expected to take. In the absence of any strong priors regarding the specific type of manipulation used, the result suggests that using all three models in combination may give the greatest chance of detecting earnings management.

2.5 Motives for earnings management

In the context of earnings management in general, Burgstahler and Dichev (1997) argue that companies prefer to report positive earnings instead of negative earnings. Examining the cross-sectional distribution of annual earnings changes, they find evidence of unusually low frequencies of small decreases in earnings, suggesting that companies manage reported earnings in order to avoid earnings decrease. The reason for this is that investors place high value on companies with positive and less variable earnings as compared to companies with volatile and negative earnings patterns. In a related work, Barth et al. (1999) document that companies with patterns of increasing earnings have higher price-earnings multiples than other firms. These patterns of increasing earnings are positively correlated with proxies for growth and negatively correlated with proxies for risk.

Research on earnings management provides some evidence that companies tend to inflate or deflate earnings depending on their motivation. Healy and Wahlen (1999), in a review of the earnings management literature, note a range of potentially significant incentives to undertake earnings management. These include capital market expectations and valuations, contracts written in terms of accounting numbers, and government actions such as anti-trust legislation. Table 2-4 shows the different motives documented in prior empirical studies of earnings management.

Table 2-4: Prior earnings management studies in different context

Context	Study
Management compensation scheme	Healy (1985)
Management buyout	De Angelo (1986), Perry and Williams (1994), Marquardt and Wiedman (2004b)
Regulatory motives	Jones (1991), Cahan (1992), Key (1997), Navissii (1999), Bowman and Navissi (2003), Haw et al. (2005)
Lending contracts	Defond and Jiambalvo (1994), Saleh and Ahmed (2005)
Seasoned equity offerings	Teoh et al. (1998b), Rangan (1998), Shivakumar (2000), Marquardt and Wiedman (2004a), Kim and Park (2005).
Stock merger and acquisition	Erickson and Wang (1999), Abdul Rahman and Abu Bakar (2002), Louis (2004), Koumanakos and Georgopoulos (2005).
Initial public offerings	Aharony (1993), Friedlan (1994), Teoh et al. (1998a), Roosenboom et al. (2003), Du Charme et al. (2004), Gramlich and Sorensen (2004), Jaggi et al. (2006),

2.5.1 Management compensation scheme

Healy (1985) examines the impact of bonus plans on managerial decisions in a situation where bonuses are not simple linear functions of accounting income. Rather, they are a linear function with lower, and frequently upper, bounds of net income. Once net income exceeds the lower bound, the bonus increases linearly with increases in income, and once it exceeds the upper bound, then the bonus does not increase with further increases in net income. There is evidence that managers will not adopt income increasing discretionary accruals when the resulting net income will remain below the lower bound and no bonus will be earned. There is also evidence that the managers have no incentives to employ income-increasing accounting accruals if income, before

discretionary accruals, is above the upper bound because increasing income may not increase the bonus reward. This suggests that managers' choice of accounting accrual is associated with the expected reward of their bonus plan.

2.5.2 Management buyout

Studies of earnings management prior to management buyouts have provided mixed results. DeAngelo (1986), in her study investigating the accounting decision made by managers of 64 New York and American Stock Exchange companies who proposed a management buyout of public stockholders during 1973-1982, hypothesised that these acquisitions engender potentially severe managerial conflict of interest. This is because managers, who have a fiduciary duty to negotiate a fair value for publicly-held shares, are themselves the purchasers of those shares, and thus have a countervailing incentive to minimise the compensation paid. However, such empirical evidence does not support the hypothesis that managers of sample companies systematically understated earnings before the management buyout.

This finding is in contrast to the findings of Perry and Williams (1994) and Marquardt and Weidman (2004), each of whom found evidence of income manipulation prior to a management buyout. Perry and Williams (1994), using the Jones (1991) model, provide evidence of significant negative discretionary accruals prior to any management buyout. Marquardt and Weidman (2004), using the same model, also find evidence that companies engaging in a management buyout delay their revenue recognition. Because of severe managerial conflicts of interest in the buyouts, the insignificant result in DeAngelo (1986) may be explained by the careful examination and close scrutiny made by public stockholders and their financial advisors for evidence of income-reducing accounting techniques. Managers therefore, faced with the prospect of litigation costs which could engender their personal wealth losses through allegation of fraud, have no incentive to employ a systematic accounting technique for materially reducing reported earnings (DeAngelo, 1986).

2.5.3 Regulatory motivations

The earnings management literature has also explored the effects of regulation on managers' incentives to manage earnings. For example, it is often alleged that managers of companies vulnerable to an anti-trust investigation, or other adverse political consequences, have incentives to manage earnings in order to appear less profitable (Watts and Zimmerman, 1978).

A number of studies have examined whether regulatory scrutiny increases the likelihood of earnings management. Jones (1991) found that companies in industries seeking import relief tend to defer income in the year of application. Cahan (1992) showed that companies investigated for monopoly-related violations reported income-decreasing abnormal accruals in investigation years. Similarly, Key (1997) examines unexpected accruals for companies in the cable industry during periods of Congressional scrutiny on whether to deregulate the industry. Navissi (1999) examines discretionary accruals made by New Zealand companies subjected to regulation, allowing them to apply for increased prices in order to gain relief from the financial hardship caused by Price Freeze Regulation. He/she provides evidence of income decreasing discretionary accruals for the years during which they could apply for price increases. In summary, the earnings management studies strongly suggest that regulatory considerations provide incentives for companies' earnings management.

2.5.4 Lending contracts

Prior studies have examined whether companies that are close to the limits of their lending covenants manage earnings. Empirical studies using samples of financially distressed companies, however, suggest that different incentives affect accounting choices in those companies. For example, DeAngelo et al. (1994) examine whether NYSE listed companies with persistent losses change their accounting method or accruals to avoid cutting dividends. They find that managers of these companies adopt

income-decreasing accounting choices, even though dividends are under pressure, due to negotiation of private debt agreements.

While dividend-paying companies can avoid violating their dividend constraint by cutting dividends when necessary, debt covenant violations mean their companies may have fewer options available. DeFond and Jiambalvo (1994) and Sweeney (1994) examined a sample of companies that actually violated a lending covenant. Their results are mixed. DeFond and Jiambalvo (1994) find that sample companies accelerate earnings one year prior to the covenant violation and interpret this as evidence of earnings management by companies close to the limits of their lending covenants. Sweeney (1994), on the other hand, finds that sample companies make income-increasing accounting changes after the violations. This finding indicates that the companies did not make accounting changes to avoid violation of lending covenants, but that the changes were made to reduce the likelihood of future covenant violations.

In a later study, Saleh and Ahmed (2005) find evidence of significantly more negative accruals for distressed companies during the year surrounding renegotiation with lenders, compared to similar financial performance companies which have not undertaken debt renegotiation during the same period.

2.5.5 Seasoned equity offerings

Managed reported earnings can improve the terms on which companies' stocks are sold to the market. Since this provides direct monetary benefits to managers and their companies, share offerings provide a direct incentive to manage earnings (Dechow and Skinner, 2000). Prior empirical studies provide evidence that managers manage earnings at the time of seasoned equity offerings (Rangan, 1998; Teoh et al., 1998b; Shivakumar, 2000; Marquardt and Wiedman, 2004a). Rangan (1998) and Teoh et al. (1998b), in their studies of US seasoned equity offerings, show that: (1) reported earnings of companies that make SEOs are higher in the issue year; (2) high reported

earnings are attributable to unusually high discretionary accruals; (3) there is a negative relation between pre-issue discretionary current accruals and post issue stock earnings and stock price performance. These results suggest, when a seasoned equity issue is offered, investors naively extrapolate pre-issue earnings and therefore overvalue stocks. Subsequent to the offerings, when the reversal of discretionary accruals causes earnings to decline, the market is disappointed and corrects its valuation errors. They conclude that issuing companies can manage their stock price by managing earnings because the stock market does not correctly value the implications of discretionary accruals for subsequent earnings.

Consistent with Teoh et al. (1998b) and Rangan (1998), Shivakumar (2000) finds evidence of earnings management around equity offerings for his US studies. However, in contrast to the conclusions of Teoh et al. (1998b) and Rangan (1998), he concludes that seasoned equity issuers' earnings management may not be designed to mislead investors, but may reflect the issuers' rational response to anticipate market behaviour at offering announcements. He calls his argument for earnings management the "Managerial Response" hypothesis. He argued that since issuers cannot credibly signal the absence of earnings management, investors treat all companies announcing an offering as having overstated prior earnings, and subsequently discount their stock prices. Anticipating stock market behaviour, issuers rationally overstate earnings prior to offering announcements at least to the extent expected by the market. The hypothesis is supported as evidence by a negative relation between pre-announcement abnormal accruals and the stock price reaction to the offering announcement. He comments that the negative relation between pre-offering accruals and post-offering returns found by Teoh et al. (1998b) and Rangan (1998) seems to be induced by test misspecification owing to, among other factors, skewness in the long-horizon returns data.

2.5.6 Stock merger and acquisition

Prior research has discussed the role of accounting earnings in equity valuation (e.g. DeAngelo, 1986, 1990) with an empirical focus on management buyouts (e.g. DeAngelo, 1986; Perry and Williams, 1994). Because management is buying the company in these transactions, it is argued that they then have an incentive to reduce earnings prior to the transaction in an attempt to reduce the purchase price. A similar study to the studies of earnings manipulation in a management buyout, is one which focuses on earnings management prior to a stock for stock merger.

Erickson and Wang (1999) argued that an acquiring company has an incentive to manage its earnings upward in order to increase their stock price prior to a stock for stock merger. They suggested a higher stock price will minimise the dilution of voting power and control of existing stockholders, particularly manager-stockholders¹⁰. A higher price of the acquiring company's stock reduces the number of shares that the acquiring company must use in the exchange, and therefore, will reduce the cost of acquiring the target company. Using a sample of 55 mergers, the findings indicate that acquiring companies will manage earnings upward in the period prior to the merger agreement. In a similar study of Malaysian companies, evidence is also provide that, in the year prior to the acquisition, acquiring companies in share for share acquisitions manage earnings upward in an attempt to increase their share price prior to the acquisition (Abdul Rahman and Abu Bakar, 2002). A later study by Louis (2004), using a large sample of 373 mergers of publicly traded US companies, provides strong evidence to suggest that acquiring companies overstate their earnings in the quarter preceding a stock swap announcement.

A later study by Koumanakos and Georgopoulos (2005) however, finds weak support for earnings management by managers in the year preceding the announcement and

¹⁰ Amihud et al. (1990) conclude that the dilution of management control associated with a stock for stock merger increases the likelihood that high management ownership acquiring firms will purchase target firms for cash.

completion of the acquisition. They argued the difference in results may be due to sampling bias, resulting from the small number of acquiring firms used in the study. In fact, the majority of the deals included in their sample are cash mergers and only a minority are stock for stock mergers.

Table 2-5 shows prior empirical studies of earnings management in different contexts.

Table 2-5: Empirical studies of earnings management in different context

Context	Study	Motivations	Sample	Methodology	Results
Management compensation scheme	Healy (1985)	Effect of bonus plans on accounting choices	239 company years of US industrial corporations	Total accruals	Evidence that managers select accounting procedures and accruals to maximise the value of their bonus awards
Management buyout	DeAngelo (1986)	Investigates accounting choices made by managers who proposed a management buyout of public stockholders	64 NYSE and American SE companies proposing a management buyout	Change in total accruals	No evidence of income decreasing earnings management in periods prior to a management buyout of public stockholders
	Perry and Williams (1994)	EM prior to the buyout proposal	175 management buyouts during 1981-1988	Jones (1991) model	Evidence of negative discretionary accruals in the year preceding the announcement of management buyout
Regulatory motivations	Marquardt and Wiedman (2004)	Examines EM in three different contexts to determine whether the specific accrual used varies with the motivation behind EM	1290 equity offering firms for the period 1995-1999	Jones (1991)	Companies engaging in management buyout delay their revenue recognition.
	Jones (1991)	EM during an inquiry of the International Trade Commission	23 samples in 5 US industrial sectors	Jones (1991) model	Managers decrease earnings through earnings management during import relief investigations
	Key (1997)	Examining discretionary accruals in the cable television industry to mitigate Congressional scrutiny and potential regulation	US cable service companies	Jones (1991)	1. Discretionary accruals are income-decreasing in the Congressional scrutiny period 2. The magnitude of income-decreasing discretionary accruals is greater for strictly cable TV operators firms than diversified firms.
	Navissi (1999)	EM under price regulation	62 New Zealand firms one control sample	Dechow et al. (1995)	Evidence of income-decreasing EM in year price regulation applies (year 0)
	Haw et al.	Examines whether listed Chinese	329 firms listed firms	Cross-	Managers use income-increasing

	(2005)	firms manage earnings to meet regulatory benchmark	that reported an ROE between 10-11% during 1996 -1998	sectional Jones (1991) model	accounting accruals to meet regulatory ROE targets
Lending contracts	DeFond and Jiambalvo (1994)	EM for firms approaching debt covenant violation	94 firms with covenant violations	Time-series and cross-sectional Jones (1991) model	Abnormal total and working capital accruals are significantly positive in the year prior to violation
	Saleh and Ahmed (2005)	Examines EM in financially distressed companies	153 Malaysian financial distressed companies that defaulted on their debt payments and debt restructuring in 98 and 99	Modified Jones (1995) model	DA is significantly negative during the year surrounding renegotiation with lenders compared with those of a control sample companies which have not undertaken debt renegotiation but experienced similar financial performance
Seasoned equity offerings	Teoh et al. (1998b)	Examines whether income increasing earnings management prior to offering affect post issue stock returns and net income.	1256 US firms conducting seasoned equity offerings during 1976-1989	Modified Jones (1995) model	1. DA are significantly positive, rising to the peak in the offering year and decline monotonically in post issue year until year +3 2. There is a negative relation between pre-issue DA and post-issue stock returns
	Rangan (1998)	To investigate whether EM around the time of offering can explain the poor performance in the following year (earnings changes and market adjusted stock return)	230 US company seasoned offerings during 1987-1990	Jones (1991) modified by DeChow (1995) model	DA during the year around the offering is negatively correlated to earnings changes and market adjusted stock return in the following year
	Shivakumar (2000)	Investigates whether companies overstate earnings before seasoned equity offerings and whether, at offering announcements, investors recognize and undo the effects of	1222 U. S seasoned equity offerings of industrial companies during 1983 -1992	Jones (1991) model	1. DA are abnormally high around equity offerings 2. Negative relation between pre-announcement abnormal accruals and the stock price reaction to the

	such earnings management	192 Seasoned equity offering firms.	Modified Jones (1995) model	offering announcement
Stock merger and acquisition	Marquardt and Wiedman (2004a)	Examines whether EM affects the value relevance of net income and book value in determining stock price	192 Seasoned equity offering firms.	Evidence of EM in the year of secondary equity offering, i.e., when managers are selling their own shares
	Kim and Park (2005)	Examines the relations between earnings management by SEO companies and the pricing of their offer	1040 US seasoned equity offerings	Evidence of significant DA in the year of offerings. Negative relation between DA and underpricing indicates management engage in earnings management to push the offer price to receive more proceeds from their offerings.
	Erickson and Wang (1999)	Examines whether acquiring firms attempt to increase stock price by managing earnings prior to a stock for stock merger	55 firms involved in stock for stock merger during 1985-1990	Evidence of income increasing discretionary accruals in the periods prior to the merger agreement
	Abdul Rahman and Abu Bakar (2002)	Examines whether there is any manipulation of earnings by acquiring companies in the period preceding the acquisitions	125 share for share acquiring companies and 158 cash acquisitions companies	Evidence of upward earnings management in the year prior to the acquisition for acquiring companies for share for share acquisitions
	Louis (2004)	Examines the effects of earning management on the performance of acquiring firms	373 mergers of publicly traded U.S. companies during 1992 - 2000	1. Evidence of upwards earnings management in the periods prior to a merger announcement 2. Evidence of post-merger reversal of stock price effects of the pre-merger earnings management
	Koumanakos and Georgopoulos (2005).	Examines whether acquiring firms manipulate accounting earnings prior to the initiation and completion of mergers and acquisitions	42 stock for stock and cash acquisitions of firms listed in the Athens Stock exchange	Weak evidence of earnings management by managers in the year preceding the merger announcement

2.6 Managing earnings around a public issue

Earnings play an important role in evaluating the firm. Investors in public markets generally do not have private access to corporate information and therefore rely heavily on the information which companies provide in the prospectuses during public offerings (Teoh et al., 1998b; DuCharme et al., 2001). Aharony et al. (1993) argued that because a company's prospectus is both the primary promotional document for the IPO and the main source of public information for investors, managers may well believe that their accounting choices can affect the value of the IPO. Therefore, the possibility of influencing investor response and the initial offer price through accounting choices may provide the management with the incentive to do so. Table 2-6 shows prior empirical studies of earnings management around IPOs.

Two earlier studies addressing discretionary accounting choices by issuers of IPOs focus on the possibility that issuers inflate earnings by managing accruals. Aharony et al. (1993) examined whether IPO issuers manipulate earnings prior to an initial offering. Arguing that managers have incentives to behave opportunistically in an effort to increase the initial offering price, they examine a proxy for discretionary accruals as potential evidence of manipulation. Their empirical results, however, provide weak support for the accounting manipulation hypothesis. To the extent that evidence of earnings management was detected, it was more pronounced for smaller companies and those with higher leverage.

Friedlan (1994) also addresses the issue of accounting choices for IPOs. Noting that there is an apparent association between financial statement information and the offering prices of IPOs, Friedlan (1994) argues that issuers have incentives to exercise accounting discretion to increase the proceeds from their offerings. As in Aharony et al. (1993), a modified accrual estimation technique is employed to assess whether accruals increase beyond what might be expected given the growth of the company. By examining interim as well as annual financial statements prior to the initial offering,

Friedlan (1994) reports results consistent with the hypothesis that issuers of IPOs, on average, use discretionary accruals to increase income prior to going public. In a later study, Neil et al. (1995) examine directly the accounting method choices made by IPO companies for the fiscal year ended immediately prior to the initial public offering date¹¹. They provide evidence consistent with the hypothesis that investors interpret the choice of liberal methods as a credible signal of high company value. The result exhibits a positive association between the initial offering proceeds and the choice of liberal accounting methods.

In the late 1990's, research began to focus on the relationship between earnings management around the IPO and the post-offer stock returns. Teoh et al. (1998a), find evidence that is consistent with earnings management in the year a company goes public. They also find that issuers with unusually high accruals in the IPO year experience poor stock return performance in the three years thereafter. For example, Teoh et al. (1998a) show that discretionary accruals are highest in the year of the IPO and are negatively correlated with future net income and cash flow from operation. In a second paper, Teoh et al. (1998b), in their analysis examining stock price performance in the post-IPO reporting period, find that discretionary accruals and stock performance are negatively correlated.

¹¹ The counting method choices considered in the classification scheme are the depreciation method and the inventory cost flow assumption. a company using both accelerated depreciation and LIFO is classified as a 'conservative' methods company (income decreasing accounting choice), one using neither accelerated depreciation nor LIFO is a 'liberal' company (income-increasing accounting choice), and all other companies are 'mixed' method companies. 'Mixed method' companies were excluded from the sample.

Table 2-6: Empirical studies of earnings management around initial public offerings (IPOs)

Study	Motivations	Sample	Methodology	Results
Aharony (1993)	Examines whether entrepreneurs manipulate earnings in the periods prior to IPOs	229 U.S. industrial companies during 1985-1987	Total accounting accruals developed in Healy (1985) and DeAngelo (1986)	1. Only weak support that entrepreneurs chose accounting methods to manage reported net income in the period prior to the public offering. 2. The phenomenon is more pronounced among small firms and firms with high leverage
Friedland (1994)	Examines whether IPO issuers making discretionary increasing accruals in the financial statements included in prospectuses	277 of IPO firms in the U.S. during 1981 - 1984	DeAngelo (1986) model	Issuers of IPOs make income-increasing discretionary accruals before going public.
Neil et al. (1995)	Examines the relationship between accounting method choice and (1) the pricing of initial offering company; (2) the under-pricing of initial offerings	505 U.S IPOs for the period between 1975-1984	Examined accounting method choices used (depreciation and inventory method)	1. A positive association between initial proceeds from the offering and the selection of liberal accounting methods 2. The presence of liberal accounting methods has a positive association with the level of underpricing
Teoh et al. (1998a)	To examine the relationship between positive accruals in the IPO year and post IPO stock return performance	1649 IPO U. S. company years	DCA using Jones (1991) modified by Dechow (1995) model	1. EM are high around the IPO relative to those of non-issuers 2. Issuers with unusually high accruals in the IPO year experience poor stock return performance in the three years thereafter
Roosenboom et al. (2003)	Examines EM by IPO companies in a European country	64 IPOs in Amsterdam	Modified Jones (1995) model	1. Managers manage their earnings upwards in the first year as a public company 2. Negative association between the size of DCA in the first year and the long run stock price performance over the next 3 years

Gramlich and Sorensen (2004)	To determine whether managers exercise DA to reach the earnings forecast targets they voluntarily specify in IPO prospectuses	Danish IPO companies who voluntarily disclosed Profit forecasts during 1984 - 1996	Healey (1985) model	<p>1. Danish IPO companies engage in accruals management to reach their voluntary earnings forecasts targets</p> <p>2. DA are made to reduce forecast error without regard to whether pre-managed earnings are greater or less than their target forecast</p>
Du Charme et al. (2004)	Examines the relations among management, accruals, port-offer returns and lawsuits	The US SEOs and IPOs companies.	Modified Jones (1995) model	<p>1. Evidence of positive abnormal accrual around stock offers</p> <p>2. Accruals are negatively related to post-offer stock returns</p> <p>3. Stock returns are much lower and reversals much more pronounced for firms that are sued in connection with their offers</p>
Jaggi et al. (2006)	To examine whether forecast error was reduced by manipulating earnings	Taiwan industrial IPO companies from 1994 to 2002. 253 companies with a total of 759 forecasts.	Modified Jones (1995) DCA	<p>1. Optimistic forecasts errors were reduced more significantly by using discretionary accruals than revising the forecasts</p> <p>2. Earnings management increased considerably after the regulation requiring inclusion of profit forecasts in IPO prospectuses</p>

The evidence discussed above suggests that earnings are managed in the relatively highly litigious US environment. Further research in an environment with less legal implications may provide a more complete picture of the issuer earnings management behaviour at the time of offering. Using a sample of 64 Dutch IPOs, Roosenboom et al. (2003), examine the pattern of discretionary current accruals over time. They find that managers manage their company's earnings in the first year as a public company but not in the years before the IPO. They also find a negative association between the size of discretionary current accruals in the first year as a public company and the long run stock price performance over the next three years. Ahmad Zaluki (2005), in her analysis of the association between the magnitude of earnings management in the IPO year and post-IPO performance of Malaysian IPO companies for the period from 1990 to 2000, provides evidence of significantly higher discretionary accruals in the year of IPO. She also finds evidence that aggressive earnings management at the time of an IPO leads to poor post-IPO stock market and operating performance. These findings are consistent with Teoh et al.'s (1998a) US study.

Gramlich and Sorensen (2004) investigate accrual management toward earnings forecasts in an environment where there is less enforcement of accounting standards. Examining 58 Danish companies which issued voluntary management earnings forecasts in connection with IPOs between 1984 and 1996, their evidence strongly suggests that these companies engaged in accruals management to reach their voluntary earnings forecast targets. However, in contrast with Kasznik's (1999) results related to voluntary forecasting American companies, managers of these Danish companies exercised discretionary accruals to mitigate earnings forecast errors regardless of sign of forecast error. They suggest that managers view voluntary earnings forecasts as terms of an implicit contract with stakeholders and discretionary accruals appear to be used to narrow the gap between forecast and reported earnings.

Prior research in the US, and Amsterdam (Friedlan, 1994; Teoh et al., 1998a; Roosenboom et al., 2003) documents consistent evidence of significant income-

increasing discretionary accruals in the year of the IPO or in the first year as a public company. The first reason given by Roosenboom et al. (2003) for income-increasing earnings management is to support the stock price of the firm. As managers have entered into lock-up agreements with underwriters preventing them from selling shares for a specified period, managers who wish to sell their shares at the end of the lock-up period may have an incentive to support the stock price of the firm in the first year after the IPO. Another reason is the pressure to meet earnings forecasts issued at the time of the IPO. Managers also tend to manage earnings upwards in the first year after the IPO because companies are facing unusual legal and reputation scrutiny after the IPO (Friedlan, 1994; Teoh et al., 1998b), or to counter bad news which may adversely affect the stock prices (Friedlan, 1994).

Kaszniak (1999), in a study of earnings management in companies providing voluntary earnings forecasts, found evidence that companies have significantly higher positive discretionary accruals in the forecasting year than in other years. He predicts two incentives for managers who issue an earnings forecast that later becomes inaccurate to manage reported earnings toward the forecast. The first incentive is to avoid potential legal liability and the second is to avoid the loss of reputation for accuracy. There is support for the hypothesis that managers who overestimate earnings use income-increasing discretionary accruals to mitigate their forecast error. Also found was evidence that the extent of earnings management activity is positively associated with proxies for the increased likelihood and cost of litigation associated with management earnings forecast error.

Recent study by Jaggi et al. (2006), examines 253 Taiwan companies subjected to regulation requiring disclosure of earnings forecasts in the IPOs. Using forecast error as an indication of whether companies made optimistic or conservative forecasts, they find evidence supporting the hypothesis of IPO companies issuing more optimistic forecasts than conservative forecasts after the regulation was imposed. Further investigation shows that the forecast errors of optimistic forecasts are reduced by adjusting the

reported earnings using discretionary accruals rather than by revising the earnings forecasts, as allowed under the Taiwan Securities and Futures Exchange Commission (TSFEC). The Z-statistics results show there is a significant difference between the percentage of optimistic forecasts companies reporting positive discretionary accruals compared with those reporting negative discretionary accruals.

In summary, previous studies have tested earnings management relating to public issues and equity offerings, including IPOs. The empirical results have shown that IPO companies manage their earnings significantly upwards in the period of the IPO or in the first year as a public company. They have also shown that earnings management persists beyond the first year where there is continuing formal scrutiny.

Later studies on earnings management have focused on the company characteristics associated with earnings management. The next section reviews prior empirical studies examining factors associated with earnings management.

2.7 Factors associated with earnings management

Recent studies on earnings management examine the relation between company specific characteristics and the incidence of earnings management. These studies have mostly focused on the effect of board monitoring and internal company corporate governance in constraining earnings management. Table 2-7 shows prior empirical studies of factors associated with earnings management.

Fama and Jensen (1983), recognise the importance of the role of the board of directors in corporate governance, particularly in monitoring financial discretion choices made by the management. Prior research documents evidence that the proportion of outside directors has a significant negative association with earnings management in UK companies (Peasnell et al., 2005). The findings indicate that when pre-managed

earnings fall below either zero or previous year's reported earnings, there is less income-increasing earnings management for companies with a high proportion of outside directors. Peasnell et al. (2005) conclude that successful monitoring by outside directors plays an important role in frustrating earnings management strategy. This helps to uphold the integrity and credibility of published financial statements. Davidson et al. (2005), find a similar result for an Australian study. They find that having a majority of non-executive directors on the board is significantly associated with a lower likelihood of earnings management. These two findings are consistent with Beasley (1996) who suggests that the inclusion of outside members on the board of directors increases the board effectiveness at monitoring management for the prevention of financial statement fraud.

In contrast to board composition results, Peasnell et al. (2005) find no evidence that the presence of an audit committee affects the extent of income-increasing manipulations. Davidson et al. (2005) only find support for an association between an audit committee and a reduction in earnings management when the audit committee comprises a majority of non-executives. No association is found when audit committee independence is measured with all committee members found to be non-executives. Peasnell et al. (2005) conjecture that their failure to detect an audit committee effect may be due to the majority of their sample companies having an audit committee. They suggested, in understanding more about the effectiveness of this governance mechanism, that any future research on this issue would need to distinguish companies according to the quality of their audit committees.

Theoretical research shows that auditors play an important role in reducing the adverse impact of information asymmetry in the IPO process. Datar et al. (1991) find that the information asymmetry in the IPO process is mitigated by the role of auditor and audit quality. Chen et al. (2005) find evidence that high a quality industry specialist auditor is associated with lower income-increasing earnings management. This is consistent with Becker et al. (1998) who find that unexpected accruals are reduced when existing publicly-traded companies use a Big Five auditor.

Table 2-7: Factors associated with earnings management

Study	Objectives	Country	Year	Sample	Independent variables (Statistically significant)	Comment / explanation	Non-significant variables
Peasnell et al. (2005)	Examines whether the incidence of earnings management depends on board monitoring	UK	1993-1996	559 firms	Outside directors [-] Board ownership [-]	<p>1. Outside directors play an important monitoring role to uphold the integrity and credibility of financial statements</p> <p>2. Lower income-increasing EM for companies with a high proportion of outside board members</p> <p>3. The negative coefficient on board ownership is consistent with the view that there is less earnings management the more closely aligned the managerial and shareholder interests</p>	<p>Audit committee Size</p> <p>Leverage</p> <p>Auditor</p> <p>Board size</p>
Davidson et al. (2005)	Examines the role of a company's internal governance in constraining earnings management.	Australia	2000	434 firms	Board independence (the board comprised of a majority of non-executive directors) [-] Audit committee when majority of committee members are	<p>The board who is entirely independent from management can act as an effective mechanism in monitoring management</p>	<p>Internal audit</p> <p>Audit committee (all committee members being non-executives)</p>

Cheng and Warfield (2005)	Examines the link between managers' equity incentives and earnings management	US	2005	9472 firm-years during 1993-2000	non-executives. [-] Equity incentives [+]	Managers with high equity incentives can lead to incentives for EM as managers can benefit from short-term stock price increase	
Chen et al. (2005)	Investigates the relationship between audit quality and earnings management	Taiwan IPOs	1999-2002	367 new issues	Audit quality [-]	High quality (industry specialist) auditors constraining EM and providing more precise information	

2.8 Summary and conclusions

This chapter has presented the theoretical background of underlying issues relating to earnings forecast accuracy and earnings management. The background of theories and testable hypothesis has brought out a significant gap in the literature in terms of the link between earnings management and forecast accuracy; specifically the study of this link in developing countries. The main conclusions are as follows:

Firstly, the review has shown that most of the earnings management studies have focused on corporate governance effects (see Table 2-7) which may help to constrain earnings management practices. The studies are also concentrated in developed countries. Although Jaggi et al. (2006) find that companies making an optimistic forecast in Taiwan used positive discretionary accruals to reduce forecast error, no prior research has examined the link between earnings management and forecast error in a more rigorous analysis. In expanding the contribution of the study of forecast accuracy and earnings management, this research attempts to examine whether companies engage in earnings management in reporting their income to meet the forecast threshold set by regulation.

Secondly, with effect from January 1996, Malaysian IPO companies have been subjected to revised regulation regarding the disclosure of earnings forecast which has not been examined before. The change in regulation may have an effect on the accuracy of earnings forecast. The revised regulation may also have an effect on the choice of accounting policies adopted by management in reporting their actual earnings. The result will provide evidence on whether regulation has an impact on the accuracy and the choice of accounting method adopted by managers in reporting their actual earnings.

Thirdly, prior studies on forecast accuracy highlight the significance of an economic condition variable. This suggests that the economic condition variable is a pertinent issue which should be considered in the study of forecast accuracy in IPO prospectus.

Previous studies on earnings forecast accuracy of Malaysian IPOs used data from before the period of economic crisis (see Table 2-3) and none of these studies has taken into consideration the possible effect economic condition may have on accuracy. Evaluation of IPO company earnings forecast accuracy in a period of significant change in economic condition will contribute to knowledge, because the results will provide evidence on whether external factors beyond management control affect the companies in meeting their earnings forecast.

Fourthly, the review of theories in Section 2.2 shows that there are many frameworks providing theoretical reasons to explain a company's earnings management behaviour. Agency theory explains earnings management behaviour in relation to problems caused by poor alignment of interests between management and shareholders. The theory considers ownership in the company as a medium for reducing agency costs. Signalling theory explains that managers employ their accounting discretion to give a good signal to the market. Reputational costs theory views earnings management as a method by which companies seek to safeguard their reputation for reliability, and to avoid lawsuits by shareholders. Earnings management employed by the management may also be a way for companies to mitigate the effect of industry regulation. While the applicability of some theories may be straightforward, there may be the consequence of different institutional and regulatory contexts that should be considered in the interpretation of results. For example, high managerial ownership may help to align the interests of management and shareholders in a diffused ownership company. Alternatively, managers in a high ownership concentration company may employ greater income-increasing earning management for their own benefits at the expense of non-managerial owners. Leuz et al. (2003) in their study of earnings management in three different country clusters¹² found that earnings management appears to be lower in economies

¹² Three distinct country clusters are identified: 1) outsider economies with large stock markets, dispersed ownership, strong investor rights, and strong legal enforcement (e.g., UK and US), 2) insider economies with less-developed stock markets, concentrated ownership, weak investor rights, but strong legal enforcement (e.g., Germany and Sweden), and 3) insider economies with weak legal enforcement (e.g. Italy and India).

with large stock markets, dispersed ownership, strong investor rights and strong legal enforcement.

Finally, the review has shown that prior research has used quantitative techniques to identify factors influencing forecast accuracy in company prospectuses. No attempt was made to identify factors influencing forecast accuracy by interviewing market participants and regulator. Thus an opportunity arises for extending the research on forecast accuracy to include qualitative interview method. Interviews with market participants and regulators may shed lights on other factors influencing accuracy which may not have been captured in a statistical model. The interview results will contribute to knowledge because the results can also be used to support or clarify statistical observations.

The research study that follows attempts to explain disclosure of management forecasts at the time of IPO by considering the complex environment in which disclosure takes place and the wide variety of variables suggested by the literature, (and summarised in this chapter) that might influence accuracy and earnings management.

More rigorous analysis using OLS regression will be carried out by incorporating other variables to represent changes in economic condition and corporate specific characteristics in the analysis. Therefore, in addition to examining the link between income-increasing earnings management and forecast error, the analysis will allow a more comprehensive exploration of the interrelationship among a set of variables, providing information about the model as a whole and the relative contribution of each of the variables that make up the model. This will provide a better insight into the factor associated with earnings management. It will also contribute to the literature in terms of its research design, by paying particular attention to the external constraints imposed by regulatory change and economics conditions.

The next chapter provides an overview of the Malaysian market. The discussion focuses on the regulatory changes with respect to earnings forecast disclosure that took place on 1 January 1996, and the changes in economic condition experienced by the country during the period from 1996 to 2002.

CHAPTER 3: THE MALAYSIAN IPO REGULATORY FRAMEWORK AND ECONOMIC ENVIRONMENT

3.1 Introduction

This chapter presents an overview of the Malaysian IPO regulatory framework and its economic environment. The discussion focusses on three different economic periods namely a pre-crisis, an economic crisis and an economic recovery period (see Section 3.7). A discussion on the regulatory changes affecting earnings forecast disclosure in company prospectus which have taken place in January 1996 is also provided (see Section 3.5 and 3.6). This chapter highlights the main aspects of the economic and regulatory environment which are expected to influence forecast accuracy and management behaviour in reporting their actual earnings. The discussion on regulation of earnings forecast, and changes in economic condition experienced by Malaysia during the period of study, assist in understanding the issues related to accuracy and earnings management behaviour of IPO companies. Jones (1991) hypothesises that regulation has an impact on management reporting behaviour. Prior empirical studies also document evidence that economic condition influences the accuracy of forecast made by management (Chan et al., 1996; Pedwell et al., 1994).

Section 3.2 gives a brief introduction to IPOs in Malaysia. Section 3.3 discusses regulatory bodies responsible for the supervision and management of the securities industry in Malaysia. Section 3.4 briefly discusses the procedures for initial listing. This is followed by a discussion of the Malaysian IPO prospectus guidelines in Section 3.5. Section 3.6 provides a discussion of the IPO share moratorium and profit guarantee regulation that became effective on 1 January 1996. Section 3.7 discusses the economic conditions experienced by Malaysia during the period of study, focusing on three different economic periods, namely a pre-crisis period, an economic crisis period and an economic recovery period, and their impact on the Malaysian economic growth and stock market performance. Section 3.8 summarises and concludes the chapter.

3.2 IPOs in Malaysia

The IPO market in Malaysia differs from other IPO markets in a number of ways. Most importantly, IPOs are an instrument of official government policy, used to redistribute national wealth among different ethnic groups¹³. This new policy mandates that at least 30 percent of new shares offered by a company seeking listing should be sold to the Bumiputera investors or to mutual funds owned by them¹⁴. Consequently, IPOs are strictly regulated and monitored by the government, which involves a lengthy process before approval is granted for official listing on the KLSE.

In contrast to the markets of developed countries, companies seeking a listing in Malaysia are required to determine offer prices at the time of application to the Securities Commission, which will consider the application and the proposed offer price before it gives its approval. The company publishes an offer by means of a prospectus, inviting the public to subscribe for shares. The interested investor may subscribe for the issue by submitting the application on a prescribe form. The issue must be underwritten, normally by merchant banks and issuing houses. Should the issue be oversubscribed, selection of successful applicants will be made by means of balloting and if the issue is under subscribed, no balloting is necessary.

3.3 Regulatory bodies

A sound regulatory framework exists to govern the Bursa Malaysia and the Malaysian securities industry, maintaining investors' confidence in a market which promotes fair and open price formations, providing investor protection, and ensuring prompt and reliable information disclosure and dissemination. Given the vibrant nature and fast pace of developments in capital markets, the regulatory framework is continuously being

¹³ Record of Parliamentary Proceedings (1975), The Government Printers.

¹⁴ SC Policies and Guidelines on Issue/offer of Securities, Chapter 6, Part II.

reviewed and enhanced in order to be reflective of the environment in which the industry operates¹⁵. The following regulatory bodies are responsible for the supervision and management of the securities industry:

3.3.1 The Securities Commission (the SC)

The Securities Commission (SC) is a public sector body established under the Securities Commission Act, 1993 to provide regulation, and to advise the Minister of Finance, on all matters relating to the securities and futures contracts industries. It reports to the Minister of Finance and its accounts are tabled annually in Parliament. It places great importance on due diligence and the professional responsibilities of the corporate advisers, directors and management of public companies, as well as the adoption of high standards of disclosure and accounting standards. It has statutory power to enforce compliance of its regulations.

The SC's many regulatory functions include¹⁶:

- supervising exchanges, clearing houses and central depositories;
- registering authority for prospectuses of corporations other than unlisted recreational clubs;
- approving authority for corporate bond issues;
- regulating all matters relating to securities and futures contracts;
- regulating the take-over and mergers of companies
- regulating all matters relating to unit trust schemes;
- licensing and supervising all licensed persons;
- encouraging self-regulation; and
- ensuring proper conduct of market institutions and licensed persons.

Underpinning all these functions is the SC's ultimate responsibility to protect the investor. Apart from discharging its regulatory functions, the SC is also obliged by statute to encourage and promote the development of the securities and futures markets in Malaysia.

¹⁵ Bursa Malaysia listing Guidelines

¹⁶ www.sc.com.my

3.3.2 The Kuala Lumpur Stock Exchange

The Kuala Lumpur Stock Exchange was established in 1973. It is a self-regulatory organisation with its own Memorandum and Articles of Association, governing the conduct of its members in securities dealings. It is also responsible for the surveillance of the market place and for the enforcement of its Listing Requirements which spell out the criteria for listing, disclosure requirements and standards to be maintained by listed companies. It was renamed Bursa Malaysia Berhad on April, 14, 2004.

The Kuala Lumpur Stock Exchange (KLSE) requires an IPO company to have an operating history of at least five years and to have made a profit in the last three of those years. A prospectus accompanies each new issue and this usually contains an audited forecast of the next year's profit. Initial public offerings are made at fixed prices, which are published in prospectuses, and banking and financial institutions underwrite them. Substantial media coverage of IPOs helps publicize the new issues. Malaysian new issues are sold to the general investing public (and are not, therefore restricted to selected investors) and the shares are listed on the stock exchange. Companies are listed on either the Main Board or the Second Board of the exchange, and are classified into a range of diverse sectors reflecting their core businesses. Appendix 3-A shows the list of industries listed on the Bursa Malaysia at the initial date of study. Table 3-1 shows the number of companies listed on main board and second board for the period of study.

Table 3-1: Number of companies listed based on board of listing.

IPO year	Number of companies		
	Main Board	Second Board	Total
1996	40	52	92
1997	25	63	88
1998	6	22	28
1999	10	11	21
2000	12	26	38
2001	6	14	20
2002	22	22	44

3.4 Listing procedures

There are various bodies which administer and regulate the securities industry in Malaysia, among them the Ministry of Finance, Central Bank, Registrar of Companies, Foreign Investment Committee, Securities Commission and Bursa Malaysia. The following are the procedures for an initial listing application¹⁷

1. Company submits applications to Securities Commission
2. Company submits Memorandum and Articles of Association of company to the Exchange for approval
3. Company files initial listing application and supporting paper with the Exchange
4. Securities Commission approves listing
5. Exchange approves listing
6. Company files final copy of prospectus with Registrar of Companies and the Exchange
7. Company issues prospectus to public and offer period opens
8. Company announces basis for allotment
9. Company issues shares pursuant to the allotment
10. Shares admitted to Official List
11. Shares traded on the Exchange 3 market days after certificates have been dispatched or, in the case of prescribed securities, receipt of confirmation from Central Depository that the securities accounts of the successful applicants have been duly credited.

Before approval is granted, the SC make a financial and qualitative evaluation of the firm, taking into account the earnings and dividend forecasts by the firm and its underwriter.

¹⁷ KLSE listing Guidelines

3.5 IPO prospectus guidelines

Subsequent to the approval of the Securities Commission, and before the signing of the underwriting agreement and the announcement of the offer price, the board of directors and its lead underwriter are required to furnish a detailed prospectus to the SC and the KLSE. The content and form of the prospectuses must comply with the guidelines set out by Securities Commission Policies and Guidelines on Issues/Offer of Securities (Section 32, Securities Commission Act 1993). Chapter 13 of the prospectus guidelines lists the financial information required to be included in the prospectus, including a profit estimate/forecast in respect of initial public offerings¹⁸. The prospectus must include, among other things, financial information of the company categorized into general information, historical information, future financial information, and proforma consolidated balance sheet and reporting accountants' / auditors' letter. The historical financial information must include a table of the income statement of the corporation / group (proforma or actual) for the last 5 financial years and for the latest audited accounts¹⁹. As the information contained in the prospectus relating to initial public offers (IPOs) is usually the first documented information about the company, investors subscribing for new shares should read and understand the information disclosed.

The future financial information must include, among other things, a profit estimate/forecast, the accounting policies and calculations for profit and / or cash flow estimates / forecasts and / or projections (where applicable), which has been reviewed and reported by the Reporting Accountants²⁰. Sufficient detail on the basis and assumptions of the estimate/forecast and / or projections must also be disclosed to enable the investor to assess the reliability of the estimate/forecast and / or projections and the effect of any changes to the assumptions used²¹. Where an estimate is provided in respect of a

¹⁸ SC Prospectus Guidelines Public Offerings, 1 July 2000.

¹⁹ SC Prospectus Guidelines on Issue/Offer, Chapter 13, Part II.

²⁰ Chapter 13, part III, para 9 SC Prospectus Guidelines Public Offerings.

²¹ Chapter 13, part III, para 10 SC Prospectus Guidelines Public Offerings.

financial year which has less than 3 months to run, the forecast for the next financial year shall also be prepared and included in the prospectus²².

3.6 IPOs Share Moratorium / Profit Guarantee regulation

With effect from 1 January 1996, the Securities Commission placed greater importance on the accuracy of earnings forecasts made by Malaysian IPOs, with revised guidelines requiring IPOs in specific industries to provide a “guarantee” for their profit forecast (SC 1995).

‘the substantial shareholders and promoters of the main board applicant companies involved in construction, services or specialized activities and Second Board applicant companies are required to collectively opt either for a moratorium to be imposed on disposal of their shares in the applicant companies or to provide a profit guarantee of 90% of the forecast profit(s) as stated in the prospectus and also 90% of the submitted annual maintainable profits for the following two(2) financial years.’ (SC Guidance Notes 10-19, 1 January 1996.)

The Guidelines required the substantial shareholders and promoters of any main board applicant companies involved in construction, trading/services²³ or specialized²⁴ industries, and all second board applicant companies, either to opt for a moratorium to be imposed on disposal of their shares in the applicant company or to provide a profit guarantee of 90% of the forecast profit as stated in the prospectus (SC 1995). From 1 July 1997 all second board companies were required to provide a profit guarantee (SC 1997).

²² Chapter 13, part III, para 12 SC Prospectus Guidelines Public Offerings.

²³ Trading/services industries consist of companies in the trading, finance, hotel and property sector.

²⁴ Specialised industries consist of companies in the plantations and mining sector.

Under the moratorium condition the substantial shareholders who promoted the IPO were not allowed to sell or transfer their shareholdings for one year from the date of admission to the board. Thereafter they were allowed to sell only up to a maximum of 20% per annum for main board or 15% per annum for second board shareholders.

A profit guarantee is a contractual agreement between the major shareholders as guarantors, the company and the financial intermediary. Under the profit guarantee condition, the promoters guaranteed that in the financial year following listing the audited profit before taxation would be not less than 90% of the forecast profit before taxation of the group and that the profit before taxation of the group for each of the following two financial years would be not less than 90% of the maintainable profit²⁵ before taxation of the group. The guarantee of profits was secured either by providing a bank guarantee in favour of the IPO firm or by deposit of securities beneficially owned by the guarantors²⁶ with an independent stakeholder who was responsible for carrying out daily reviews of the price movement of the shares based on the daily closing transacted market price of the shares. In the event that the actual profit before taxation of the group was less than 90% of the guaranteed profit for the relevant financial years, the guarantors were required to compensate the group for the shortfall for each financial year concerned. From 30 April 1999, this guarantee condition was replaced by a share moratorium on all promoters of regulated IPOs, but with no condition on forecast accuracy (SC 1999).

Under the share moratorium rules currently in place in Malaysia, the major shareholders of all second Board companies and certain main board companies involved in construction, property developments, services or specialized activities are not allowed to sell, transfer or assign 45% of the issued share capital of the companies until one year

²⁵ Maintainable profit is not reported in the prospectus. It is an amount reported to the Securities Commission.

²⁶ SC Guidance notes para 10-13.

after listing. Thereafter, in every subsequent year, the major shareholders of the companies are permitted to dispose of 15% of the shares under moratorium²⁷.

3.7 Economic condition

When regulation of profit forecasts was introduced in 1996, Malaysia was experiencing a boom economy, with 10% growth of gross domestic product (GDP) (see Table 3-2). The market capitalization of the Kuala Lumpur Stock Exchange rose to RM 806.8 billion in 1996 compared with RM 156.1 billion in 1989. The year 1996 saw the highest number of companies being listed, with 92 new companies being listed on the Kuala Lumpur Stock Exchange (KLSE listing statistics-www.bursamalaysia.com), with the Kuala Lumpur Stock Exchange Composite Index (KLCI) closing the year above 1200 on November 21 1996, for the first time since 1993 and the Second Board closing the year at 576.31 (SC, 1996). Table 3-2 shows KLSE market capitalisation for the main and second boards, GDP growth, and end of period KLSE Composite Index for the years 1995 to 2002.

²⁷ Revision to the issue guidelines (summary of major changes to chapter 10, 11 and 18), May 1999.

Table 3-2: KLSE market capitalisation, GDP growth, and KLSE Composite Index for the year 1995 to 2002.

Year	KLSE market capitalisation			GDP Growth (%)	End of period KLSE Composite index
	KLSE main board (RM billion)	KLSE second board (RM billion)	Total (RM billion)		
1995	542.8	22.7	565.5	9.4	995.2
1996	746.0	60.8	806.8	10	1238.0
1997	354.2	21.6	375.8	7.3	594.4
1998	353.4	21.1	374.5	-7.4	586.1
1999	527.6	25.1	552.7	6.1	812.3
2000	423.9	20.5	444.4	8.3	679.6
2001	444.3	20.7	465.0	0.4	696.1
2002	464.5	16.4	480.9	4.1	646.3

Sources: Malaysia Economic Report 1999/2000, 2000/2001, 2002/2003
<http://www.treasury.gov.my>

In mid-1997, Malaysia experienced economic turmoil as a result of the Asian economic crisis triggered by the collapse of the Thai Baht in July 1997. The country's real gross domestic product (GDP) growth rate plummeted from 10 % in 1996 to -7.4% in 1998 and this remained negative until the first quarter of 1999²⁸ (see Table 3-2). For the year 1997, the Kuala Lumpur Stock Exchange market capitalization was brought down by 53.4% to RM375.8 billion, while the benchmark Kuala Lumpur Composite Index (KLCI) plunged 52.0%.

Table 3-3 shows Malaysia's key economic indicators during the three different economic period (i.e. the pre-crisis, economic crisis and economic recovery period).

²⁸ Malaysia economic report 1998/1999

Table 3-3: Malaysia Key Economic Indicators

Economic period	Year	Market capitalization (billion Ringgit) at month-end	US Dollar exchange rates at month-end	KLSE composite index at month-end
Pre-crisis	1996			
	December	774.23	2.53	1237.96
Crisis period	1997			
	July	725.38	2.63	1012.84
	August	542.73	2.92	804.4
	September	561.29	3.36	814.57
	October	472.19	3.35	664.69
	November	372.04	3.49	545.44
	December	362.90	3.89	594.44
	1998			
	January	344.63	4.18	569.51
	February	459.38	3.68	745.36
	March	447.17	3.58	719.52
	April	375.83	3.67	625.97
	May	324.75	3.84	538.24
	June	275.31	4.14	455.64
	July	247.06	4.12	402.65
	August	192.12	4.20	302.91
	September	239.96	3.80*	373.52
	October	256.36	3.80	405.33
	November	336.38	3.80	501.47
	December	363.14	3.80	586.13
Recovery	1999			
	January	373.49	3.80	591.43
	February	338.43	3.80	542.23
	Mac	307.59	3.80	502.82
	April	410.69	3.80	674.96
	May	446.27	3.80	743.04
	June	513.4	3.80	811.10

* The Ringgit was pegged at RM 3.80 per US dollar in September 1998 (MER 1999/2000).

The KLSE²⁹ Composite Index plunged from 1012 points in July 1997 to 804 points in August for the same year (SC, 1998). The market capitalization of the KLSE fell by 25.2% from 725.38 billion ringgit in July to 542.73 billion ringgit in August 1997. At the same time Malaysian currency depreciated in value from its normal average of RM 2.5 - 2.6 per US dollar to RM 2.92 in August 1997. This continued to depreciate to the lowest value of RM 4.20 per dollar before it was pegged at RM 3.8 per US dollar in September 1998.

Malaysia is considered to have begun recovering from its economic turmoil in the year 2000 when the economy rebounded in 1999 from a sharp 7.4% contraction in 1998 (MER 1999/2000). Real GDP registered a significantly milder contraction of 1.3% in the first quarter of 1999 before recovering with a positive growth of 4.1% in the second quarter of 1999. The KLSE Composite Index increased by 34.2% in the month of April 1999 to close at 674.96 points, and market capitalisation increased by 33.5% for the same period.

Economic activity expanded strongly in year 2000 with real gross domestic product (GDP) increasing to 8.3% (see Table 3-2), a faster than anticipated rate of expansion (MER 2001/2002). However, in the 2001 Malaysia faced a very challenging and uncertain external environment. The country, which was heavily dependent on electronic exports, responded quickly to the global slowdown in information technology. The United States economic slowdown and global electronic downturn resulted in declining manufacturing production and negative export growth, particularly of electronics. This resulted in a sharp decline in real GDP growth from 8.3% in year 2000 to 0.4 % in year 2001 (see Table 3-2).

²⁹ Currently known as Bursa Malaysia

3.8 Summary and conclusions

This chapter presents an overview of the Malaysian IPO regulatory environment and economic condition experienced by the country during the period of study. The IPO earnings forecast guidelines (see Section 3.6) assists in the expectation of managers behaviour in reporting their actual earnings. Understanding of regulation helps in the formulation of research hypotheses for forecast accuracy study in Chapter 4 and earnings management study in Chapter 6.

Discussion of the economic condition experienced by Malaysia during the period of study provides another interesting issue to be tested in this study. Three different economic conditions (see Section 3.7) for the period of study provides an opportunity to examine whether unexpected change in the economy have an effect on the accuracy of forecast, and the act of management in reporting their actual reported earnings after the IPO. The issues are taken further in the formulation of research hypotheses in chapter 4. The next chapter describes the research methodology and method. Hypotheses are formulated based on relevant theoretical frameworks, prior empirical evidence and features of the Malaysian IPO regulation and economic condition discussed in this chapter.

Appendix 3-A: List of industries listed on the KLSE as of 15 January 2004.

Board of listing	Industry
Main Board	Technology
	Consumer Products
	Industrial Products
	Construction
	Trading / Services
	Finance
	Infrastructure Project
	Hotel
	Properties
	Mining
	Plantation
Second Board	Technology
	Consumer products
	Industrial Products
	Construction
	Trading / Services
	Properties
	Plantation

CHAPTER 4: RESEARCH METHODOLOGY, METHOD AND HYPOTHESES

4.1 Introduction and methodology

This chapter describes the research approach, methodology adopted and the method used to answer research questions outlined in Section 1.4 of the thesis.

4.1.1 Introduction

The first stage of this study examines the accuracy of earnings forecasts contained in the IPO prospectuses of Malaysian companies seeking listing on the Bursa Malaysia main and second boards between January 1996 and December 2002. During this period there were significant changes in regulation with regard to the disclosure of earnings forecasts made by IPO companies (see Section 3.6 of Chapter 3). In addition, there were also significant changes in the economic conditions during this period (see Section 3.7 of Chapter 3).

The second stage seeks to find evidence of positive discretionary accruals in the financial statements of IPO issuers during the year of IPO, and in three years following this. This involves the calculation of discretionary accruals and statistical testing for the sample companies.

Finally, a correlation study examines the association between earnings management and forecast error, and other variables representing unexpected change in economic condition. Company specific characteristics are also tested.

4.1.2 Methodology and method

This study adopts the positivist research paradigm using a hypothetico-deductive methodology to determine variables that are significant in influencing the level of accuracy of earnings forecast made by the management of Malaysian IPO companies. The deductive approach moves from a general statement to a conclusion of a particular study. It begins explicitly with a tentative hypothesis or set of hypotheses that form a theory, and then finding contrary cases using observations or experiments (Popper, 2006). The hypothetico-deductive method is the most suitable method because the research testing a pre-determined hypothesis and the general theory in a specific set of sample. Data are collected and relationship between data is established based on factual or statistical evidence. This method offers a research design that can be scientifically tested, can easily be replicated in other contexts, and a mechanism for assuring validity of the results. With a sufficient number of samples and based on experimental evidence, the results obtained can be generalised to other study with similar economic condition.

Hypotheses are developed based on the prior empirical findings and theoretical framework discussed in chapter 2, and those features of Malaysian regulation and economic condition discussed in chapter 3. These hypotheses are tested using multiple regression analysis. A multivariate design method is chosen because this study tests theories regarding the relationship between independent and dependent variables which relate regulation, changes in economic condition and company characteristics to forecast accuracy. This method offers a research design that can be scientifically tested and can easily be replicated in other contexts. This method is widely used in social and natural science research in general and specifically in the study investigating relationship between independent and dependent variables.

In addition to this multivariate regression analysis, personal interviews are conducted with a number of influential market participants. Interviews are used in order to further comprehend the behaviour and perception of the market participants with regard to the

importance and factors affecting the accuracy of forecasts made by IPO companies. Interviews findings are used as an external validation to back up quantitative findings. It is claimed qualitative data, such as interview findings, is useful when one needs to supplement, validate, explain or reinterpret quantitative data obtained from the same setting (Miles and Huberman, 1994).

4.2 Forecast accuracy study

The following sections discuss the sample selection and data collection, definition and calculation of forecast accuracy, development of hypothesis and statistical techniques used for data analysis.

4.2.1 Sample selection and data collection

Data for the forecast accuracy study has been obtained from company prospectuses and annual reports. All companies' prospectuses and annual reports are published in English because this is a requirement of the Malaysian Companies Act and Bursa Malaysia guidelines. The study is based on IPO prospectuses of companies that were listed on the Bursa Malaysia between 1996 and 2002.

During this period, 317 new issues (excluding finance) were listed on the main and second boards of the exchange. Companies in the finance and finance-related industries were excluded from the sample for reasons of comparability with prior research (Jelic et al., 1998; Chan et al., 1996; Pedwell et al., 1994; Chen et al., 2000), and because there already exists separate financial reporting regulations for such companies. Information on the names, industry classification and board listing of IPO companies was extracted from the Bursa Malaysia listing statistics (www.bursamalaysia.com.my).

The number of companies examined in this study (see Table 4-1), differs from that of the population, determined by the availability of company prospectus and data on the company characteristics. If data were missing for any item (e.g. comparative earnings figures for variable actual earnings reduction), then the companies were removed from the analyses. Companies which forecast earnings on an after taxation basis but not before taxation were also excluded from the analysis, because tax changes for a particular year could affect the results of absolute forecast error. As a result of this, the final number of companies for univariate and multivariate analysis comprises 242 companies. A breakdown of the companies by year of listing, board listing, regulation and economic period is provided in tables 4-1, 4-2 and 4-3.

Table 4-1: Investigated companies by year of listing

IPO year	Total	1996	1997	1998	1999	2000	2001	2002
Population available	331	92	88	28	21	38	20	44
Finance companies	14	8	6	0	0	0	0	0
Non-financial IPO companies	317	84	82	28	21	38	20	44
Prospectuses unavailable	34	15	14	2	3	0	0	0
Total number of prospectuses available	283	69	68	26	18	38	20	44
Company with no forecast PBT	9	2	3	1	3	4	0	0
Company with no data for earnings reduction*	32	14	11	0	1	0	2	0
Total no of IPOs available for analysis	242	53	54	25	14	34	18	44
Proportion of non-financial IPO companies (%)	76	63	66	89	67	89	90	100

*No data for earnings reduction variable comprises the following:

1. No comparative balance sheet for the period before the IPO.
2. The accounting period for the last balance sheet before the IPO does not match with the period for the actual result presented in the year after listing.

Table 4-2: Investigated companies by regulation and by board of listing

Board/regulation	Regulated companies ³⁰	Non-regulated companies	Total
Main Board	55	34	89
Second Board	153	0	153
	208	34	242

Table 4-2 shows investigated companies by listing status and by regulation. Main board companies make up about a third of the companies examined in the study, while 86% of the companies are regulated companies.

Table 4-3: Investigated companies by economic condition period

Period of listing	Number of companies (n=242)	%
Pre-crisis period (1996 – mid-1997)	48	19.8
Crisis period (mid 1997 – first quarter 1999)	85	35.1
Post-crisis period (second quarter 1999-2002)	109	45.1
TOTAL	242	100

³⁰ Regulated main board companies are companies in the construction, services and specialised activities sectors. All second board companies are regulated companies.

Table 4-3 shows the proportion of investigated companies by economic condition period. There are 242 companies examined in this research. About 20% of the sample companies made IPOs in the period of pre-crisis, 35% of sample companies made IPOs during economic crisis period and 45% of sample companies made the IPOs afterwards.

All data in this study has been acquired from primary sources (see Table 4-4). Data for earnings forecast, forecast horizon, company's age, auditor reputation, board of listing, size (total assets) and long term debt prior to listing was manually collected from the prospectuses. Data for management retained share ownership, and actual profits was obtained from the annual reports for the forecast year. Classification of regulated and non-regulated industries is made, based on the regulation stated in the Securities Commission Guidance Notes 10-19, 1996 (see Section 3.6 of Chapter 3). The forecast profits disclosed in the prospectus were matched with the actual earnings reported in the annual report, ensuring that a comparable basis was applied (for example, forecast "earnings before tax" was matched with "earnings before tax" in the annual report). Table 4-4 shows measurement and sources for independent variables.

Table 4-4: Measurement and sources for independent variables

Independent variables	Variable labels	Data sources	Measurement
Crisis period	CRISIS	Government report	Crisis period is the period from July 1997 to March 1999 (category = 1) Others(category = 0)
Recovery period	RECOVERY	Government report	Recovery period is period from April 1999 onwards (category = 1) Others (category = 0)
Regulation	REGULATION	SC Guidelines	Regulated companies (category = 1) Non regulated (category = 0)
Earnings reduction	ERED	Annual report	Actual earnings decreased (category = 1) Earnings increased (category = 0)
Management ownership	MGTOWN	Company's annual report	Percentage of shares owned by the company's executive directors after the IPO
Forecast horizon	FZON	Company's prospectus	Represented by the number of months from the date the prospectuses were issued up to the end of the forecast period
Company's age	AGE	Company's prospectus	Represented by the number of years the company has been in operation, calculated from the date of incorporation
Leverage	LEV	Company's prospectus	Leverage is calculated by dividing the total long-term liability by total assets before listing
Auditor reputation	AUD	Company's prospectus	Classified as "Major International Accounting Firm" (if auditor is Big 5 or their pre-merger equivalents, category = 1) and "Non-Major International Accounting Firm" (category = 0)
Board listing	BOARD	Company's prospectus	IPOs listed on the main board (category = 1) or the second board (category = 0)
Size	SIZE	Company's prospectus	Represented by total assets before listing.

4.2.2 Calculation of variables and definition of forecast accuracy

Forecast accuracy may be measured as the difference between a forecast and the actual income. The methods employed in this study of forecast accuracy are based on those applied in previous research (eg. Hartnett and Romcke, 2000; Cheng and Firth, 2000; Chan et al., 1996). One is to measure the relative size and direction of the difference

(i.e. forecast error), and the other is to measure the relative size of the difference or the magnitude of the error (i.e. absolute forecast error). These are defined as follows:

$$\text{Forecast error} = \frac{\text{Actual earnings}_{i,t} - \text{Forecast earnings}_{i,t}}{\text{Forecast earnings}_{i,t}} \times 100$$

$$\text{Absolute forecast error} = \frac{|\text{Actual earnings}_{i,t} - \text{Forecast earnings}_{i,t}|}{|\text{forecast earnings}|} \times 100$$

Where

Actual earnings_{i,t} = Actual profits of Company i for period t

Forecast earnings_{i,t} = Forecast profits³¹ of Company i for period t

The term ‘positive forecast error’ means actual earnings are greater than the forecast and the term ‘negative forecast error’ means the actual earnings are less than the forecast.

The accuracy of forecasts is examined by evaluating the absolute forecast error of Malaysian IPO companies. The association between the forecast accuracy and company characteristics has been examined by conducting ordinary least square (OLS) regression test on normalised absolute forecast error³² as the dependent variable, regulation, and changes in economic condition (represented by crisis and recovery) as the independent variables and other companies’ specific characteristics as the control variables.

³¹ There is no forecast loss in the sample

³² Due to skewed data, dependent variable (absolute forecast error) has been transformed into normalised absolute forecast error (Cooke, 1998).

4.2.3 Development of hypotheses

In order to provide comparability of results with prior empirical evidence, in Section 4.2.3.1, this study starts by examining, the bias in forecasting. In order to examine possible determinants of earnings forecast accuracy, a number of independent variables (based on empirical evidence discussed in Chapter 2), have been tested for their association with accuracy. Table 4-5 lists variables chosen to represent regulation, economic condition and management optimism. Other variables (i.e. company specific characteristics) are included as control variables.

Table 4-5: Independent variables tested – forecast accuracy study

Variables		Section
1	Regulation	4.2.3.2
2	Economic condition	4.2.3.3
3	• Crisis period • Recovery period	
4	Management optimism	4.2.3.4
5	Management ownership	4.2.3.5
6	Forecast horizon	4.2.3.6
7	Company's age	4.2.3.7
8	Leverage	4.2.3.8
9	Auditor reputation	4.2.3.9
10	Board listing	4.2.3.10
11	Size of company	4.2.3.11

This section describes the construction of hypotheses and expectations based on prior research with respect to: regulation, economic condition, management optimism, management ownership, forecast horizon, company's age, leverage, auditor reputation, board listing and size (with size measured by total assets of the companies). The expectation for the association between absolute forecast error and the presence of

regulation is based on evidence specific to Malaysia. The hypotheses are expressed in both null and alternative form.

4.2.3.1 Bias in reporting

An understanding of the bias and accuracy of management forecasts is achieved by analysing the earnings forecast error and absolute forecast error in the year of forecast issuance. Each earnings forecasts made in the prospectus gives an estimate of earnings for an accounting year following the listing. Comparing the actual earnings for the forecast period with the earnings forecasts made in the prospectus gives an indication of the accuracy and bias of forecast (see, for example, Firth and Smith, 1992; Pedwell et al., 1994; Chan et al., 1996; Jelic et al., 1998; Cheng and Firth, 2000).

Owner-managers have incentives to signal company value to differentiate their company from companies of lesser quality. However, information asymmetry makes it possible for owner-managers to act in a manner that is not in the best interest of potential investors, for example by publishing overly-optimistic earnings forecasts (McConomy, 1998). By comparing the forecast earnings with the actual earnings figures for the specified fiscal period, the accuracy and bias of earnings forecast can be revealed. The bias in forecasts made by sample companies in this study is tested in the following null hypothesis:

H₀₁: The mean forecast error is not significantly different from zero.

The alternative hypothesis is:

H_{A1}: The mean forecast error is significantly different from zero.

4.2.3.2 Regulation

There is some evidence in the literature that industrial classification may have an association with the level of forecast accuracy; i.e. that profits for companies in some industries may be inherently more difficult to predict than others. Dev and Webb (1972) found that absolute forecast errors in some industries were significantly less than those for their entire sample of companies. Mak (1989) found industry membership to be a significant variable. Jelic et al. (1998) found a significant relationship between industry and forecast accuracy for Malaysian companies listed before 1996. He found that construction, services and special activities companies (classified as regulated industries from year 1996 onwards) have a higher absolute forecast error than companies in other industries. Construction, services³³ and specialised³⁴ industries are sectors which became regulated in 1996.

It is noted earlier (see Section 3.5 of Chapter 3) that all companies in Malaysia are required to include an earnings forecasts in the prospectus for an initial public offering (IPO). With effect from 1 January 1996, an additional regulation was applied to IPOs in specific industries through the Securities Commission's Prospectus Guidelines (Guidance Notes 10-19). This additional regulation was introduced in 1996 because some industries had a particularly poor history of inaccurate earnings forecasts (Jelic et al., 1998). However, the 1996 guidelines applied to all companies in the second board so it is not possible to match regulation and industry exactly across both boards. This study, therefore, tests the effect of regulation rather than industry difference.

It is expected that after January 1996, due to the introduction of regulation, that the regulated IPO companies would have been more cautious than non-regulated companies in making a forecast. Those promoters providing a profit guarantee would want to avoid

³³ Services industries consist of companies in the trading, finance, hotel, and property sector.

³⁴ Specialised industries consist of companies in the plantation and mining sector.

losing their deposited bond. Promoters opting for the moratorium would not face the financial penalty of losing a deposited bond but they would suffer reputational loss from failure to meet the forecast, and might find the share price disappointing when they eventually came to sell shares.

When making a forecast based on the risk of losing a deposited bond or the risk of reputational loss, it is expected that the mean absolute forecast error for regulated companies would be lower than that of non-regulated companies³⁵. In order to test this hypothesis, regulated companies are assigned a dummy variable of one, and non-regulated companies are assigned a value of zero. Based on the above expectation, regulated companies are expected to have a lower absolute forecast error than non-regulated companies. The hypothesis stated in the null form, is:

H₀₂: There is no significant association between the accuracy of earnings forecast made in IPO company prospectus and regulation.

The alternative hypothesis is:

H_{A2}: There is a significant association between the accuracy of earnings forecast made in IPO company prospectus and regulation.

4.2.3.3 Economic condition

During the period of study (i.e. from 1996 to 2002), Malaysia experienced three different changes in economic conditions. When regulation of earnings forecasts was introduced in 1996, Malaysia was experiencing a boom economy, with 10% growth of gross domestic product (GDP). The Malaysian IPO market in 1996 saw the highest

³⁵ The 1996 guidelines applied to all companies in the Second Board so it is not possible to match regulation and industry exactly across both boards. We therefore test the effect of regulation, rather than industry difference, in this paper.

number of companies being listed on the Bursa Malaysia³⁶, with the Bursa Malaysia Composite Index closing the year above 1200 for the first time since 1993 (SC, 1996).

In mid-1997, Malaysia experienced economic turmoil as a result of the Asian economic crisis, triggered by the collapse of the Thai Baht in July 1997 of that year. Recovery from this economic turmoil is considered to have begun in the second quarter of 1999 (MER 1999/2000). This change in economic condition is categorised as the pre-crisis period, running from 1 January 1996 to July 1997. The crisis period runs from August 1997 to March 1999 and the period from April 1999 onwards is categorized as the recovery period.

Previous studies have suggested that the ability to forecast accurately is influenced by the variability of the economic condition in effect for the duration of the forecast period. Chan et al. (1996) and Pedwell et al. (1994) found a positive association between change in economic condition and IPO forecast accuracy measured in terms of absolute forecast error. Their findings suggest that the accuracy of earnings forecasts in prospectuses will deteriorate with an unexpected change in economic condition. Overall, prior studies suggest a positive association between uncertainty of economic condition and absolute forecast error. The null hypotheses for economic crisis and recovery period are stated as follows:

H₀₃: There is no significant association between the accuracy of forecast (AFE) and crisis variable

H₀₄: There is no significant association between the accuracy of forecast (AFE) and recovery variable

The alternative hypothesis is:

³⁶ www.bursamalaysia.com

H_{A3}: There is a significant positive association between accuracy (AFE) and crisis period variable

H_{A4}: There is a significant positive association between accuracy (AFE) and recovery period variable

Based on clear evidence from prior studies that economic condition significantly influences the accuracy of forecast, and discussion of the economic situation experienced by Malaysian companies during the period of study, companies in the crisis and recovery period are expected to have a greater absolute forecast error than companies in the pre-crisis period.

4.2.3.4 Management optimism

Firth, (1998) found that the earnings forecasts play an important part in valuing an IPO and provide an important signal of IPO values. Jelic et al. (1998) hypothesised that, in such circumstances, managers may be reluctant to forecast a decline in earnings. Consistent with that hypothesis, they found a positive and significantly higher absolute forecast error for companies which experienced a decline in actual earnings. They measured this decline by comparing the actual earnings of the forecast period with the actual earnings of the accounting period immediately prior to the date of issuing the forecast.

This study follows Jelic et al. (1998) in hypothesising that managers will seek to avoid giving pessimistic forecasts even when they privately believe that there is a risk of earnings falling in the first reporting period following the IPO. It is expected that a decline in actual earnings after the IPO will result in greater absolute forecast error. The hypothesis stated in the null form is as follows:

H₀₅: There is no significant association between earnings reduction and the accuracy of earnings forecast made in company prospectus.

The alternative hypothesis is:

H_{A5}: The absolute forecast error is significantly greater, the higher the decline in actual earnings after the IPO.

Based on clear evidence from similar research studies, a positive association between management optimism, represented by actual earnings reduction, and absolute forecast error is expected.

4.2.3.5 Management ownership

In this study, management ownership is measured as the percentage of shares owned by the executive directors of the company after the IPO. Leland and Pyle (1977) demonstrated that the percentage of equity retained by the entrepreneur could be in fact, an indicator of his /her private beliefs. Higher levels of retained ownership may signal higher confidence in the company's future prospects and forecast achievability (Leland and Pyle, 1977; Hartnett and Romcke, 2000). Jelic et al. (1998) hypothesized a negative association between the proportion of shares retained by the owners or managers and absolute forecast error, suggesting that a manager holding a higher percentage of share ownership is likely to commit more resources and attach a greater importance to the earnings forecast as a signal of the quality of their company. They found that the coefficient had the expected negative sign but was not statistically significant. The hypothesis stated in the null form is as follows:

H₀₆: There is no significant association between management ownership and the accuracy of earnings forecast made in company prospectus.

The alternative hypothesis is:

H₀₆: There is a significant negative association between management ownership and the accuracy of earnings forecast made in company prospectus.

Because a higher percentage of ownership indicates that the directors-owners are more confident and are likely to put more resources in the company, they are expected to attach a greater importance to the earnings forecast as a signal of the quality of their company. Therefore, a negative association between management ownership and absolute forecast error is expected.

4.2.3.6 Forecast horizon

Forecast horizon is one of the most commonly used variables in forecast accuracy studies. It has been documented as a significant variable for explaining IPO forecast accuracy in Canada (Pedwell et al., 1994), Singapore (Firth et al., 1995), Australia (Brown et al., 2000; Chapple et al., 2005), and Thailand (Lonkani and Firth, 2005). Table 4-6 summarises empirical findings regarding the association between forecast horizon and the accuracy of forecast. In general, the longer the forecast horizon, the less accurate is the forecast (Lee et al. 1993; Pedwell et al. 1994; and Firth et al. 1995). Jaggi (1997) suggested that forecasts made towards the end of the forecast period would have a better set of information on which to base the forecast. Ferris and Hayes (1977), who found a negative association between the length of forecast horizon and absolute forecast error in the UK, suggested that, the longer the forecast horizons, the greater the opportunity for management to exercise discretion in maintenance and capital expenditure decisions would be enabling management to improve the accuracy of earnings forecasts.

However, Firth and Smith (1992), Mohamad et al. (1994), Jaggi (1997), Chan et al. (1996), Jelic et al. (1998) and Hartnett and Romcke (2000) found no significant association between forecast accuracy and forecast horizon. Table 4-6 shows previous empirical findings on the association between forecast horizon and forecast accuracy.

Table 4-6: Forecast horizon and accuracy - empirical findings

Significant positive (+) association	Non-significant positive (+) association
Pedwell et al. (1994)	Firth and Smith (1992)
Firth et al. (1995)	Mohamad et al (1994)
Brown et al. (2000)	Chan et al. (1996)
Lonkani and Firth (2005)	Jaggi (1997)
Chapple et al. (2005)	Jelic et al (1998)
	Cheng and Firth (2000)

Based on the above discussion, the null hypothesis is stated as follows:

H₀₇ : There is no significant association between the accuracy of forecast made in IPO company prospectus and forecast horizon.

The alternative hypothesis is stated as follows:

H_{A7} : There is a significant positive association between the accuracy of forecast made in IPO company prospectus and forecast horizon.

With a longer forecast horizon, management are more uncertain about the revenue and expenses to be incurred and are facing higher risk in the case of economic uncertainty, therefore a positive association between absolute forecast error and forecast horizon is expected.

4.2.3.7 Company age

Previous studies postulate that the longer a company has been in existence, the greater the forecast accuracy, predominantly because predicting earnings for completely new companies is more difficult compared to those companies with a solid earnings history (Davidson and Neu, 1993). Those companies, which have been in existence for a number of years, would be in a better position to make predictions about their future

performance, because they are likely to have a better appreciation of the market environment and comparatively better control over their operations (Firth and Smith, 1992; Lee et al., 1993; Jaggi, 1997).

The evidence with regard to the association between a company's age and absolute forecast error is mixed. The majority of studies did not find any significant association between company age and forecast accuracy, with the exception of Pedwell et al. (1994), Jaggi (1997) and Jelic (1998), who found a significant association. Table 4-7 summarises the studies on the association between age and forecast accuracy.

Table 4-7: Age and forecast accuracy - empirical findings

Significant negative (-) association	Non-significant negative (-) association
Pedwell et al. (1994)**	Keasey and McGuinness (1991)
Jaggi (1997)**	Firth and Smith (1992)
Jelic et al. (1998)*	Mohammad et al. (1994)
	Cheng and Firth (2000)
	Hartnett and Romcke (2000)

** significant at the 5% level, * significant at the 10% level.

Based on prior empirical findings, the null hypothesis is stated as follows:

H₀₈ : There is no significant association between a company's age and forecast accuracy.

The alternative hypothesis is:

H₀₈ : There is a significant negative association between a company's age and forecast accuracy.

Older companies (with earnings history) have a better appreciation of the market environment which helps them make more accurate forecasts, thus a negative association between absolute forecast error and company age is expected.

4.2.3.8 Leverage

Leverage is one measure of the risk of a company. High-risk companies will be associated with greater uncertainty over profits (Eddy and Seifert, 1992). Highly-g geared companies have more volatile earnings streams and thus, earnings forecasting is more difficult (Cheng and Firth, 2000). Traditionally, the net profits of companies with comparatively higher levels of debt are regarded as being more difficult to forecast (Firth and Smith, 1992; Mohamad et al.1994). A positive association between leverage and absolute forecast error has been hypothesized previously (Chan et al., 1996; Firth and Smith, 1992; Mohamad et.al. 1994; Jaggi, 1997). However,Chan et al. (1996) and Mohamad et al. (1994) documented a negative association between leverage and absolute forecast error which was contrary to their expectation. Only Mohamad et al. (1994) documented a significant association between leverage and forecast accuracy.

Jelic et al. (1998), in their study of Malaysian IPO companies, hypothesizes a negative association between leverage and absolute forecast error. They explained that, since the banks are jointly responsible with the management for the earnings forecast and pricing of IPOs, agency theory suggests that companies with higher gearing will have higher bonding and monitoring costs. Therefore, since the banks are acting both as creditor and adviser, they are likely to scrutinize high-g geared companies more rigorously than they do their lower-g geared counterparts. Their results had an expected negative sign but not significant. Table 4-8 below summarises the empirical findings regarding the association between leverage and the accuracy of forecast made in the company prospectus.

Table 4-8: Leverage and forecast accuracy - empirical findings

Significant negative (-) association	Non-significant association (Sign of coefficient)
Mohammad et al. (1994)**	Firth and Smith (1992) (+)

	Firth et al. (1995) (-)
	Chan et al. (1996) (-)
	Jaggi (1997) (-)
	Jelic et al. (1998) (-)
	Cheng and Firth (2000) (+)
	Lonkani and Firth (2005) (+)

** significant at the 5% level.

The null hypothesis is as follows:

H₀₉: There is no significant association between the accuracy of earnings forecast made in IPO company prospectus and leverage.

The alternative hypothesis is:

H_{A9}: There is a significant association between the accuracy of earnings forecast made in IPO company prospectus and leverage.

Because of the mixed results documented in prior research, no specific expectation is formed regarding the direction of association between leverage and forecast accuracy.

4.2.3.9 Auditor reputation

Previous studies have suggested that the reputation of the company's public accountant influences forecast accuracy. Titman and Trueman (1986) suggest that this could signal the quality of its financial statements. Firth and Smith (1992) argue that the expertise which major international³⁷ accountancy firms bring to the forecasting process leads to more accurate forecasts, i.e., they hypothesize a negative relationship between absolute forecast error and public accountant quality. Simunic and Stein (1987) in particular

³⁷ 'Big eight' at the time of their study.

emphasize that major international³⁸ audit firms are the producers of high quality audits because they have very large investments in reputation capital. Therefore, they exercise greater caution to ensure greater accuracy of forecasts contained in IPO prospectuses.

Results on auditor reputation variable tend to differ. While Jelic et al. (1998), Jaggi (1997), Chan et al. (1996), Firth et al. (1995), Mohammad et al. (1994), and Firth and Smith (1992) found no significant association, Pedwell et al. (1994) Davidson and Neu (1993) found a positive and significant association between auditor quality and absolute forecast error. Davidson and Neu (1993) provide evidence that higher quality audit firms are associated with larger absolute forecast errors, since management have fewer opportunities to minimize the difference between forecast and actual income. On the other hand, Cheng and Firth (2000) for Hong Kong study, Hartnett and Romcke (2000), Brown et al. (2000) and Chapple et al. (2005) for Australia studies, found a significant negative association between auditor quality and forecast accuracy. The null hypothesis is:

H₁₀: There is no significant association between the accuracy of forecast made in IPO company prospectus and auditor quality.

The alternative hypothesis is:

H_{A10}: There is a significant association between the accuracy of forecast made in IPO company prospectus and auditor quality.

Because of the mixed results, no specific expectation is formed regarding the influence of auditor reputation on the accuracy of forecast made by IPO companies' management.

³⁸ 'Big six' at the time of their study

4.2.3.10 Board of listing

A public company seeking listing of, and quotation for, its securities on the main or second board of Bursa Malaysia must satisfy quantitative and qualitative requirements set out by the securities commission. Generally, companies listed on the main board are bigger in size, with larger amounts of issued and paid up capital. It has been argued that larger companies will be able to use the best expertise and modern sophisticated forecasting techniques, as well as modern computer technology to generate more accurate forecasts (Firth and Smith, 1992; Mak, 1994). This would mean they would be able to make more accurate forecasts (Jaggi, 1997). The hypothesis stated in the null form is as follows:

H₀₁₁: There is no significant association between the accuracy of forecast made in IPO company prospectus and board listing.

The alternative hypothesis is:

H_{A11}: There is a significant association between the accuracy of forecast made in IPO company prospectus and board listing.

Since there is no clear evidence from previous studies, there is no strong expectation regarding this variable.

4.2.3.11 Company size

Previous research suggested that there may be stronger incentives for the management of larger companies to provide more accurate forecasts due to the monitoring mechanisms of external information sources. Larger companies might enjoy lower forecasting error through their ability to better absorb unexpected financial events, more sophisticated forecast techniques or the regulator effect of the market scrutinizing these companies

more closely due to their higher profile (Hartnett and Romcke, 2000). Large size IPOs are usually raising proportionately more capital in the new issue than their smaller counterparts. It is therefore more difficult to predict the earnings from the investment of the new issue proceeds than earnings from the activities owned prior to the new issue (Firth and Smith, 1992). Brown et al. (2000) and Chapple et al. (2005), on the other hand, found a significant negative association between size and accuracy for Australian companies. They suggested that large companies have more control over the market setting, enjoy comparative economies of scale and more diversification; thereby making earnings less volatile and more predictable.

Ferris and Hayes (1977), however, found a positive association between size and absolute forecast error. They explained that accuracy might be more important in an absolute sense to the management of smaller companies, who perceive the market to be more tolerant of error on the part of larger companies. Thus, greater control over discretionary actions may be exercised by the managers of smaller companies. However, their result is not significant. The null hypothesis is stated as follows:

H₀₁₂: There is no significant association between the accuracy of forecast made in IPO company prospectus and company size.

The alternative hypothesis is:

H_{A12}: There is a significant association between the accuracy of forecast made in IPO company prospectus and company size.

Because of the mixed results, no specific expectation is formed regarding the direction of association.

4.3 Earnings management study

This study investigates earnings management in regulated companies making initial public offerings (IPOs), where government regulation is applied to penalise under-achievement of forecasts outside a defined range. It is hypothesised that earnings management will be observed in the form of positive discretionary accruals during the periods covered by regulation. IPOs from three different years, representing three different phases of regulation and economic condition, are tested.

4.3.1 Definitions and formation of hypotheses

4.3.1.1 Definitions

The study tests for earnings management cover the year of the IPO and the first three full financial years of trading. It provides evidence relating to the hypothesised relationship in the two-year period following the IPO (during which a regulatory obligation continues) and provides evidence that earnings management has ceased in the year beyond the end of the regulatory impact. In the study, the descriptions IPO 1996, IPO 1998 and IPO 2000 are used, to refer to initial public offerings made in those respective years.

Year 0 denotes the year of the first forecast (which may cover a period shorter than 12 months). The description year 1 refers to the first full financial year following listing, with subsequent years being numbered sequentially.

4.3.1.2 Formation of hypotheses

The detailed construction of hypotheses and the expectations formed, are discussed in Section 6.4 of Chapter 6.

4.3.2 Method, sample selection and data

4.3.2.1 Method

This study considers the working capital accruals model, discussed in chapter 2, as a proxy for earnings management. For each year under investigation (years 0 to 3), current accruals for the control group are regressed on the change in sales, in order to estimate the coefficient of the equation. The control group is used to estimate a type of behaviour for ‘normal’ companies (i.e. those already listed and not making share issues). This ‘normal’ behaviour is then used as a benchmark for judging the behaviour of the sample group (IPO companies). The test is intended to provide evidence that accounting discretion is exercised by issuers of IPO. Companies in the control group must not have an IPO in the past five years. Outliers are excluded by trimming companies with either exceptionally high or low current accrual, or change in revenue relative to others in the group. For a stable control group, outliers are taken out stepwise, based on change in revenue and current accruals (see Section 6.3 of Chapter 6).

Consistent with the use of the model in accounting literature, all variables are deflated by total assets at the start of the period. Using ordinary least square (OLS) cross-sectional regression, the current accrual regression is:

$$\frac{CRACC_{jt}}{TA_{jt-1}} = \alpha \frac{1}{TA_{jt-1}} + \beta_1 \frac{\Delta SALES_{jt}}{TA_{jt-1}} + \varepsilon_{jt} \dots\dots\dots(1)$$

where, for company j and in year t:

- $CRACC_{jt}$ = current accruals for company j in year t
- $\Delta SALES_{jt}$ = change in revenues for company j in year t
- TA_{jt-1} = total assets for company j at the end of year t-1
- α and β_1 = regression coefficients

ε_{jt} = error term

The results at this stage will give an estimate of the two coefficients α and β_1 for the control group.

In the second stage, the non-discretionary accruals are estimated for each separate company in the sample of IPO companies. To obtain the discretionary and non-discretionary accruals for a given year, a cross-sectional version of the modified Jones (1991) model, developed by Dechow et al. (1995) and used by Teoh et al. (1998a, 1998b) is used. The model is estimated cross-sectionally to control for the effects of changing industry-wide economic conditions on total accruals, and to allow the coefficients to vary across years (DeFond and Jiambalvo, 1994).

Non-discretionary current accruals (NDA_{jt}) are calculated as:

$$NDA_{jt} = a \left(\frac{1}{TA_{jt-1}} \right) + b_1 \left(\frac{\Delta SALES_{jt} - \Delta REC_{jt}}{TA_{jt-1}} \right) \dots \dots \dots (2)$$

where a and b_1 are the OLS regression estimates of α and β_1 respectively, obtained from equation (1), ΔREC is the change in trade debtors in the year, and other variables are as defined in (1) above.

The non-discretionary accruals (scaled by opening assets), represent the portion of current accruals dictated by company sales growth, and are viewed as being independent of managerial control. The increase in trade debtors is subtracted from the change in sales to allow for the possibility of credit sales manipulation by the issuer (Dechow et al. 1995). This adjustment was introduced by Dechow et al. (1995) to recognise that sales growth may be partly due to management exercising discretion over sales.

In the third stage, the current accruals for each IPO company in the sample are calculated. Current accruals for the period are obtained by subtracting the change in

current liabilities from the change in non-cash current assets for the period. Accordingly, current accrual for each sample company is defined as:

$$CRACC_t = (\Delta CA_t - \Delta CASH_t) - (\Delta CL_t - \Delta STD_t) \dots\dots\dots(3)$$

where:

- ΔCA_t = change in current assets
- $\Delta CASH_t$ = change in total cash and equivalents
- ΔCL_t = change in current liabilities
- ΔSTD = change in current maturity of long term debt

Finally, discretionary accruals for each sample company are defined as the difference between current accruals and non-discretionary accruals for each IPO company.

$$DA_{jt} = CRACC_{jt} - NDA_{jt} \dots\dots\dots(4)$$

4.3.2.2 Company selection and data

The population consists of regulated companies that went public through IPO on the Kuala Lumpur Stock Exchange between January and December in any one of these three years: 1996, 1998 and 2000³⁹. These three IPO years were chosen because they represent three different economic periods and variations in regulation of earnings forecast disclosure made by the regulated issuing companies. IPO 1996 regulated companies were given an option to provide either a profit guarantee or share moratorium, IPO 1998 companies were subjected to a compulsory profit guarantee and IPO 2000 companies were subjected to only a share moratorium. The regulatory changes corresponded to three very different economic conditions experienced by Malaysia, namely a pre-crisis period (1996 to mid-1997), a period of economic crisis (mid-1997 to April 1999) and an economic recovery period (April 1999 onwards).

³⁹ There were relatively few IPOs by non-regulated companies, so the matching of regulated and non-regulated companies was not possible.

To calculate the earnings management for year 0, financial information in the year immediately preceding the IPO is required. Because this data was not available on DataStream database, the data was collected manually from the company's first annual report after listing. Accounting data concerning the years after the IPO was obtained from DataStream database. Financial data required for this study included: total sales (DS item 104), total assets (DS item 392), current assets (DS item 376), cash and equivalents (DS item 375), current liabilities (DS item 389), trade debtors (DS item 287), and current maturity of short-term debts (DS item 309). If the data required was not available on DataStream, the information was manually collected from the company's annual reports, and DataStream definition used as a guide. For example, cash and equivalents (DS item no 375) includes cash and bank balances, fixed term and bank deposits, short-term investments or trading securities and cash balances with a financial company. Data for the control group was extracted from DataStream database. Table 4-9 provides summary information on the number of companies included in the study.

Table 4-9: Number of companies included in the study

	IPO 1996				IPO 1998				IPO 2000			
	Year 0	Year 1	Year 2	Year 3	Year 0	Year 1	Year 2	Year 3	Year 0	Year 1	Year 2	Year 3
Total Number of IPOs	92	92	92	92	28	28	28	28	38	38	38	38
Finance companies	8	8	8	8	0	0	0	0	0	0	0	0
Non-regulated companies	19	19	19	19	4	4	4	4	5	5	5	5
Number of regulated companies	65	65	65	65	24	24	24	24	33	33	32	32
Companies with missing data	11 ¹	12 ¹	13 ¹	13 ¹	2 ¹	0	0	1 ²	5 ¹	0	0	0
Total number of regulated companies for analysis	54	53	52	52	22	24	24	23	28	33	32 ³	32 ³

Data missing is for the following reasons:

Notes ¹ : For year 0, balance sheet data is not provided as a comparative figure in the company's first year after listing annual report.

For years 1 to 3 this is due to unavailable annual reports for the particular year.

Notes ² : For IPO 1998 year 3, the difference in the number of regulated companies for analysis is due to change in financial year-end for one firm.

Notes ³ : For IPO 2000, one company was de-listed in 2002.

4.4 Relating forecast error and earnings management

The following sections discuss sample selection and data collection, definition of variables and development of hypotheses for the link between earnings management and forecast error. The research focuses on the effect of having a negative forecast error greater than 10%, deemed to affect the financial reporting behaviour of Malaysian IPO companies. An economic condition variable and other company characteristics are used as control variables.

The study uses the signed discretionary accruals as a proxy for the extent of earnings management to capture the effect of income-increasing earnings management to satisfy the regulation on forecast error. Specific regulations applied to sample companies for IPO year 1996, 1998 and 2000, offer an ideal setting for examining the relationship between this minimum forecast error regulation and earnings management behaviour.

4.4.1 Sample selection and data

The sample contains companies subjected to earnings forecast regulation which became effective on 1 January 1996. The three period IPOs of 1996, 1998 and 2000 were chosen to allow for examining the impact of earnings forecast regulation on earnings management. The sample period, covering three different periods of economic conditions (a pre-crisis, crisis and recovery period), also allows this study to check whether unexpected changes in economic condition have an effect on the earnings management behaviour of IPO companies.

4.4.2 Definition and formation of hypotheses

The following sections present definition of variables and formation of hypotheses.

4.4.2.1 Definition of variables

This study tests for a relationship between earnings management behaviour and regulation of earnings forecast in the year of forecast issuance. This provides evidence relating to the hypothesised relationship that IPO companies with a negative forecast error greater than 10% manage their earnings upward. The study uses the direction of a company's discretionary accruals from the modified cross-sectional Jones (1991) model, modified by Dechow (1995), to proxy for the extent of earnings management (see Section 4.3.2.1).

4.4.2.2 Formation of hypotheses

The hypotheses of the expectation for the association between earnings management and economic changes and other company characteristics are formed based on prior research and are expressed in both null and alternative form. Table 4-10 lists those variables chosen to represent forecast error, economic condition, and company characteristics. Other variables of company-specific characteristics are included as control variables. A detailed construction of the hypotheses, and the expectations formed, are discussed in Section 7.3 of Chapter 7.

Table 4-10: Independent variables tested – relating earnings management and forecast error study

	Variables	Section
1	Forecast error	7.3.1
2	Economic condition	7.3.2
3	• Crisis period	
3	• Recovery period	
4	Management ownership	7.3.3
5	Auditor reputation	7.3.4
6	Company's age	7.3.5
7	Company's size	7.3.6
8	Leverage	7.3.7

4.5 Preliminary analysis

Preliminary analysis on the data file was carried out before conducting specific statistical techniques to address the study research questions. The analysis was carried out by obtaining descriptive statistics, to ensure that the data did not violate any of the assumptions made by the individual statistical test (Pallant, 2001). These descriptive statistics include the mean, standard deviations, frequency distribution, skewness and kurtosis.

4.6 Normality test

Several tests were performed to assess whether data in the study of earnings forecast accuracy is normally distributed. Tests of normality on dependent variables were performed using the 'Explore' option under 'Descriptive statistics' in the 'Analyze' menu on SPSS. Visual inspection of the histograms, normal Q-Q plots and de-trended normal Q-Q plots, show that the variables are not normally distributed. The histograms show that the distribution of the variables is negatively skewed rather than bell shaped, as would be in a normally distributed situation. The standard test on skewness and kurtosis, and Kolmogorov-Smirnov statistics results shows significance of less than 0.05 (sig. < 0.05), which confirms that the variables are not normally distributed.

In order to use parametric techniques for analysing the relationship between dependent variables and independent variables, Van der Waerden's approach (Cooke, 1998)⁴⁰ was used. Using this approach, the dependent variable for forecast accuracy study (absolute forecast error) and the dependent variable for the study on the link between discretionary accruals and forecast error (discretionary accruals) have been transformed into normalised absolute forecast error and normalised discretionary accruals. When the

⁴⁰ Advantages of this procedure include meaningful F and t-statistics as well as coefficients being produced. Therefore, significance level can be determined (Cooke, 1998)

dependent variable is transformed into normal scores, there is no longer any apparent problem of non-normality (Cooke, 1998).

4.7 Statistical techniques

The wide varieties of statistical techniques available have been classified into two main groups: parametric and non-parametric. Parametric tests are more powerful than non-parametric, though they assume that the underlying distribution of scores in the population is normally distributed. Non-parametric techniques, on the other hand, are distribution-free tests but tend to be less sensitive than parametric tests and, therefore, may fail to detect differences between groups that do actually exist. In analysing the data, different types of statistical techniques are used depending on the research question and the nature of the data.

4.7.1 Univariate analysis

This section discusses statistical tests employed in the univariate analysis to explore the relationship between variables and the differences between groups of variables.

4.7.1.1 Exploring the relationship

In the univariate analysis, the strength and relationship between pairs of dependent and independent continuous variables was investigated using the Pearson product moment. To explore the relationship between two categorical variables, the chi-square test for independence is used to determine if the two variables are related.

4.7.1.2 Exploring differences between groups: forecast accuracy study

Further univariate analysis is performed to find out whether there is a statistically significant difference among a number of groups. A one-sample t-test was performed to assess whether the mean absolute forecast error and mean forecast error of sample companies is significantly different from zero. For categorical independent variables, independent sample t-tests were performed to see whether there is a statistically significant difference in the mean forecast error between the two groups. For independent variables with more than two groups (e.g., economic condition), one-way analysis of variance (ANOVA) is used to compare their mean scores on a continuous variable. A non-parametric alternative using the Mann-Whitney U tests was also performed to test for differences in the median forecast error and absolute forecast error between the two groups.

4.7.1.3 Exploring differences between groups: earnings management study

For the earnings management study, discretionary accruals of sample companies are measured and tested at different times (year 0 to year 3). In this study, the Wilcoxon Signed Rank Test, (the non-parametric alternative to the repeated measure t-tests), was employed to compare the discretionary accruals of sample companies at different times. The use of non-parametric tests is consistent with prior research on earnings management (e.g. Teoh et al., 1998; Peasnell et al., 2000; Roosenboom et al., 2003). Barber and Lyon (1996), in their study to evaluate the power of tests designed to detect abnormal operating performance, conclude that non-parametric Wilcoxon Signed Rank Test statistics are uniformly more powerful than parametric t-statistics.

4.7.2 Multivariate analysis

This section discusses multivariate analysis performed when examining the association between :

1. Dependent variable of forecast accuracy and independent variables of regulation, economic conditions and company-specific characteristics.
2. Dependent variable of earnings management and independent variables of forecast error, economic conditions and company-specific characteristics as control variables.

4.7.2.1 Empirical model: forecast accuracy study

The association between the forecast accuracy (absolute forecast error) and company characteristics has been examined by conducting ordinary least square (OLS) regression tests on earnings forecasts. In this study, standard multiple regressions were run, where the independent variables were entered simultaneously in order to explore the predictive ability of a set of independent variables on one continuous dependent variable.

In this regression analysis, the dependent variable is transformed into normal scores using Van der Waerden approach ⁴¹(Cooke, 1998) so that the problem of non-normality is no longer apparent. Both standard tests on skewness and kurtosis are satisfactory and the Kolmogorov-Smirnov test statistic suggests normality (K-S greater than 5%). Bivariate correlations between independent variables, eigenvalues and condition index show no multicollinearity between independent variables (see Section 5.7.1).

Consistent with previous studies on earnings forecast accuracy (Jelic et al.,1998, Mohammad et al., 1994; Davidson and Neu, 1993; and Chan et al., 1996), absolute forecast error for the full sample (1996-2002) is regressed with regulation variable (REG), and eight independent control variables, namely, management ownership (MGTOWN), forecast horizon (FZON), company's age (AGE), leverage ratio (LEV),

⁴¹ The transformation proposed is from actual observations to normal distribution by dividing the distribution into the number of observations plus one region on the basis that each region has equal probability. The main advantage of replacing the rank by normal scores is that the resulting tests would have exact statistical properties because (a) significance levels can now be determined, (b) the F and t-tests are meaningful and (c) the power of the F and t-tests may be used. (Cooke, 1998)

auditors (AUD), board listing (BOARD), earnings reduction (EARRED) as a measure of management optimism, and size (SIZE) measured in terms of total assets. Previous studies have also suggested that the ability to forecast accurately is influenced by the variability of the economic conditions in effect from the beginning to the end of the forecast period (Davidson and Neu, 1993; Chan et al., 1996).

To test the effect of a change in economic conditions on forecast accuracy, dummy variables are used, indicating which economic condition IPO companies are categorised (from the beginning to the end of the forecast period). In the regression analysis, the pre-crisis condition variable is omitted from the regression model. The pre-crisis variable becomes a 'normal' or 'control' condition (Ashenfelter et al., 2006), in order to see how much better or worse IPO companies are in crisis and recovery period, when compared to pre-crisis companies.

Equation 5 shows the full model for all variables including control variables⁴²:

$$\begin{aligned}
 NAFE_i = & \beta_0 + \beta_1 CRISIS + \beta_2 RECOVERY + B_3 REGULATION \\
 & + B_4 EARRED + \beta_5 MGTOWN + \beta_6 FZON + \beta_7 AGE + \beta_8 LEV \\
 & + \beta_9 AUD + \beta_{10} BOARD + \beta_{11} SIZE + \varepsilon_i \dots\dots\dots(5)
 \end{aligned}$$

Where:

- NAFE_i* = Normalised absolute forecast error for sample companies
- CRISIS* = Economic crisis period
- RECOVERY* = Economic recovery period
- REG* = Regulation category
- EARRED* = Earnings reduction
- MGTOWN* = Management ownership
- FZON* = Forecast horizon
- AGE* = Company's age since incorporation
- LEV* = Leverage ratio

⁴² Control variables are independent variables which have been tested in prior studies

<i>AUD</i>	=	Auditor reputation
<i>BOARD</i>	=	Board listing
<i>SIZE</i>	=	Total assets
β_0	=	The intercepts
β_1	=	The coefficients of the independent variables
ϵ_i	=	Error term

In the above equation, the normalised absolute forecast error for each company is used as the dependent variable. The R^2 and F-statistics are used to test whether the above variables could significantly explain absolute forecast error.

4.7.2.2 Empirical model: relating earnings management and forecast error study

The association between the signed discretionary accruals and forecast error, economic conditions and company characteristics has been examined by conducting ordinary least square (OLS) regression test on normalised discretionary accruals as the dependent variable.

Equation 6 shows the full model for all variables including control variables⁴³:

$$NDA_{it} = \alpha + \beta_1 FE_{it} + \beta_2 CRISIS_{it} + \beta_3 RECOVERY_{it} + \beta_4 AUDITOR_{it} + \beta_5 MGTOWN_{it} + \beta_6 AGE_{it} + \beta_7 SIZE_{it} + \beta_8 LEV_{it} + \epsilon_{it} \dots \dots \dots (6)$$

Where:

<i>NDA</i>	=	Normalised discretionary accruals
<i>FE</i>	=	Forecast error
<i>CRISIS</i>	=	Crisis period
<i>RECOVERY</i>	=	Recovery period
<i>AUDITOR</i>	=	Auditor reputation
<i>MGTOWN</i>	=	Management ownership

⁴³ Control variables are independent variables which have been tested in prior studies

<i>AGE</i>	=	Company's age
<i>SIZE</i>	=	Company's total assets
<i>LEV</i>	=	Leverage ratio
B_0	=	The intercepts
B_i	=	The coefficients of the independent variables
ϵ_i	=	Error term

In the above equation, the normalised discretionary accruals are used as the dependent variable. The adjusted R^2 and F statistics are used to test whether the variables could significantly explain earnings management of those companies examined.

4.7.2.3 Multicollinearity

Multicollinearity occurs when two or more variables are highly correlated. In prior studies, this has been the most commonly used test for multicollinearity. Tabachnick and Fidell (1996, p.86) suggest the need to consider omitting one of the variables with a bivariate correlation of .7 or more.

Considering that multicollinearity may exist even when simple correlations are comparatively low, for example less than $r = .5$ (Gujarati, 1995 p.336), two more tests were carried out as presented below:

1. The Eigenvalues and condition index, used to detect multicollinearity and proposed by many econometricians as the best multicollinearity diagnostic (Gujarati, 1995). As a rule of thumb, Gujarati suggests that, if condition index is between 10 and 30, there is moderate to strong multicollinearity, and if it exceeds 30 there is severe multicollinearity.
2. If the VIF of a variable exceeds 10 ($VIF > 10$), then this variable is regarded as highly collinear (Gujarati, 1995).

4.8 Interviews

Interview-based research is intended to complement results from quantitative analysis. The main purpose of interviews is to find evidence which may support or challenge the quantitative findings research, as opposed to the practice and opinions of market participants. These will contribute towards extending ideas on factors influencing forecast accuracy and earnings management behaviour which the statistical model may not capture. It may also reveal other interesting or unexpected findings to help in the design of future research. These interviews are analysed in chapter 8 of the thesis.

4.8.1 Interview method

Patton (1990) identifies three basic types of qualitative interviewing for research or evaluation: the informal conversational interview, the interview guide approach, and the standardised open-ended interview. This research followed the interview guide or semi-structured approach, whereby the interviewer has an outline of topics or issues to be covered, but is free to vary the wording and order of the questions to some extent. Using this approach, interview questions (see Appendix 8-A, 8-B, 8-C in Chapter 8) are constructed some time before the interview and are sent to each interviewee in advance. Adopting a semi-structured approach is intended to ensure that the same general areas of information are collected from each interviewee, while still allowing a degree of freedom in getting the information from the interviewees. The interview questions were structured and cross-referenced to the research hypotheses and research questions being tested. This ensured that the research issues addressed by the hypotheses were discussed. Each interview lasted one to one and a half hours. Interviews were recorded in note form and on tape (after obtaining permission from the interviewee).

4.8.2 Analysis of interview findings

All interviews were tape recorded, then transcribed using the recordings and notes taken during the interviews. All transcripts were examined for emerging issues or themes. During the first round of transcript examination, these issues or themes were highlighted with different colours. A second examination was carried out to ensure that themes or issues which could be classified in the same category had been highlighted with the same colour. A final examination was then undertaken to look for any other issues falling outwith the previously identified categories. Responses of the interviews were given in full. Comments and summary were then made based on the responses given.

4.8.3 Selection of interviewees

Email contacts was made with fifteen market participants, explaining the purpose of the interview. These were: eleven company directors, one chief financial officer, two financial analysts and a regulator. These three different groups of people were chosen because they represent those who prepare company annual reports, the users of financial information and the body who regulates the capital market (especially in terms of the preparation of the IPO prospectus).

Contact was made with four of the company directors, the chief financial officer and one financial analyst through the use of personal contacts. In a developing country like Malaysia, where research is relatively unfamiliar, and interviews not readily welcomed, the use of networking can help to increase a researchers chances of access to potential interviewees (Ghazali, 2004). All the six people contacted agreed to be interviewed and were later contacted via telephone to arrange a suitable time for interview. Of the other nine people contacted through email, only the regulator responded to the email stating his preferred date and time for an interview. The other seven company directors declined to be interviewed due to time constraints. No reply was received from the remaining financial analyst and when contacted directly via telephone, he declined to be

interviewed, explaining that, “they have no time to entertain a student’s research”. Thus, interviews were finally carried out with four company directors, one chief financial officer, one financial analyst and the regulator.

4.9 Summary and conclusions

This chapter has discussed the hypothetico-deductive methodology adopted and described the quantitative methods applied to carry out empirical work and described the population and the final list of companies on which the research is based. The research approached, sample selection, data collection, definition and measurement of the variables tested in the research and method used to answer the research questions of this study were outlined. The formation of hypotheses for the forecast accuracy study was based on the prior empirical evidence discussed in chapter 2 and those regulations and economic conditions specific to Malaysia’s environment (as discussed in Chapter 3). The statistical techniques used for univariate analysis, and the multivariate analysis used to test the research hypotheses were explained at the end of the chapter.

Chapter 5 reports the results of analysis of the factors hypothesised to be associated to the dependent variable of forecast accuracy. The results of univariate and multiple regression analyses are presented and the influence of regulation, changes in economic condition, management optimism and companies’ specific characteristics are examined. The results for the earnings management study for IPO year 1996, 1998 and 2000 are presented in chapter 6. Chapter 7 discusses the result of linking earnings management to forecast error and other company specific characteristics.

CHAPTER 5: FORECAST ACCURACY STUDY: STATISTICAL RESULTS AND ANALYSIS

5.1 Introduction

This chapter tests the hypotheses for determinants of earnings forecast accuracy developed in Section 4.2.3 of Chapter 4. These are tested using the research method explained in Section 4.2 of Chapter 4.

This chapter also answers the following research questions:

Research question 2(a): What is the extent of forecast accuracy?

Research question 2(b): Is there a significant association between:

- 1) Forecast accuracy and regulation?**
- 2) Forecast accuracy and economic condition?**
- 3) Forecast accuracy and corporate characteristics?**

Research question 2(a) involves the calculation of forecast error and absolute forecast error, and statistical testing for the companies investigated. To answer this question, hypothesis H_{01} is tested using a parametric t-test, non-parametric Sign test and a Wilcoxon-U test (see Table 5-5 in Section 5.3). Comparison is made with prior studies in countries with mandatory forecast disclosure and in countries with voluntary earnings forecasts disclosure regulation (see Section 5.4).

Research question 2(b) seeks to identify the association between the dependent variable (i.e. forecast accuracy) and the independent variables (regulation, economic condition, and corporate characteristics). Univariate and multivariate analysis were used to test these associations. Univariate analysis involves two statistical tests of independent sample t-tests and the non-parametric Mann-Whitney U test. As there are three changes in economic condition during the period of study, analysis of variance (ANOVA) is used

to test the impact of changes in economic condition on forecast accuracy. Finally, the forecast accuracy model is tested using OLS regression with a dependent variable of absolute forecast error and independent variables of regulation, economic condition, and other company characteristics as control variables. The regression results are presented in Section 5.7.2.

Section 5.2 describes the sample. Section 5.3 provides descriptive statistics for the forecast error and absolute forecast error in the study. Section 5.4 compares the forecast error and absolute forecast error of the present study to those documented in prior research. Section 5.5 presents univariate results of the analysis used to test the relationship between the dependent variable and continuous independent variables. Section 5.7 reports the multivariate analysis results. Section 5.8 discusses the independent variables contributing to the accuracy of forecast made in the IPO prospectuses. Section 5.9 presents the results of those companies which failed to achieve their profit guarantee target. Section 5.10 highlights the limitation of this study, and the summary and conclusions are provided in Section 5.11.

5.2 Sample description

Descriptive statistics for the 242 companies listed are presented in Table 5-1 and Table 5-2 (see Appendix 5-A for a list of companies included in the study).

Table 5-1: Descriptive statistics of continuous independent variables

Independent variable	Mean	Median	Std deviation	Min	Max
Forecast horizon (months)	8.2	8.0	3.6	1.0	20.0
Age (years)	6.4	3.0	7.1	1.0	31.0
Size of assets (in million RM)	313	92.2	129.8	12.8	16796.3
Leverage ratio (%)	11.9	6.5	17.4	0.0	93.6
Management ownership (%)	19.4	13.1	20.5	0.0	88

The descriptive statistics of continuous independent variables in Table 5-1 show that the average age of companies included in the sample is 6.4 years, with a minimum age of 1 year and a maximum age of 31 years. A companies age is measured from the date of it's incorporation, so it may not actually reflect the time that company has been in business (i.e. some companies may have been operating for many years but only been incorporated recently). The mean forecast horizon is 8.2 months, which is above the minimum forecast horizon of 6 months required by the regulation.

Comparing these with the descriptive statistics of companies investigated by Jelic et al. (1998), it can be concluded that companies included in this study are relatively young, with a mean company age of 6.4 years, compared to 17.2 years in Jelic et al., smaller in terms of total assets (RM 313 million compared to RM 755 million in Jelic et al) have a lower percentage of shares owned by the management, (19.42% compared to 74.5% in Jelic et al) and have a lower leverage ratio (11.9% compared to 46.3% in Jelic et al.). The lower percentage of shares owned may be explained by the differences in the measurement of management ownership and the category of companies included in the sample. In this study management ownership is measured as the percentage of shares owned by the executive directors after the IPO while Jelic et al. (1998) defined

management ownership as the percentage of shares retained by the directors-owners after the IPO (a higher percentage of ownership means a lower percentage of share offered for sale). Companies included in this study cover both main board and second board, whereas Jelic et al. (1998) cover only companies on the main board.

Table 5-2 shows the descriptive statistics of the hypothesised independent categorical variables. The results show that more than 60% of the investigated companies are audited by major international accounting firms, are listed on the Second Board of Bursa Malaysia, have a forecast horizon between 6 to 12 months, are aged between 1 to 5 years, and reported an increase in actual earnings in the year following listing. The results also show that more than 80% of investigated IPO companies are in regulated industries.

Table 5-2: Descriptive statistics of independent categorical variables

Variable	Variable labels	companies for regression analysis (n=242)	
		n	Percentage (%)
Auditor reputation <ul style="list-style-type: none"> • Major international accounting firm • Non-major international accounting firm 	AUD	150	62
Board listing <ul style="list-style-type: none"> • Main board • Second board 	BOARD	89	37
Forecast horizon <ul style="list-style-type: none"> • Less than 6 months • 6 to 9 months • 10 to 12 months • more than 1 year 	FZON	92	38
Firm's age <ul style="list-style-type: none"> • 1 to 5 years • 6 to 10 years • Above 10 years 	AGE	153	63
Regulation <ul style="list-style-type: none"> • Profit guarantee • Share moratorium • Total regulated • Non-regulated 	REGULATION	42	17
Economic condition <ul style="list-style-type: none"> • Pre-crisis period • Economic crisis period • Recovery period 	CRISIS RECOVERY	118	49
Earnings reduction <ul style="list-style-type: none"> • Earnings increased • Earnings decreased 	ERED	49	20
		33	14
		165	68
		27	11
		50	21
		70	29
		138	57
		208	86
		34	14
		48	20
		85	35
		109	45
		148	61
		94	39

5.3 Descriptive statistics of forecast error

Table 5-3 provides the descriptive statistics for the forecast error analyses in this study. The mean and median forecast errors are negative at -14.12% and -7.96% respectively. The negative signs of mean and median forecast error indicate that IPO earnings forecast are optimistic in the sense that the actual earnings are less than forecast. This shows that

the negative mean forecast error is greater than the 10% range tolerated by the Securities Commission. This finding differs significantly from the reported findings of Mohamed et al. (1994) on Malaysian IPOs for the period 1984-1988 and Jelic et al. (1998) for the period 1988-September 1995. Both these studies reported a positive mean forecast error (see Table 5-6).

Table 5-3 also shows the mean absolute forecast error, calculated to measure how close the forecast is to the actual result for the period. The mean absolute forecast error of 25.6% is lower than the 27.91% reported by Mohamed et al. (1994) and the 54.91% reported by Jelic et al. (1998) (see Table 5-6). This would appear to indicate that the level of forecast accuracy in new issue prospectuses of Malaysian companies was improving over the time period.

Table 5-3: Mean forecast error and absolute forecast error

	N	Mean	Median	Standard deviation	Minimum	Maximum
Forecast error before tax	242	-14.12	-7.96	41.57	-257.62	111.62
Absolute forecast error before tax	242	25.60	13.01	35.64	.11	257.62

The results in Table 5-4 show that, out of 242 companies' earnings forecasts, 87 companies (35.9%) exceeded their forecast while 155 companies (64.1%) reported earnings below those predicted in the prospectus. The frequency distribution of forecast error also shows that 57 companies (23.6% of examined companies) have a negative forecast error within the 10% tolerated level. Seven companies are on the extreme at more than 100% below forecast and one company is more than 100% above forecast. Table 5-4 shows frequency distributions of forecast error for the period of study. Figure 5-1 shows that the forecast error for the investigated companies is negatively skewed towards negative values.

Table 5-4: Frequency distribution of forecast error before tax

Forecast error distribution	Frequency	Percent	Cumulative percent
Exceeding forecasts			
Above 100%	1	0.4	0.4
90.01 to 100	2	0.8	1.2
80.01 to 90	0	0	1.2
70.01 to 80	0	0	1.2
60.01 to 70	1	0.4	1.6
50.01 to 60	0	0	1.6
40.01 to 50%	2	0.8	2.4
30.01 to 40%	7	2.9	5.3
20.01 to 30%	6	2.5	7.8
10.01 to 20%	20	8.3	16.1
0.00 to 10%	48	19.8	35.9
TOTAL	87	35.9%	
Not meeting forecast			
-10 to -.01%	57	23.6	59.5
-20 to -10.01%	27	11.2	70.7
-30 to -20.01%	18	7.4	78.1
-40 to -30.01%	21	8.7	86.8
-50 to -40.01%	6	2.5	89.3
-60 to -50.01%	5	2.1	91.4
-70 to -60.01%	4	1.6	93.1
-80 to -70.01%	5	2.1	95.2
-90 to -80.01%	2	0.8	96.0
-100 to -90.01%	3	1.2	97.2
Below -100%	7	2.9	100
TOTAL	155	64.1%	

Figure 5-1: Forecast error frequency distribution

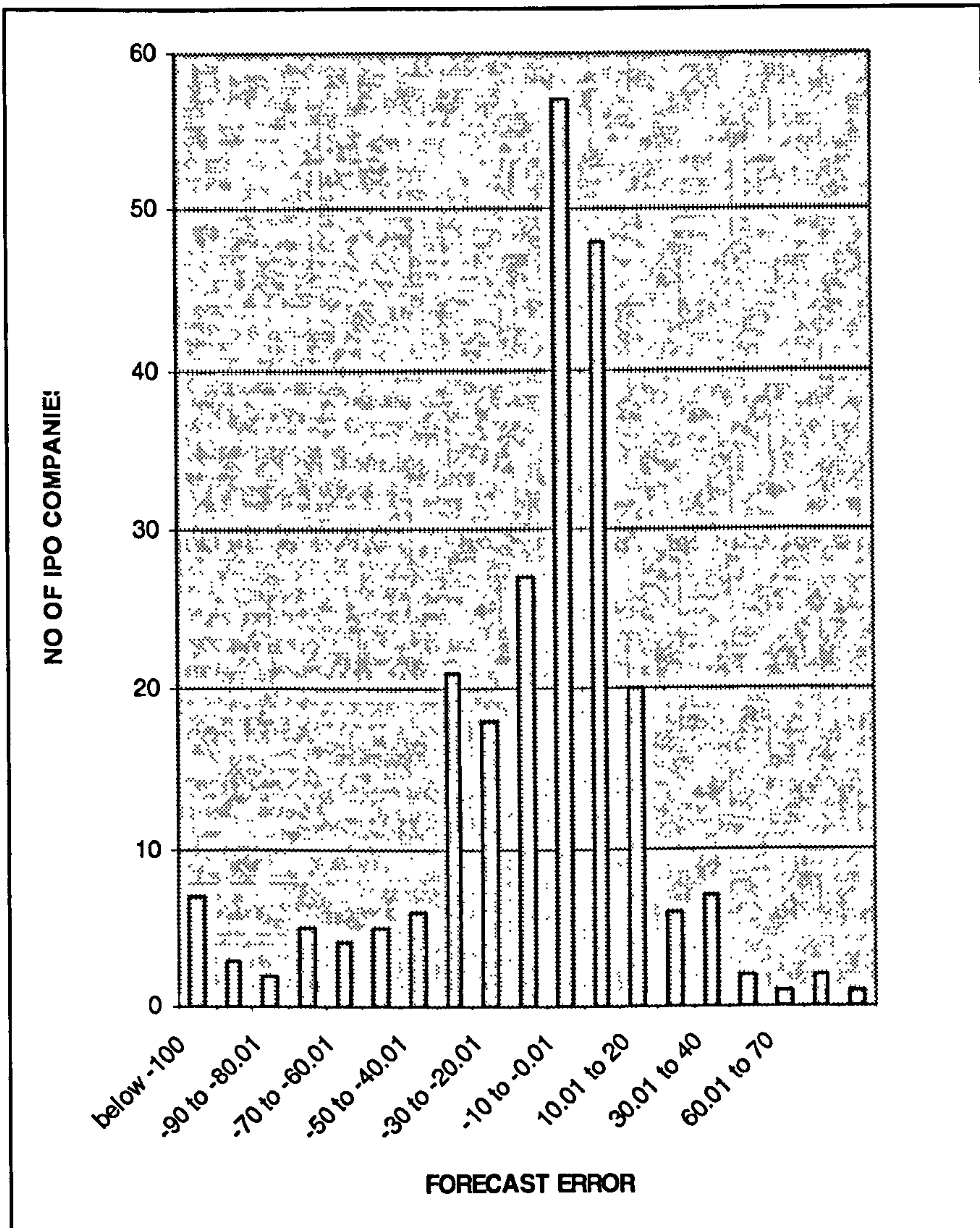


Table 5-5: Parametric and non-parametric test on forecast error

	Parametric test T-Test p-value		Sign test		Wilcoxon test	
	T-stats.	p-value	Z-value	Sig.	Z-value	Sig.
Forecast error before tax (%)	-5.28	0.000	-4.31	0.000	-5.68	0.000
Absolute forecast error before tax (%)	11.17	0.000	-15.49	0.000	-13.49	0.000

Following Jelic (1998), the hypothesis that mean forecast error is equal to zero (H_{01} in Section 4.2.3.1) is tested using a parametric t-test. The reported p-values in Table 5-5 indicate that the mean forecast error of -14.12% (see Table 5-3) is significantly smaller from zero at the 1% significant level indicating positive bias across the 242 companies as a group. As the distribution of error metrics is not symmetric, but is skewed to the left, the hypothesis is also tested using the non-parametric test for the median. The results of the Wilcoxon and the Sign test in Table 5-5 also indicate that median forecast error is significantly negative at the 1% level. Testing the hypothesis using a parametric t-test and a non-parametric test on the mean absolute forecast error, also gives a significant result at the 1% significant level. According to Jelic et al. (1998), if the forecasts are unbiased (i.e. company's management do not systematically over- or-under predict earnings), the mean of the forecast error (FE) should not be significantly different from zero. Therefore, the results in Table 5-5 reject the null hypothesis H_{01} and suggest the forecasts are positively biased for the period of study.

5.4 Comparison with prior studies

This section compares the relative size and direction of error (forecast error), and the magnitude of error (absolute forecast error) of the present study to those documented in

prior research and previous studies on Malaysian IPO management earnings forecast accuracy.

5.4.1 Comparison with previous studies on Malaysian IPOs

Table 5-6 compares previous studies on Malaysian IPOs.

Table 5-6: Comparison with previous studies on Malaysian IPOs

Study	Country	Period	Sample	Forecast error (%)	Absolute forecast error (%)	Min Forecast error (%)	Max Forecast error (%)
Mohamad et al. (1994)	Malaysia	1984 -1988	65	9.34	27.91	N.A	N.A
Jelic et al. (1998)	Malaysia	1988 -1995	124 (Main board)	33.37	54.91	-136.17	4110.53
This study	Malaysia	1996-2002	242 (both boards)	-14.12	25.60	-257.62	111.62
This study	Main Board	1996 - 2002	89	-11.89	25.98	-249.19	47.84
	Second Board	1996 - 2002	153	-15.36	25.37	-257.62	111.62

Table 5-6 shows that for the period 1996-2002, the absolute forecast error for Malaysian IPO companies in this study is lower than the values reported by Mohamed et al. (1994) for the period 1984-1988, and by Jelic et al. (1998) for the period 1988-1995. Although both studies were on Malaysian IPOs, it cannot be concluded that IPO companies in Malaysia between 1996-2002 are more accurate in their forecast. There are several reasons for this. Firstly, a direct comparison with the result of Mohamed et al. (1994) and Jelic et al. (1998) may not be entirely objective due to the different populations of companies tested. Jelic et al. (1998) covers only companies listed on the main board of Bursa Malaysia while Mohamed et al. (1994) fail to mention the board of listing of their sampled companies. This study investigated companies listed on both the main and second board of the Bursa Malaysia. Secondly, all of these studies are made in different period with different economic condition.

In order to make an objective comparison, the results for both forecast error and absolute forecast error for companies listed on the main board were compared with Jelic's study. Results from Table 5-6 show that main board IPO companies between 1996-2002 found it more difficult to achieve their forecast, resulting in a negative forecast error of 11.89% compared to Jelic et al's. (1998) mean positive forecast error of 33.37%. However, the results also suggest that, for the period 1996-2002, Malaysian IPO companies listed on the main board were more accurate on average in their forecast compared to those on the main board for the period 1988-1995. The mean absolute forecast error reported by Jelic et al (1998) in the previous study (54.91%) is twice the percentage of absolute forecast error reported for main board companies in this study (25.98%). One possible explanation for the lower absolute forecast error during the period might be the new regulations governing earnings forecast disclosure in IPO companies' prospectuses, which became effective from 1 January 1996. The possible effect of regulation is further investigated in the multivariate analysis in Section 5.7 and in the follow-up interviews with company management.

5.4.2 Comparison with studies in other countries

Comparison with studies in other countries was made based on the regulation of earnings forecast disclosure in company prospectus. The first group of countries consists of those in which a mandatory earnings forecast disclosure is required, and the second group consists of countries in which companies voluntarily disclosed their earnings forecast in company prospectuses.

Table 5-7 shows results comparing this study with other studies on earnings forecast accuracy in IPO companies prospectuses with mandatory earnings forecast disclosure. China, New Zealand, Singapore and Thailand are countries which have a mandatory requirement for the management of IPO companies to furnish earnings forecasts in their prospectuses.

Table 5-7: Comparison with previous studies with similar compulsory earnings forecast disclosure

Study	Country	Period	Sample	Mean forecast error (%)	Mean absolute forecast error (%)	Min Forecast error (%)	Max Forecast error (%)
Chen and Firth (1999)	China	1991-1996	532	21.9	40.12	NR	NR
Mak (1989)	New Zealand	1983-1987	71	NR	100	NR	NR
Firth and Smith (1992)	New Zealand	1983-1986	89	-92.0	328	-12393	3047
Firth et al (1995)	Singapore	1980 -1993	114	20.1	10.4	NR	NR
Lonkani and Firth (2005)	Thailand	1991-1996	175	-6.9	35.76	-370	298
This study	Malaysia	1996-2002	242	-14.1	25.6	-257.6	111.6

Key:

NR = Not reported

Although the results in Table 5-7 show that, for the period 1996-2002, Malaysian IPO companies seem to have a lower absolute forecast error compared to other countries with a mandatory earnings forecast disclosure (with the exception of Singapore), it cannot be concluded that Malaysian IPOs earnings forecasts are more accurate than others. There are several reasons for this. Firstly, the difference in the results obtained may be due to differences in the period of study between countries. Chan et al. (1996) in his univariate analysis, found a significant association between year of flotation and absolute forecast error. Their study suggests that Hong Kong IPO companies listed in 1991 and 1992 have more accurate prospectus earnings forecasts. Secondly, different countries may have different economic conditions at the time of study. The findings of earlier research suggest that a change in economic condition is an important variable in explaining variation in profits (Chan et al. 1996).

Table 5-8 shows a summary of studies of earnings forecasts in IPO prospectuses – comparing other countries with voluntary disclosure.

Table 5-8: Summary of studies of earnings forecast in IPO prospectuses - comparing other countries with voluntary disclosure

Study	Country	Period	Sample	Mean Forecast error (%)	Mean Absolute forecast error (%)	Min Forecast error (%)	Max Forecast error (%)
Dev and Webb(1972)	UK	1968-1969	212	112	NR	46.6	196.4
Keasey and McGuinness (1991)	UK	1984-1986	121	5	11	NR	NR
Chan et al (1996)	HK	1990-1992	110	NR	18	NR	NR
Jaggi (1997)	HK	1990-1994	161	6.5	12.79	-147.82	63.96
Chen et al (2001)	HK	1993-1996	162	9.4	21.96	NR	NR
This study	Malaysia	1996 - 2002	242	-14.12	25.60	-257.62	111.62

Key:

NR = Not reported

However, comparing the result with developed countries and those other countries who voluntarily disclosed earnings forecast in their IPO prospectuses (see Table 5-8), shows that for the period 1996-2002 Malaysian IPO companies are less accurate in their forecast. Since all these companies (UK and Hong Kong) are voluntarily disclosing an earnings forecast, it can be expected that they will have a lower absolute forecast error, because managers who doubt the accuracy of their forecasts, are under no obligation to publish them. The signalling hypothesis suggests that companies with good news have incentives to voluntarily disclose an earnings forecast to distinguish themselves from companies with bad news (Penmann, 1980; Clarkson et al., 1991). Managers will have an incentive to disclose earnings forecasts if it conveys good news in order to receive a higher company valuation from investors (Verrecchia, 1983). However the inclusion of earnings forecasts for companies applying for a new stock exchange listing in the United States is rare (Pedwell et al., 1994). This absence of earnings forecasts is due to a concern about legal suits if the forecasts prove to be inaccurate (Firth, 1998).

5.5 Univariate analysis-relationship between variables

To explore the direction and the strength of the relationship between the dependent variable (absolute forecast error) and continuous independent variables, Pearson's Product-Moment correlation (r) was computed. In this study, correlation coefficients were computed for normalised dependent variable absolute forecast error. The results of the correlation analysis are presented in Table 5-9.

Table 5-9: Correlation between continuous independent variables and forecast accuracy (absolute forecast error)

Independent variables	Forecast accuracy – Normalised absolute forecast error (Pearson correlation)	Significance (2-tailed)
Forecast horizon	.080	.213
Company's age	-.072	.262
Size (total assets)	-.048	.458
Leverage ratio	-.092	.154
Management ownership	-.009	.888

The results in Table 5-9 show that all continuous independent variables have weak correlations with the accuracy of forecasts made by the management of IPO companies. This suggests that these variables do not relatively influence the accuracy of forecasts made by IPO companies.

In determining whether categorical variables included in the study have an impact on the accuracy of forecasts made, two statistical tests were performed (independent-samples t-test and the non-parametric Mann-Whitney U test). The results of these are shown in Table 5-10.

Table 5-10: T-test and Mann-Whitney U test for categorical independent variables

Categorical independent variable	N	Mean AFE	Standard deviation	t-value (sig. 2-tailed)	Mann-Whitney (Z value)
Auditor reputation					
Major international firm	150	27.31	34.73	0.957 (.340)	-2.046 (.041)
Non-major international firm	92	22.80	37.10		
Board listing					
Main board	89	25.98	34.05	.128 (.898)	-.311 (.756)
Second board	153	25.37	36.65		
Regulation					
Regulated	208	26.40	37.82	.864(.388)	-.365 (.715)
Non-regulated	34	20.70	16.67		
Management optimism					
Earnings increased	148	17.57	19.59	4.574 (.000)	-3.707 (.000)
Earnings decreased	94	38.24	49.21		

Key:
AFE = Absolute forecast error

A parametric t-test shows that there is no significant difference between the accuracy of forecasts made by companies audited by major international accounting firms and those audited by non-major international accounting firms. There is also no significant difference in the accuracy of main board and second board companies, and no significant difference in the accuracy of regulated and non-regulated companies. A non-parametric Mann Whitney-U test, however, shows that there is a statistically significant difference in the accuracy of forecast made by companies audited by major accounting firms and non-major accounting firms. The difference in results for the auditor

reputation variable is probably due to sample data not being symmetrically distributed. The t-test and Mann Whitney-U test show that the difference in forecast accuracy is statistically significant between companies with an increase in actual earnings after listing, and those experiencing a reduction.

During the period of study, Malaysia experienced three different economic conditions. Thus, because there are more than two economic conditions involved, analysis of variance (ANOVA) was used. Tables 5-11A and 5-11B show the result.

Table 5-11A: One-way ANOVA for economic condition variable

	Economic condition			F	Sig.
	Pre-crisis	Crisis	Recovery		
N	48	85	109	4.022	.019
Mean	12.89	30.15	27.64		
Standard deviation	17.68	37.28	39.06		

Table 5-11B: Tukey HSD test

Economic category (Mean AFE, S.D)	Economic category	Mean difference	Sig.
Pre-crisis (12.89, 17.68)	Crisis	-17.26*	.019
	Recovery	-14.75*	.043
Crisis (30.15, 37.28)	Pre-crisis	17.26*	.019
	Recovery	2.51	.875
Recovery (27.64, 39.06)	Pre-crisis	14.75*	.043
	Crisis	2.51	.875

* The mean difference is significant at the .05 levels.

AFE = absolute forecast error, S.D. = standard deviation

In comparing the mean scores of more than two groups of economic condition, analysis of variance is conducted. The one-way between-group analysis of variance was conducted to explore the impact of changes in economic condition on forecast accuracy,

as measured by absolute forecast error. Economic conditions were divided into three groups, namely a pre-crisis, crisis and recovery period. A significant F test ($F = 4.022$, $p = .019$) indicates there is significant variability between different economic periods but does not, however, indicate which of the groups differ. Further post-hoc tests are conducted to identify where the differences among the group occur (Pallant, 2001 p.190). The Tukey HSD test in Table 5-11B indicated that the mean absolute forecast error for the pre-crisis period (mean = 12.89, SD = 17.68) was statistically different from that of the crisis (mean = 30.15, SD = 37.28) and recovery period (mean = 27.64, SD = 39.06). Forecast accuracy in the recovery period is, however, not statistically different from that of the crisis period.

Table 5-12 shows descriptive statistics of forecast error and absolute forecast error by economic period.

Table 5-12: Descriptive statistics of forecast error and absolute forecast error by economic period

Economic period	Forecast error			Absolute Forecast error		
	Pre-crisis	Crisis	Recovery	Pre-crisis	Crisis	Recovery
No of companies	48	85	109	48	85	109
Mean (%)	8.57	-22.64	-17.46	12.89	30.15	27.64
Median (%)	5.27	-11.51	-7.84	7.25	21.09	14.39
Standard deviation (%)	20.18	42.32	44.60	17.68	37.28	39.06
Minimum (%)	-34.21	-249.19	-257.62	0.15	0.76	0.11
Maximum (%)	111.62	94.84	98.98	111.62	249.19	257.62

Table 5-12 provides the descriptive statistics of the forecast error and absolute forecast error under the three different economic conditions. The forecast error of companies listed in the pre-crisis period is positive (+8.57%), indicating that companies in this period, are on average, meeting or exceeding the forecast made in prospectuses. Companies in the period of economic crisis and the period of economic recovery have a negative forecast error (-22.64% and -17.46% respectively) and have a negative error greater than the 10% level tolerated by the securities commission. This negative forecast error means companies, on average, are not meeting their forecast. The forecasts are negatively biased for IPO companies in the pre-crisis period and positively biased for IPOs in both the crisis period and the recovery period.

Results on the magnitude of error shows that IPO companies in the period of pre-crisis are more accurate in their forecast compared to companies in the crisis and recovery period. Unexpectedly, there is very little difference in the forecast accuracy of IPOs between the crisis period and the recovery period. There is no significant difference (based on a t-test) in scores for the crisis period (mean = 30.15%, standard deviation = 37.28), and the recovery period (mean = 27.64%, standard deviation = 39.06; $t = .743$, $p = .46$).

To explore whether differences in regulation of earnings forecasts (i.e. profit guarantee or share moratorium) have an impact on the direction and magnitude of forecast error, two statistical tests of independent-samples t-tests and non-parametric Mann-Whitney U test were performed. Table 5-13A shows the results of the independent t-test and Mann-Whitney U test for forecast error, and Table 5-13B shows the results for absolute forecast error.

Table 5-13A: T-test and Mann-Whitney U test for forecast error

Regulation	N	Mean forecast error	t-value (sig.-2tailed)	Mann-Whitney Z value (sig.)
Profit guarantee	70	-11.96	-.733 (-.464)	-.184 (.854)
Share moratorium	138	-16.66		

Table 5-13B: T-test and Mann-Whitney U test for absolute forecast error

Regulation	N	Mean absolute forecast error	t-value (sig.-2tailed)	Mann-Whitney Z value (sig.)
Profit guarantee	70	22.24	1.132 (.259)	-.584 (.559)
Share moratorium	138	28.51		

Out of 242 companies examined, 208 companies are regulated companies. 70 regulated companies are subject to the profit guarantee agreement and 138 regulated companies are subject to the share moratorium. The results in Table 5-13A and Table 5-13B show that mean forecast error and absolute forecast error for companies subject to the profit guarantee (-11.96%, 22.24%) is lower than mean forecast error and absolute forecast error for companies subject to the share moratorium (-16.66%, 28.51%). The results of statistical tests of independence however, show that there is no significant difference in the direction and magnitude of forecast error between companies subject to the profit guarantee and the share moratorium.

The hypothesis that the mean forecast error is equal to zero (hypothesis 1) is also tested for the three different economic periods using a parametric t-test. The reported p-values in Table 5-14 indicate that the mean forecast error for these economic periods (see Table 5-12) is significantly different from zero at the 1% significant level. The results of the

Wilcoxon and Sign test in Table 5-14 also indicate that median forecast error is significantly different from zero at the 1% level for all three economic conditions tested. Therefore, the results in Table 5-14 suggest the forecasts are significantly negatively biased for the pre-crisis period IPO companies and positively biased for both crisis and recovery period IPOs. Table 5-14 shows the results of parametric and non-parametric tests.

Table 5-14: Test of significance of mean forecast error

Forecast error	Parametric test		Sign test p-value	Wilcoxon test p-value
	t-test	p value		
Pre-crisis	2.944	0.005	0.006	0.001
Crisis	-4.933	0.000	0.000	0.000
Recovery	-4.008	0.000	0.000	0.000

5.6 Univariate results – test of company characteristics relationship

The chi-square statistic reported in Table 5-15 is to test whether or not there is a relationship between two nominal variables, or whether they are independent of each other. In this study, forecast error is classified into two categories, i.e. positive forecast error, indicating a company meeting or exceeding the forecast, and negative forecast error indicating failure to do so. The null hypothesis, for the chi-square test for independence, states that there is no relationship between variables tested and sign of forecast error⁴⁴.

⁴⁴ The chi-square statistic indicates that there is no significant relationship between earnings reduction and crisis period (chi-square value =1.896, sig = 0.169).

Results in Table 5-15 shows that auditor reputation, forecast horizon, regulation, company's age and size of companies have no significant relationship with companies meeting or not meeting the forecast. Board listing, economic condition and earnings reduction have a significant relationship at the 1% level while leverage has a significant relationship with meeting or not meeting the forecast at the 5 % level. This will be discussed in Section 5.8 in relation to univariate and multivariate results.

Table 5-15: Crosstab and Chi-square statistics for differences between meeting or exceeding the forecast (positive forecast error) and not meeting the forecast (negative forecast error) – categorical variables

Variable	Forecast error		Total	Chi-square value
	Negative forecast error (not meeting forecast)	Positive forecast error (exceeding the forecast)		
Auditor reputation				
Major accounting firm	92 (61.3%)	58 (38.7%)	150	(1.264) .261
Non major accounting firm	63 (68.5%)	29 (31.5%)	92	
Total	155 (64.0%)	87 (36.0%)	242	
Board listing				
Main board	47 (52.8%)	42(47.2%)	89	(7.725) 0.005***
Second board	108 (70.6%)	45 (29.4%)	153	
Total	155 (64.0%)	87 (36%)	242	
Forecast horizon				
Less than 6 months	24 (57.1%)	18 (42.9%)	42	(2.853) 0.415
6 to 9 months	74 (62.7%)	44 (37.3%)	118	
10 to 12 months	36 (73.5%)	13 (26.5%)	49	
More than 1 year	21 (63.6%)	12 (36.4%)	33	
Total	155 (64.0%)	87 (36%)	242	
Regulation				
Regulated	134 (64.4%)	74 (35.6%)	208	(0.090) 0.765
Non-regulated	21 (61.8%)	13 (38.2%)	34	
Total	155 (64.0%)	87 (36%)	242	
Economic condition				
Pre – crisis period	14 (29.2%)	34 (70.8%)	48	(37.789) 0.000***
Economic crisis period	70 (82.4%)	15 (17.6%)	85	
Post - crisis period	71 (65.1%)	38 (34.9%)	109	
Total	155 (64.0%)	87 (36%)	242	
Company's age				
1 to 5 years	109 (66.1%)	56 (33.9%)	165	(2.034) 0.362
6 to 10 years	14 (51.9%)	13 (48.1%)	27	
Above 10 years	32 (64.0%)	18 (36.0%)	50	
Total	155 (64.0%)	87 (36%)	242	
Earnings reduction				
Earnings increased	83 (56.1%)	65 (43.9%)	148	(10.57) 0.001***
Earnings decreased	72 (76.6%)	22 (23.4%)	94	
Total	155 (64.0%)	87 (36%)	242	
Size-total assets				
1 to 100 million (RM)	91 (67.4%)	44 (32.6%)	135	(1.495) 0.221
Above 100 million (RM)	64 (59.8%)	43 (40.2%)	107	
Total	155 (64.0%)	87 (36%)	242	
Leverage ratio				
0 to 30%	145 (65.9%)	75 (34.1%)	220	(8.431) 0.038**
30.01 to 60%	6 (40%)	9 (60%)	15	
60.01 to 85%	1 (25%)	3 (75%)	4	
Above 85%	3 (100%)	0 (0%)	3	
Total	155 (64.0%)	87 (36%)	242	

*** Significant at the 1% level, ** significant at the 5 % level,

5.7 Multivariate analysis

Multiple regression analysis was used to explore the relationship between the continuous dependent variable and a number of independent variables. This analysis allows a more sophisticated exploration of the interrelationship among a set of variables, providing information about the model as a whole and the relative contribution of each of the variables that make up the model (Pallant, 2001. p.134).

The full regression model for this study is as follows:

$$\begin{aligned}
 NAFE_i &= \beta_0 + \beta_1 CRISIS + \beta_2 RECOVERY + \beta_3 REGULATION \\
 &+ \beta_4 EARRED + \beta_5 MGTOWN + \beta_6 FZON + \beta_7 AGE + \beta_8 LEV + \beta_9 AUD \\
 &+ \beta_{10} BOARD + \beta_{11} SIZE + \epsilon_i \dots\dots\dots(7)
 \end{aligned}$$

Where:

- $NAFE_i$ = Normalised Absolute forecast error for investigated companies
- i = Number of companies
- $CRISIS$ = Crisis period
- $RECOVERY$ = Recovery period
- $REGULATION$ = Regulation
- $EARRED$ = Earnings reduction
- $MGTOWN$ = Management retained ownership
- $FZON$ = Forecast horizon
- AGE = Company's age since incorporation
- LEV = Leverage ratio
- AUD = Auditor reputation
- $BOARD$ = Board listing
- $SIZE$ = Total assets
- β_0 = The intercept
- β_i = The coefficients of the independent variables
- ϵ_i = Error term

5.7.1 Multicollinearity

The correlations between independent variables are provided in Table 5-16. Inspection of the correlation matrix shows that year of listing is highly correlated with economic condition, with a correlation of 0.899. Correlation is the most commonly used test for multicollinearity in prior studies. Tabachnick and Fidell (1996, p.86) suggest the need to consider omitting one of any pair of variables with a bivariate correlation of .7 or more. Therefore, the year of listing variable was dropped and only economic condition is entered in the equation. Table 5-16 also shows the correlation matrix between continuous independent variables for the study.

Table 5-16: Correlation matrix

	Forecast horizon	Company's age	Size	Leverage ratio	Management ownership	Economic category	Year list
Forecast horizon	1						
Pearson corr		-.016	.016	-.063	-.066	.116	.030
Sig. (2 tailed)		.803	.809	.326	.310	.071	.645
Company's age		1	-.069	-.105	-.123	-.143*	-.106
Pearson corr			.287	.104	.056	.027	.101
Sig. (2 tailed)				.382**	-.131*	.117	.156*
Size			1	.000	.042	.069	.015
Pearson corr							
Sig. (2 tailed)							
Leverage ratio				1	-.087	-.103	-.065
Pearson corr					.178	.110	.314
Sig. (2 tailed)							
Management ownership					1	-.126*	-.064
Pearson corr						.049	.322
Sig. (2 tailed)							
Economic category						1	.899**
Pearson corr							.000
Sig. (2 tailed)							
Year list							1
Pearson corr							
Sig. (2 tailed)							

Considering that multicollinearity may exist even when simple correlations are comparatively low, less for example than $r = .5$ (Gujarati et.al., 1995, p.336), other multicollinearity tests of condition indices, VIF, tolerance and eigenvalues were examined (see Table 5-17). The results show that, except for the size variable, the condition index for all the other variables is less than 10. Gujarati suggests as a rule of thumb that, if the condition index is between 10 and 30, there is moderate to strong multicollinearity, and if it exceeds 30, there is severe multicollinearity. Table 5-17 shows the results of collinearity tests of independent variables.

Table 5-17: Collinearity test – Eigenvalue, VIF, Tolerance, and Condition Index

Model	Collinearity statistics		Collinearity diagnostics	
	Tolerance	VIF	Eigenvalue.	Condition Index
Constant			6.463	1.000
Crisis	.538	1.858	1.252	2.272
Recovery period	.505	1.981	1.020	2.517
Regulation	.702	1.425	.768	2.901
Earnings reduction	.958	1.044	.591	3.307
Management ownership	.917	1.090	.489	3.636
Forecast horizon	.963	1.039	.431	3.872
Company's age	.864	1.157	.379	4.128
Leverage ratio	.797	1.255	.301	4.633
Auditor reputation	.929	1.076	.163	6.302
Board listing	.614	1.630	.116	7.468
Size	.779	1.284	.027	15.391

The variance inflation factor (VIF) of all the variables in the study is less than 2, which suggests the absence of multicollinearity in the regression model (Gujarati, 1995). The results for “Tolerance” show that none of the variables has a value close to zero, which further support that multicollinearity may not be a threat. Finally, looking at “Eigenvalues”, the eigenvalues for all variables are not close to zero, indicating that multicollinearity may not be a problem.

5.7.2 Multiple regression results

Multiple regressions were applied to explore the relationship between the dependent variable of forecast accuracy measured in terms of absolute forecast error and a number of independent variables. The standard multiple regression result is shown in Table 5-18⁴⁵.

⁴⁵ The study ran an alternative multiple regression using non-normalised dependent variables. The regression result shows that crisis, recovery, and earnings reduction variables have significant positive association with absolute forecast error. The distinction between major international and non-major international accounting firms is not found to have a significant association with absolute forecast error.

Table 5-18: Standard multiple regression results for forecast accuracy (AFE)

	Variable labels	Expected sign	Sign observed	Beta	t-stats (sig.)	p-value
Intercept			-		-2.676	(.008)**
Crisis period	CRISIS	+	+	.321	3.924	(.000)***
Recovery period	RECOVERY	+	+	.228	2.694	(.008)***
Regulation	REGULATION	-	+	.010	.143	(.887)
Earnings reduction	ERED	+	+	.280	4.567	(.000)***
Management ownership	MGTOWN	-	+	-.003	-.056	(.956)
Forecast horizon	FZON	+	+	.071	1.163	(.246)
Firm's age	AGE	-	-	-.119	-1.837	(.068)*
Leverage	LEV	+/-	-	-.093	-1.389	(.166)
Auditor reputation	AUD	+/-	+	.123	1.968	(.050)**
Board listing	BOARD	+/-	+	.089	1.155	(.249)
Size	SIZE	+/-	+	-.064	-.936	(.351)
R ² (%)	17.2					
Adjusted R ² (%)	13.2					
N	242					
F -value	4.328					
Sig.	(.000)***					

Notes: *** 1% significant level; ** 5% significant level, * 10% significant level

The results in Table 5-18 show that the regression is significant at the 1% level, explaining 13.2 % of the variation in the absolute forecast error. This means that 13.2% of the variation in forecast accuracy level in IPO companies' prospectus examined in this study can be explained by the eleven variables specified in the model. The explanatory power of the model in this study is higher than the adjusted R^2 of Cheng and Firth (2000) in a study of Hong Kong IPOs, and Jelic et al's. (1998) study on Malaysian IPOs for the period 1988-1995. The explanatory power of the regression model is, however, lower than that of Pedwell et al. (1994) (see Table 2-2 in Chapter 2).

The economic crisis, recovery period, and management optimism represented by the earnings reduction variable are significant at the 1% level, while the auditor reputation variable is significant at the 5% level. The positive signs for the crisis and recovery period variables indicate that IPO companies in these periods have a higher absolute forecast error than IPO companies in the pre-crisis period. Thus, the results (which are consistent with the study expectation), indicate the alternative hypothesis (H_{A3} in Section 4.2.3.3) of significant positive association between accuracy and crisis period variable can be accepted at 1% level, and the hypothesis of no significant association between the accuracy of forecast and recovery period variable (H_{04} in Section 4.2.3.3) can be rejected at the 1% level.

The significant positive coefficient for earnings reduction implies that companies which experience a higher reduction in actual earnings after listing have a significantly larger absolute forecast error than companies with an increase in actual earnings after listing. The null hypothesis (H_{05} in Section 4.2.3.4) of no significant association between earnings reduction and the accuracy of the earnings forecast made in company prospectus can be rejected at the 1% level. Auditor reputation has a positive significant association with forecast accuracy at the 5% level. This indicates that companies audited by major international accounting firms have a greater absolute forecast error than companies audited by other accounting firms. Company age has a marginal significant association with accuracy while other

variables are not significantly associated with the accuracy of prospectus earnings forecasts. These will be discussed in Section 5.8.

In comparing the contribution of each independent variable to the prediction of the dependent variable (forecast accuracy), the Beta value under Standardised Coefficients is referred to. The standardised coefficients mean that the values for each of the different variables have been converted to the same scale so that comparison on the contribution of each independent variable can be made (Pallant, 2001). Results from Table 15-18 show that the crisis period variable makes the strongest contribution to the prediction of IPO forecast accuracy (Beta = .321), when the variance explained by all other variables in the model is controlled for, followed by the earnings reduction variable (Beta = .280), the economic recovery variable (Beta = .228) and auditor reputation (Beta = .123).

An alternative test using forecast error as the dependent variable, was performed. The result is shown in Table 5-19. The regression result shows that the crisis, recovery, earnings reduction and forecast horizon variables have a significant negative association with forecast error at the 1% level. This indicates companies in the crisis and recovery period have more negative error than companies in the pre-crisis period. The negative association between earnings reduction and forecast error means that the greater the reduction in actual earnings after the IPO, the more negative is the forecast error. A significant negative association between forecast horizon and forecast error indicates that, the longer the period from the date of forecast to the date of actual earnings, the more negative is the forecast error. Other variables are not found to significantly influence the direction of forecast error. Table 5-19 shows standard multiple regression results for direction of forecast error. The regression model is significant at the 1% level, explaining 25% of the variation in the forecast error.

Table 5-19: Standard multiple regression results for magnitude and direction of forecast error

	Variable labels	Expected sign	Sign observed	Beta	t-stats (sig.)	p-value
Intercept			+		3.988	.000***
Crisis period	CRISIS	-	-	-.495	-6.510	.000***
Recovery period	RECOVERY	-	-	-.424	-5.396	.000***
Earnings reduction	ERED	-	-	-.325	-5.704	.000***
Management ownership	MGTOWN	+	+	.028	.477	.634
Forecast horizon	FZON	-	-	-.150	-2.629	.009***
Firm's age	AGE	+	-	-.024	-.399	.690
Leverage	LEV	+/-	+	.025	.396	.692
Auditor reputation	AUD	+/-	+	.052	.906	.366
Board listing	BOARD	+/-	+	.029	.411	.681
Size	SIZE	+/-	+	.024	.387	.699
Regulation	REGULATION	+	+	.016	.241	.810
R ² (%)	28.3%					
Adjusted R ² (%)	24.9%					
N	242					
F-value	8.259					
Sig.	.000***					

Notes: *** 1% significant level; ** 5% significant level, * 10 % significant level

5.8 Discussion of results of forecast accuracy

This section discusses the independent variables contributing to the accuracy of forecast made in the IPO prospectuses.

5.8.1 Regulation

The regulation variable (dummy variable) is positive but not significant. This regression result shows that regulation of specific companies has no significant impact on forecast accuracy, compared to non-regulated companies. The sign of the coefficient for regulation is consistent with the findings of Jelic et al. (1998) in relation to the industry group which became regulated in 1996. It would appear that the regulation, not applicable to Jelic's test companies, did not have the reforming effect intended by the regulator. The non-significant association result is consistent with the univariate analysis result in Table 5-10. It shows that, despite the ruling of the profit guarantee up to 1999, and share moratorium in the subsequent periods, regulated companies still reported a greater absolute forecast error (mean absolute forecast error = 26.40%) than non-regulated companies (mean absolute forecast error = 20.70%).

An alternative test for regulation was carried out using a dummy variable to classify those companies giving a profit guarantee into those choosing a moratorium and those not regulated. In this test, the dummy variable for profit guarantee and share moratorium have a positive coefficient, which could indicate that regulated companies providing either a profit guarantee or share moratorium had a higher absolute forecast error than other non-regulated companies. The coefficients are, however, not significant (profit guarantee t-stats. = .150, sig. = .881; share moratorium t-stats = .501, sig. = .617). Table 5-20 shows the results for standard multiple regressions of absolute forecast error using the alternative test for regulation.

Table 5-20: Standard multiple regression results for dependent variable of AFE using alternative test for regulation

	Variable labels	Expected sign	Sign observed	Beta	t-stats (sig.)	p-value
Intercept			-		-2.829	.005***
Crisis period	CRISIS	+	+	.336	3.691	.000***
Recovery period	RECOVERY	+	+	.220	2.539	.012***
Earnings reduction	ERED	+	+	.276	4.417	.000***
Management ownership	MGTOWN	-	+	-.003	-.052	.958
Forecast horizon	FZON	+	+	.068	1.107	.269
Firm's age	AGE	-	-	-.118	-1.813	.071*
Leverage	LEV	+/-	-	-.092	-1.354	.177
Auditor reputation	AUD	+/-	+	.123	1.965	.051**
Board listing	BOARD	+/-	+	.097	1.263	.208
Size	SIZE	+/-	+	-.065	-.950	.343
Profit Guarantee	PG	+/-	+	.017	.150	.881
Share moratorium	MORATORIUM	+/-	+	.053	.501	.617
R ² (%)	17.3					
Adjusted R ² (%)	12.9					
N	242					
F-value	3.980					
Sig.	.000***					

Notes: *** 1% significant level; ** 5% significant level, * 10% significant level

This alternative test for regulation was also carried out on the dependent variable of forecast error. The results found that profit guarantee has a positive association with forecast error, indicating that companies giving a profit guarantee have a positive forecast error compared to the companies subjected to share moratorium and the non-regulated companies. The share moratorium variable, on the other hand, has a negative association with forecast error, indicating that companies with promoters subjected to share moratorium have more negative forecast error than profit guarantee and non-regulated companies. However, the results are not significant. A limitation of the analysis is that there is no control for the expected differences in forecast accuracy between industries. Regulated industry companies comprise companies which are difficult to forecast. Previous experience prior to regulation (Jelic et al., 1998) had shown a higher forecast error in these industries. Consequently, even if regulation had been effective, these industries might still have a higher absolute forecast error than non-regulated industries. Similarly, regulated companies include all second board companies which are smaller in size, less diversified and are likely to be more sensitive to economic cycles. This perhaps explained the lack of evidence for the effect of regulation on accuracy.

Table 5-21 shows the results for multiple regressions for forecast error using the alternative test for regulation.

Table 5-21: Standard multiple regression results for dependent variable of forecast error

	Variable labels	Expected sign	Sign observed	Beta	t-stats (sig.)	p-value
Intercept						
Crisis period	CRISIS	-	-	-.545	-6.515	.000***
Recovery period	RECOVERY	-	-	-.398	-4.939	.000***
Earnings reduction	ERED	-	-	-.310	-5.349	.000***
Management ownership	MGTOWN	+	+	.034	.575	.566
Forecast horizon	FZON	-	-	-.146	-2.560	.011***
Firm's age	AGE	+	-	-.020	-.325	.745
Leverage	LEV	+/-	+	.016	.253	.800
Auditor reputation	AUD	+/-	+	.052	.905	.366
Board listing	BOARD	+/-	+	.037	.518	.605
Size	SIZE	+/-	+	.028	.440	.660
Profit guarantee	PG	+/-	+	.104	.994	.321
Share Moratorium	MORATORIUM	+/-	-	-.007	-.073	.942
R ² (%)	28.9%					
Adjusted R ² (%)	25.2%					
N	242					
F -value	7.769					
Sig.	.000***					

5.8.2 Economic condition

Economic crisis and recovery period variables are significantly related to forecast accuracy at the 1% level. A positive coefficient for these two variables indicates IPO companies in these two periods have a greater absolute forecast error than IPO companies in the pre-crisis period. During the economic crisis and the recovery period, Malaysia experienced a greater fluctuation in its economy, reflected in the GDP growth and stock market index (see Table 3-2 in Chapter 3). The results provide support for the expectation that unexpected change in economic condition has a significant impact on the forecast accuracy made by the management.

A positive and significant association of the crisis period with absolute forecast error is expected, because Malaysia experienced a greater fluctuation in its economy during this period. This result is consistent with the findings reported by Chan et al. (1996) who explain that the accuracy of prospectus earnings forecast would deteriorate with increasing fluctuation in economic conditions. They suggest that a change in economic condition is an important variable in explaining variation in profits. Pedwell et al. (1994) also found a positive and significant association between economic condition and absolute forecast error. Their study uses the variable INDUSTRY to measure the absolute change in the specific Toronto Stock Exchange (TSE) industry index, as a measure of change in economic condition, and concludes that variability in the economy is important in explaining forecast accuracy.

The observed positive and significant association between recovery period and absolute forecast error is consistent with the study expectation. Although companies are generally expected to be able to provide a closer forecast during this period, the situation experienced by the companies examined in the study is different. Malaysia's economy continues to experience a fluctuation during the recovery period due to a market slowdown in information technology during 2001. Continuing volatility in the economy resulted in less accurate forecasts being made by companies.

5.8.3 Earnings reduction

The coefficient for earnings reduction is positive and significant at the 1% level. A reduction in actual earnings after the IPO is associated with less accuracy in the forecast. This result is consistent with Lev and Penman, (1990) who found evidence that the forecasting companies forecast an increase in earnings relative to their past earnings histories, and relative to non-forecasting companies. Our interpretation is that, where investors use earnings forecasts and projected price earnings ratios to estimate a market price, the IPO managers may be reluctant to forecast a decline in earnings. The managers' optimism may also be explained by the expectations of the regulator when considering any company for listing. According to Jelic et al. (2001), the Securities Commission recommends that forecast profits should reflect an increasing trend.

5.8.4 Auditor reputation

Amongst the control variables, the coefficient for auditor reputation is positive and significant at the 5% level, indicating that IPO companies audited by major international accounting firms have a larger absolute forecast error than companies audited by non-major international accounting firms. This result is consistent with Pedwell et al. (1994) in a Canadian study. Davidson and Neu (1993) in their study of companies listed on the Toronto Stock Exchange, used management earnings forecasts as a benchmark against which audited actual results were compared, providing evidence on the association between audit firm size and audit quality. They suggested that higher quality audit firms would be associated with larger absolute forecast errors, since management would have less opportunity to minimize the difference between forecast and actual income when a high quality auditor is present. Davidson and Neu (1993) suggest that differential audit quality has no direct impact on the quality of earnings forecasts, but at the same time does act to constrain "aggressive" reporting practices in the period following the IPO.

This result is, however, contrary to Brown et al. (2000) for an Australian study, and Cheng and Firth (2000) for a Hong Kong study, who found a negative association between auditor reputation and absolute forecast error. Specifically, high reputation auditors are strongly associated with significantly more accurate earnings forecasts. Brown et al. (2000) suggests that more reputable audit firms are associated with more precise financial information, as they possess superior skills which can result in higher quality financial information being produced. This high quality financial information allows management to predict more accurately. They also suggested more reputable audit firms are expected to face a greater expected loss in the form of loss of reputation if the information is subsequently found to be incorrect.

5.8.5 Management ownership

The coefficient for management ownership is positive but not significant. Companies with a higher proportion of director's ownership have a higher absolute forecast error than other companies. The differences in coefficient from Jelic may be explained by the differences in the measurement of management ownership. The weak relationship between the proportion of shares held by directors and the forecast accuracy is consistent with Jelic et al. (1998) and Rahman and Omar (2004), who found that a higher proportion of ownership in Malaysian IPO companies does not result in greater accuracy.

5.8.6 Forecast horizon

The positive coefficient and non-significance of forecast horizon is consistent with Jelic et al. (1998) and Mohamed et al. (1994) for their Malaysian studies, and Chan et al. (1996), Jaggi (1997) and Cheng and Firth (2000) for Hong Kong. Although the positive association may suggest that, with a shorter forecast horizon, management are more certain about the revenue and expenses to be incurred and are facing less risk in the case of economic uncertainty, these studies highlight that the length of forecast period does not have a significant impact on the accuracy of forecast made in the prospectuses. However, Pedwell et al. (1994) and Lonkani and Firth (2005),

documented a significant positive association between the forecast horizon and the forecast error in their studies of earnings forecasts provided as voluntary disclosure in Canada and mandatory disclosure in Thailand.

5.8.7 Company's age

The coefficient for a company's age variable is negative and consistent with previous studies (Firth and Smith, 1992; Pedwell et al., 1994; Chan et al., 1996; Jaggi, 1997; Jelic et al., 1998; Cheng and Firth, 2000). The result implies that the older the company, the smaller the absolute forecast error. However, Jaggi, (1997) and Jelic et al. (1998) reported a significant negative association between absolute forecast error and the company's operating history. Jaggi (1997) suggests that older companies have a better appreciation of the market environment, which helps them make more accurate forecasts. Younger companies, on the other hand, are more enthusiastic to provide a better picture of future performance. The lack of a significant relationship between age and absolute forecast error in this study, compared to Jelic's, may be explained by the lower mean age (6.4 years) of the examined companies (see Table 5-1 in Chapter 5). Jelic et al. (1998) have more stable companies, with a mean age of 17 years. Younger companies may have difficulties making accurate forecasts due to their shorter operating history. Firth and Smith (1992), however, suggested that in many IPOs, the new issue proceeds more than double the size of the existing company and so its track record is, perhaps, of limited relevance.

5.8.8 Leverage

Leverage was not found to be significantly associated with forecast accuracy. The non-significance of this variable is consistent with those documented in prior studies (Firth and Smith, 1992; Chan et al., 1996; Jaggi, 1997; Jelic et al., 1998; Cheng and Firth, 2000; Brown et al., 2000; Chen et al., 2001; Lonkani and Firth, 2005). This finding, however, contrasts with Mohamed et al. (1994), who found a negative and significant association between leverage and absolute forecast error for Malaysian IPO companies during the period 1984-1988. The lack of significance in this study

may be explained by the difference in mean leverage⁴⁶ between this study and Mohamed et al (1994).

5.8.9 Board listing

The results on the board of listing show that the coefficients are positive, suggesting that companies listed on the main board of the Kuala Lumpur Stock Exchange have a larger absolute forecast error than companies on the second board. This positive association may be explained by the effect of size and regulation governing those companies listed on the main board and second board. A main board company's massive size could limit its efficiency in making an accurate forecast, while second board companies (which are relatively smaller in size and subjected to profit guarantee) may put more emphasis on meeting the forecast. Companies on the second board, being smaller and less well known, may consider it more important to attempt to make an accurate forecast because of a perception that the market may be tolerant of error compared to the situation of a larger and high reputation company. Another speculative explanation is that the companies on the second board may have more flexibility in earnings management to subsequently match the outcome to the forecast. However, this result is not significant.

5.8.10 Size of company

The size variable is measured by total assets of company before IPO. The coefficient for size is positive but not significant. The positive association between size, measured by total assets and absolute forecast error, is consistent with the findings reported by Firth and Smith (1992) for a New Zealand study, Chan et al. (1996) and Cheng and Firth (2000) for a study in Hong Kong and Lonkani and Firth (2005) for a study in Thailand. The result contradicts that of Pedwell et al. (1994), Mohamad et al. (1994), Jaggi, (1997) and Jelic et al. (1998), Hartnett and Romcke (2000), Brown et al. (2000), Chen et al. (2001) and Chapple et al. (2005). Only Firth and Smith

⁴⁶ Mean leverage (%) in Mohamed et al. (1994) and in this study are 0.17 and 11.9

(1992) and Lonkani and Firth (2005) documented a significant positive association between size and accuracy of forecast.

5.9 Shortfall in profit guarantee

The research further investigates whether companies which had given a profit guarantee, but failed to achieve their target, actually paid the compensation for the shortfall. Of the 242 companies examined in the study, 70 companies had given a guarantee and, of these, 30 companies experienced a shortfall in profit guarantee greater than the 10% tolerated by the Securities Commission. Nine companies (30%) had a shortfall between 10.01% and 20%, fifteen companies (50%) had a shortfall between 20.01% and 50%, five companies (16.7%) had a shortfall above 50% and one company (3.3%) had an extreme shortfall of 165.67% (see Table 5-22).

Further investigation was made to see whether the guarantors of companies that were subjected to a profit guarantee agreement, actually compensated the group for the shortfall. From the annual reports for the relevant period, only 11 of the 30 companies with a shortfall in profit guarantee have specifically disclosed this information in the annual report. Where the promoters had made good the shortfall, the contribution was reported in the profit and loss account for the relevant years as a 'profit contribution' or 'proceed from profit guarantee', credited to the unappropriated profit of the group and of the company. The cash received was recorded in the cash flow statements and any unpaid balance was recorded as 'other debtors' in the balance sheet. Table 5-22 shows detailed information on the disclosure of payment made by 30 companies which experienced a shortfall in profit guarantee greater than 10%.

Table 5-22: Information on 30 companies experiencing a shortfall in profit guarantee greater than SC tolerated level

Forecast error (%)	Disclosure in the annual report (n=11)		Non-disclosure in the annual report (n=19)		Total no of companies
	Paid fully	Paid partial	Non-payment	No information	
-10.01 to -20.00	2			7	9
-20.01 to -30.00	3	3		3	9
-30.01 to -50.00		2		4	6
-50.01 to -100	1			4	5
-165.67%			1		1
TOTAL	6	5	1	18	30

Results from Table 5-22 show that, out of 11 companies who made disclosure in their annual report, only 55% (6 company guarantors) made the payment for the shortfall in profit guarantee. The balances of 5 company guarantors made an application to the Securities Commission for a variation in the terms of agreement. The penalty was weakened by the exercise of another provision in the regulation which enables the company to apply for a variation to the profit guarantee agreement⁴⁷. Subject to the approval of the shareholders and the Securities Commission, the guarantors could obtain a variation in the terms of agreement (normally a lengthening of the period of the guarantee). The study assumes that the 19 companies giving no information had exercised this option. The minority shareholders on the other hand would find it difficult to make the company act on the guarantee because of the close relationship between management and the majority or controlling shareholders (TheEDGE, 1998). The results show that it was not a very effective regulation in improving the forecast accuracy made by IPO companies.

⁴⁷ The information was obtained from discussion with the Securities Commission.

5.10 Limitation of the study

A limitation of the analysis is the assumption that companies of comparable risk profile make IPOs, irrespective of economic conditions. Data for IPO companies for the year examined (see Table 4-1 in Chapter 4) clearly shows that the number of companies going for IPO has decreased from the highest number in the pre-crisis period (1996) to a smaller number during the crisis and recovery periods (1998, 1999 and 2001). It is possible that a crisis situation would cause some sponsors to be more risk averse in making an IPO and therefore wait for improved conditions. Companies in different industries and operating in different markets may also have a different risk exposure to changes in economic condition.

5.11 Summary and conclusions

This chapter set out to examine the accuracy of earnings forecasts contained in new issue prospectuses in Malaysia. Using data for 242 companies, for the period 1996-2002, forecast errors representing the direction of error, and absolute forecast errors representing the magnitude of error, were calculated. The study also examined the relationship between the accuracy of forecasts disclosed in the prospectus between 1996 and 2002, and regulation, changes in economic condition, management optimism in making the forecasts and other corporate characteristics of management ownership, forecast horizon, company's age, leverage, auditor reputation and board listing.

The multivariate analysis shows that changes in economic conditions, represented by a crisis and recovery period, are the most significant factors determining the accuracy of forecast made in the prospectuses. The findings show that companies in the crisis and recovery period experienced a greater absolute forecast error than companies in the pre-crisis period. The results for economic condition indicate that volatility in the economy during the period of forecasting has a significant impact on companies meeting or not meeting the forecasts. The relative change in the forecast error from a

positive forecast error in the pre-crisis period to a negative forecast error in the crisis and recovery periods is attributed to economic condition and not managerial skills. The volatility in the economic condition after they make a forecast for the crisis and recovery period makes it more difficult for them to achieve the forecast. The unexpected change in the economy between the date of forecast and the actual reported result is an important factor in determining whether or not companies achieve their forecast. This study reaffirmed the findings of earlier research, which suggest that a change in economic conditions is an important variable in explaining variation in profits (Chan et al., 1996; Pedwell et al., 1994 and Cheng and Firth, 2000).

In terms of management optimism, the study found that, even where economic conditions were clearly deteriorating and the trend in reported profits was downward, managers continued to make relatively optimistic forecasts (resulting in greater absolute forecast error). One possible reason for this management optimism is a lack of positive action from the regulator itself. Although where a profit guarantee has been given there is a penalty in the compensation paid to the company, the penalty was weakened by the exercise of another provision in the regulation that enables the company to apply for a variation in the profit guarantee agreement. There have been suggestions that, in cases of IPO companies who failed to meet the earnings forecast conditions, the regulator was seen as siding with the guarantors (The Edge, 1998). The results show that, in the period up to 1999, when the profit guarantee option was in place, the revised regulation failed to meet the objective that negative forecast error must not exceed 10%. The effectiveness of the regulation is also less clear in situations where the promoters have accepted a share moratorium and have no desire to sell.

The regulated companies variable (REGULATION), used to test the effectiveness of the Securities Commission revised regulation on earnings forecasts made by Malaysian IPOs, has no statistically significant association with the magnitude of forecast error. The sign of the coefficient for regulation is consistent with Jelic et al. (1998) in relation to the industry group that became regulated in 1996. It would

appear that the regulation, not applicable to Jelic's test companies, did not have the reforming effect intended by the regulator. In relation to the crisis period and the recovery period, it can be concluded that the power of unexpected economic changes outweighs any impact of the effectiveness of the regulation. The absence of a significant difference in the accuracy of forecasts between regulated and non-regulated companies could be interpreted in two ways. On one hand it could be argued that the regulation was not effective. On the other hand it could be argued that the regulation did have some impact but that it also influenced the behaviour of non-regulated companies. In terms of the regulations objective in achieving a 10% target, it didn't achieve this target, and regulation still doesn't appear to be a significant factor in distinguishing the target for regulated and the target for non-regulated companies.

There are policy implications of these results in terms of perceptions and effectiveness of regulation. Investors may think that a regulation incorporating profit guarantees provides a degree of financial comfort for companies in which they have invested (The Edge, 1998). Regulators on the other hand may expect that imposing a regulation will improve the accuracy of forecasts. The expectations of investors and regulators were not met because of the power of the economic collapse and the countervailing motives of managers.

As the revised regulation requires companies to provide a profit guarantee or suffer a share moratorium when making an earnings forecast, further investigation to investigate whether, and if so to what extent, managers appear to have taken action to meet the forecast is discussed in Chapter 6.

Appendix 5-A: List of 242 companies included in the study

Company	Year of listing	Board of listing	Industry (Regulated/non-regulated)
AJIYA	1996	Second board	Regulated
AMWAY (MAL.) HDG.	1996	Main board	Regulated
ARTWRIGHT HOLDINGS	1996	Second board	Regulated
ASIA FILE	1996	Second board	Regulated
ATLAN HOLDINGS	1996	Second board	Regulated
BCB	1996	Main board	Regulated
BELL & ORDER BHD	1996	Second board	Regulated
BINA DARULAMAN	1996	Main board	Regulated
BOXPAK (MALAYSIA)	1996	Main board	Non-regulated
BRISDALE HOLDINGS	1996	Main board	Regulated
DELLOYD VENTURES	1996	Main board	Non-regulated
DIALOG GROUP	1996	Second board	Regulated
DKLS INDUSTRIES	1996	Second board	Regulated
ESPRIT GROUP	1996	Second board	Regulated
GANAD CORP	1996	Second board	Regulated
GLOBAL CARRIERS	1996	Second board	Regulated
GOLD BRIDGE ENGR.& CON.	1996	Second board	Regulated
HAI-O ENTERPRISE	1996	Second board	Regulated
HEXAGON HOLDINGS	1996	Second board	Regulated
HOCK SENG LEE	1996	Main board	Regulated
HUA JOO SENG ENTERPRISE	1996	Main board	Non-regulated
INDL.CONCRETE PRODUCTS	1996	Main board	Non-regulated
INTI UNIVERSAL HOLDINGS	1996	Second board	Regulated
ISUTA HOLDINGS	1996	Second board	Regulated
JOHOR LAND	1996	Main board	Regulated
JOHOR PORT	1996	Main board	Regulated
JOHORE TENGGARA OIL PALM	1996	Main board	Regulated
K.P.KENINGAU BHD	1996	Second board	Regulated
KHEE SAN	1996	Main board	Non-regulated
KIA LIM	1996	Main board	Non-regulated
KONSORTIUM LOGISTIK BHD	1996	Main board	Regulated
KOSSAN RUBBER	1996	Second board	Regulated
KUMPULAN FIMA	1996	Main board	Regulated
LATEXX PARTNERS BHD	1996	Second board	Regulated
MESB BHD	1996	Second board	Regulated
PENAS CORP	1996	Second board	Regulated

RAMATEX	1996	Main board	Non-regulated
SAUJANA CONSOLIDATED	1996	Main board	Regulated
SELOGA HOLDINGS	1996	Second board	Regulated
SHH RESOURCES	1996	Second board	Regulated
SMPC METAL IND. BHD	1996	Second board	Regulated
SPORTMA CORP.	1996	Second board	Regulated
SUNCHIRIN INDUSTRIES	1996	Second board	Regulated
SUNRISE	1996	Main board	Regulated
SUNWAY CITY	1996	Main board	Regulated
SUREMAX GROUP	1996	Second board	Regulated
TAIPING SUPER BHD	1996	Second board	Regulated
TECK GUAN PERDANA	1996	Second board	Regulated
TOMYPAK HOLDINGS	1996	Second board	Regulated
TRANSOCEAN HOLDINGS	1996	Second board	Regulated
UMS HOLDINGS	1996	Second board	Regulated
WATTA HOLDINGS	1996	Second board	Regulated
WONDERFUL WIRE & CABLE BHD	1996	Second board	Regulated
KRIS COMPONENTS BHD- 1997	1997	Second board	Regulated
HING YIAP KNITTING IND. BHD	1997	Main board	Non-regulated
MAGNA PRIME BHD	1997	Second board	Regulated
LOH & LOH CORP BHD	1997	Second board	Regulated
RAPID SYNERGY BHD	1997	Second board	Regulated
WIDETECH (MALAYSIA) BHD	1997	Second board	Regulated
PNE PCB BHD	1997	Main board	Non-regulated
CRESCENDO CORP BHD	1997	Main board	Non-regulated
COMPUTER SYSTEMS ADVISERS (M) BHD	1997	Second board	Regulated
POLYMATE HOLDINGS BHD	1997	Second board	Regulated
PARACORP CORP BHD	1997	Main board	Non-regulated
SAPURA MOTORS BHD	1997	Second board	Regulated
TIMBERWELL BHD	1997	Second board	Regulated
YTL POWER INTL BHD	1997	Main board	Non-regulated
KELADI MAJU BHD	1997	Main board	Non-regulated
HPI RESOURCE BHD	1997	Second board	Regulated
SAFEGUARDS CORPORATION	1997	Second board	Regulated
NGIU KEE CORP	1997	Second board	Regulated
SG.WAY CONSTRUCTION	1997	Main board	Regulated
ZAITUN BHD	1997	Second board	Regulated
T.H HIN CORP BHD	1997	Second board	Regulated
BUMI ARMADA BHD	1997	Main board	Regulated

TRANSMILE GROUP	1997	Second board	Regulated
INTAN UTILITIES	1997	Main board	Non-regulated
EUPE CORP BHD	1997	Main board	Non-regulated
MULTI-CODE ELECTRONICS IND.	1997	Second board	Regulated
LANKHORST BERHAD	1997	Second board	Regulated
LATITUDE TREE'S HLDGS.	1997	Second board	Regulated
CHUAN HUAT RESOURCES	1997	Second board	Regulated
YLI HOLDINGS BHD	1997	Second board	Regulated
GENERAL SOIL ENGINEERING HOLDINGS BHD	1997	Second board	Regulated
PPB OIL PALMS BHD	1997	Main board	Regulated
OCEAN CAPITAL BHD	1997	Second Board	Regulated
TT RESOURCES	1997	Second Board	Regulated
ELBA HOLDINGS BHD	1997	Second Board	Regulated
PADIBERAS NASIONAL BHD	1997	Main Board	Non-Regulated
GRAND HOOVER BHD	1997	Main Board	Non-regulated
KOMARKCORP BHD	1997	Second Board	Regulated
YUNG KONG GALVANISHING INDBHD	1997	Second Board	Regulated
CME GROUP BHD	1997	Second Board	Regulated
WOODLANDOR HOLDIGNS BHD	1997	Main Board	Non-Regulated
CHANGHUAT CORPORATION	1997	Second Board	Regulated
HUNZA CONSOLIDATION BHD	1997	Second Board	Regulated
TOYOCEM CORPORATION BHD	1997	Second Board	Regulated
FIAMMA HOLDINGS BHD	1997	Second Board	Regulated
ZECON ENGINEERING BHD	1997	Second Board	Regulated
AMTEL HOLDINGS BHD	1997	Second Board	Regulated
SUBUR TIASA	1997	Second Board	Regulated
BINAGOOD YEAR	1997	Second Board	Regulated
CCK CONSOLIDATED HOLDINGS BHD	1997	Second Board	Regulated
TAP RESOURCES BHD	1997	Second Board	Regulated
CNLT (FAR EAST) BHD	1997	Second Board	Regulated
THONG GUAN INDUSTRIES BHD	1997	Second Board	Regulated
PATIMAS COMPUTERS BERHAD	1997	Main Board	Non-regulated
AKN TECHNOLOGY BHD	1998	Second Board	Regulated
AMTEK HOLDINGS BHD	1998	Second Board	Regulated

ASTRAL ASIA	1998	Second Board	Regulated
AUTOAIR HOLDINGS BHD	1998	Second Board	Regulated
AVANGARDE RESOURCES BHD	1998	Second Board	Regulated
BINTAI KINDEN CORPORATION BHD	1998	Main Board	Regulated
COMSA FARMS BERHAD	1998	Second Board	Regulated
FAJAR BARU CAPITAL BHD	1998	Second Board	Regulated
FW INDUSTRIES BHD	1998	Second Board	Regulated
HABIB CORPORATION BHD	1998	Second Board	Regulated
HUME CEMBOARD BHD	1998	Main Board	Non-Regulated
KHIND HOLDINGS BHD	1998	Second Board	Regulated
KUMPULAN H & L HIGH-TECH BHD	1998	Second Board	Regulated
MERGE ENERGY BERHAD	1998	Main Board	Regulated
METAL RECLAMATION BHD	1998	Second Board	Regulated
MIECO CHIPBOARD BHD	1998	Main Board	Non-Regulated
NEW HOONG FATT HOLDINGS	1998	Second Board	Regulated
PADINI HOLDINGS BHD	1998	Second Board	Regulated
PLB ENGINEERING BHD	1998	Second Board	Regulated
RHYTHM CONSOLIDATED BHD	1998	Second Board	Regulated
SEE HUP CONSOLIDATED BHD	1998	Second Board	Regulated
UNISEM (M) BHD	1998	Main Board	Non-Regulated
V.S. INDUSTRY BHD	1998	Main Board	Non-Regulated
WONG ENGINEERING CORP BHD	1998	Second Board	Regulated
YONG TAI BERHAD	1998	Second Board	Regulated
AHMAD ZAKI RESOURCES BHD	1999	Main Board	Non-Regulated
MALAYSIA AIRPORTS HDG. BHD.	1999	Main Board	Non-Regulated
MALAYSIAN AE MODEL HDG.	1999	Main Board	Regulated
TA ANN HOLDINGS	1999	Main Board	Regulated
UDA HOLDINGS	1999	Main Board	Non-Regulated
WHITE HORSE BHD	1999	Main Board	Regulated
PERMAJU IND	1999	Second Board	Regulated
MINPLY HLD	1999	Second Board	Regulated
SM SUMMIT HLG	1999	Second Board	Regulated
CB INDUSTRIUAL	1999	Second Board	Regulated
SEACERA	1999	Second Board	Regulated

TAKASO RESOURCES	1999	Second Board	Regulated
ASTRAL SIPREME	1999	Second Board	Regulated
ABRIC	1999	Second Board	Regulated
ANALABS RESOURCES BHD.	2000	Main Board	Regulated
APEX HEALTHCARE	2000	Second Board	Regulated
COURTS MAMMOTH BHD.	2000	Main Board	Regulated
EUROSPAN	2000	Second Board	Regulated
FOREMOST HLD	2000	Second Board	Regulated
GLOMAC BHD.	2000	Main Board	Regulated
GOLSTA SYNERGY	2000	Second Board	Regulated
GPA HLDG	2000	Second Board	Regulated
HEITECH PADU	2000	Main Board	Non-Regulated
HUP SENG INDU	2000	Main Board	Non-Regulated
JIN LIN WOOD	2000	Second Board	Regulated
JOTECH HLD	2000	Second Board	Regulated
JPK HLD	2000	Second Board	Regulated
KIM LOONG	2000	Main Board	Regulated
LII HEN INDS.BHD.	2000	Second Board	Regulated
LTKM BHD	2000	Second Board	Regulated
MEGAN MEDIA HOLDINGS	2000	Second Board	Regulated
NIKKO ELECTRONICS	2000	Main Board	Regulated
NV MULTI	2000	Main Board	Regulated
OCTAGON CONS.BHD.	2000	Second Board	Regulated
ORIENTAL FOOD IND.HDG.	2000	Second Board	Regulated
P I E INDUSTRIAL	2000	Second Board	Regulated
PAOS HDG.	2000	Main Board	Regulated
PETRA PERDANA BERHAD	2000	Main Board	Regulated
POH HUAT	2000	Second Board	Regulated
QL RESOURCES BHD.	2000	Second Board	Regulated
SPRITZER	2000	Second Board	Regulated
SUPERMAX	2000	Second Board	Regulated
TA WIN HLDS	2000	Second Board	Regulated
TAT SANG HLD	2000	Second Board	Regulated
UCHI TECHS.BHD.	2000	Second Board	Regulated
UNICO-DESA	2000	Main Board	Regulated
UNIMECH GRP	2000	Main Board	Regulated
MAGNITECH	2000	Second Board	Regulated
BINTULU PORT HOLDINGS	2001	Main Board	Regulated
DEGEM	2001	Second Board	Regulated
EDARAN DIGITAL SYSTEMS	2001	Main Board	Regulated
INGRESS	2001	Second Board	Regulated
KNUSFORD	2001	Main Board	Regulated
MERGE HOUSING	2001	Main Board	Regulated
RANHILL	2001	Main Board	Regulated

TIME DOTCOM BHD.	2001	Main Board	Regulated
TOP GLOVE	2001	Main Board	Regulated
PRICEWORTH	2001	Second Board	Regulated
ACOUSTECH	2001	Second Board	Regulated
CENTURY LOGISTIC	2001	Second Board	Regulated
AIKBEE RES	2001	Second Board	Regulated
WEIDA	2001	Second Board	Regulated
HAISAN RES	2001	Second Board	Regulated
PJI	2001	Second Board	Regulated
XIAN LENG	2001	Main Board	Non-Regulated
SKB	2001	Second Board	Regulated
BANENG HDG.BHD.	2002	Main Board	Non-Regulated
BINAIK EQ.BHD.	2002	Main Board	Regulated
BSA INTL.BHD.	2002	Second Board	Regulated
COUNTRY VIEW BHD.	2002	Main Board	Regulated
DUOPHARMA BIOTECH BHD.	2002	Second Board	Regulated
HOCK SIN LEONG	2002	Main Board	Regulated
HUA YANG BHD.	2002	Main Board	Regulated
ISYODA CORP.BHD.	2002	Main Board	Regulated
KIMBLE BHD.	2002	Second Board	Regulated
KINSTEEL BHD.	2002	Main Board	Non-Regulated
MEDA BHD.	2002	Main Board	Regulated
MUTIARA GOODYEAR DEV. BHD.	2002	Main Board	Regulated
NPC RES.BHD.	2002	Main Board	Regulated
OKA BHD.	2002	Second Board	Regulated
PBA HDG.BHD.	2002	Main Board	Regulated
PIN-WEE GP.BHD.	2002	Second Board	Regulated
PLUS EXPRESSWAYS BHD.	2002	Main Board	Regulated
PULAI SPRINGS BHD.	2002	Main Board	Regulated
RANHILL UTILS.BHD.	2002	Main Board	Non-Regulated
SILVER BIRD GP.BHD.	2002	Second Board	Regulated
TRC SYNERGY BHD.	2002	Main Board	Regulated
YI-LAI BHD.	2002	Main Board	Non-Regulated
AE MULTI	2002	Second Board	Regulated
ATIS	2002	Main Board	Regulated
CAM	2002	Second Board	Regulated
EMIVEST	2002	Second Board	Regulated
ENG KAH	2002	Second Board	Regulated
ENGTEX	2002	Main Board	Regulated
HUAT LAI	2002	Second Board	Regulated
HYTEX INTEGRATED	2002	Main Board	Non-Regulated
KSL	2002	Main Board	Regulated
KUMPULAN POWERNET	2002	Second Board	Regulated
LONDON BISCUITS	2002	Second Board	Regulated

MAXIS	2002	Main Board	Regulated
SDKM	2002	Second Board	Regulated
SMIS	2002	Second Board	Regulated
STONE MASTER	2002	Second Board	Regulated
TRACOMA	2002	Second Board	Regulated
TSR	2002	Main Board	Regulated
UNITED KOTAK	2002	Second Board	Regulated
UNITED U LI	2002	Second Board	Regulated
VADS	2002	Second Board	Regulated
YEO AIK	2002	Second Board	Regulated
YIKON	2002	Second Board	Regulated

CHAPTER 6: EARNINGS MANAGEMENT STUDY: STATISTICAL RESULTS AND ANALYSIS

6.1 Introduction

Previous research has indicated evidence of earnings management at the time of an initial public offering (IPO) (Friedlan, 1994; Teoh et al., 1998b; Roosenboom et al., 2003) and equity offering (Teoh et al., 1998a). There is also evidence of earnings management in response to government regulation (Jones, 1991; Navissi, 1999) and in response to earnings forecasts (Kasznik, 1999).

This chapter answers research question 3 of the study:

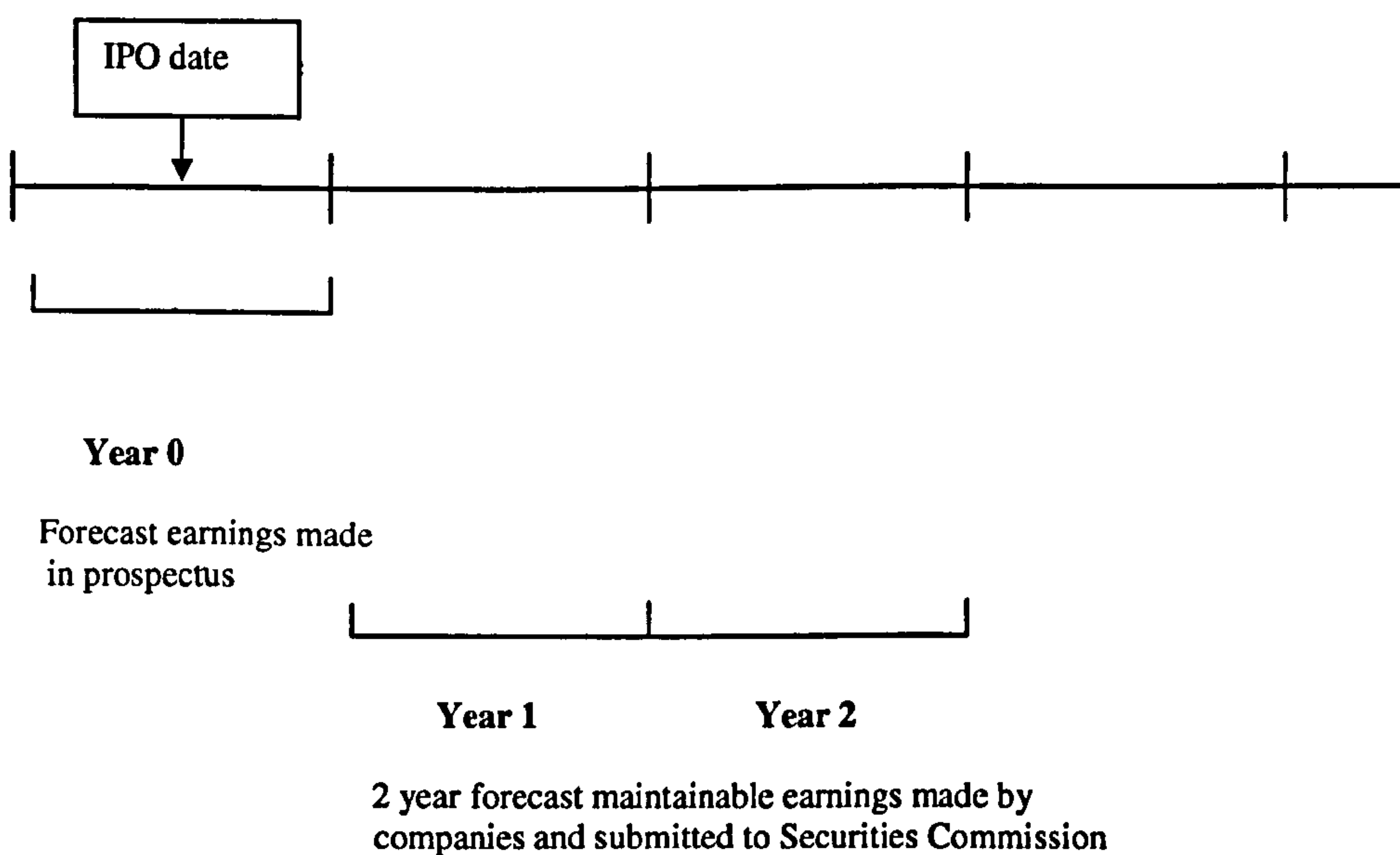
Research question 3: Is there evidence of positive discretionary accruals in the financial statement of IPO issuers during the year of issue?

Research question 3 involves the calculation of discretionary accruals for the sample companies of IPO during years 1996, 1998 and 2000. Discretionary accruals are calculated using the working capital accrual model discussed in Section 4.3.2.1 of Chapter 4. This model was chosen because accounting researchers (e.g Defond and Jiambalvo, 1994; Teoh 1998) have argued that managers have greater discretion over current accruals than over long-term accruals (see Section 2.4.2.3 of Chapter 4). Beneish (1998) and Young (1999) suggest that working capital accrual is potentially more appealing, since continuous earnings management via the depreciation accrual is likely to have limited potential due to its visibility and predictability. Young (1999) also reports that a Jones-style model, based on a manipulation of total accruals (i.e. inclusive of depreciation charge), induces substantial measurement error in the resulting estimate of managed accruals.

This chapter tests the hypothesis developed in Section 6.4. Hypothesis 13, the null hypothesis suggesting no significant association between earnings management and

regulation relating to the earnings forecasts, is tested using a non-parametric Wilcoxon Signed Rank test for the period of forecasts issuance and the three years following listing. The test for earnings management for the year of IPO and the first three years after listing provides evidence relating to the hypothesised relationship in the two-year period following the IPO (during which a regulatory obligation continues), and provides evidence that earnings management has ceased in the year beyond the end of the regulatory impact. Figure 6-1 illustrates the earnings forecast disclosure time line, defining the successive years of earnings forecast.

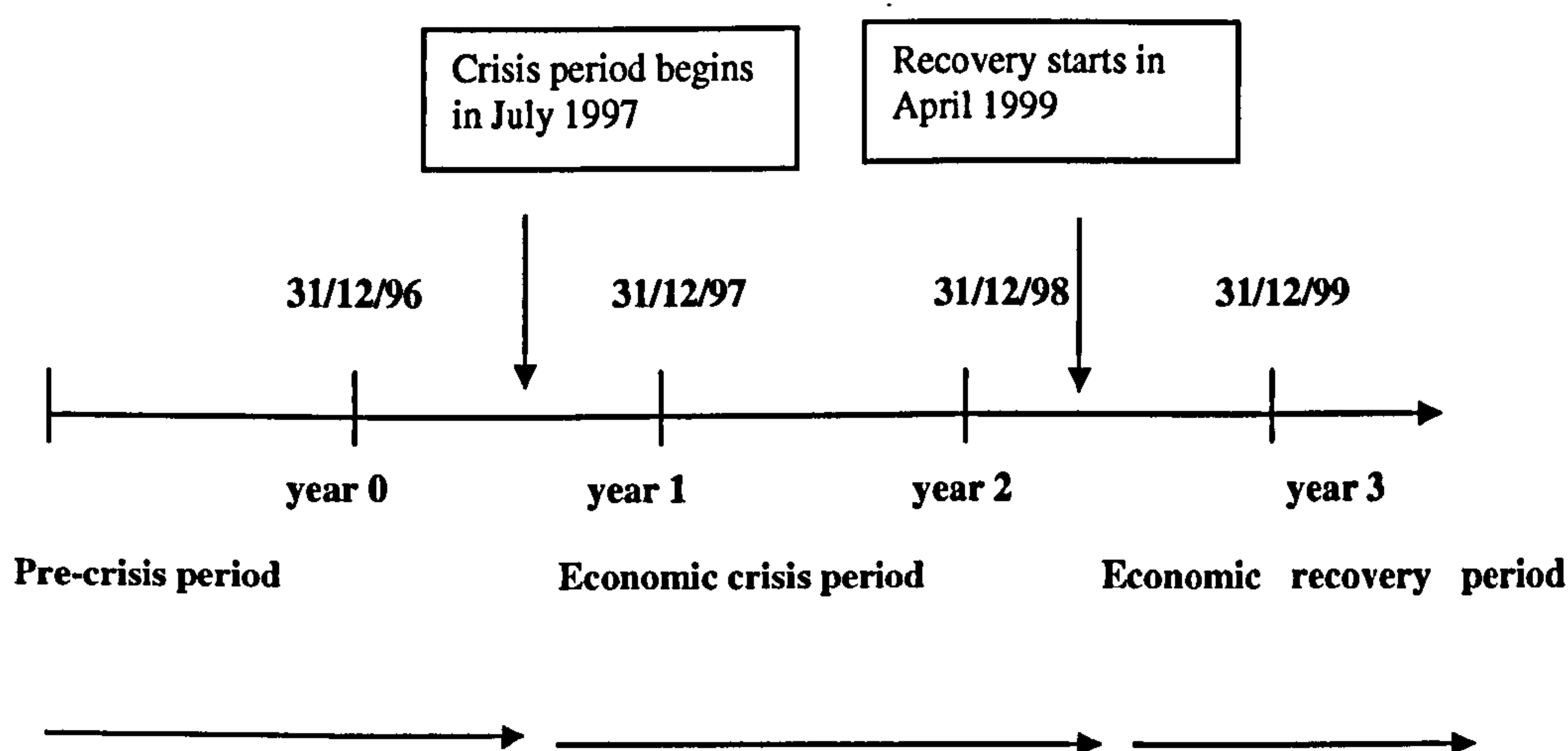
Figure 6-1: Earnings forecast disclosure time line, defining the successive years of earnings forecast



The three IPO years of 1996, 1998 and 2000 were chosen because they represent three different economic periods and include variations in the regulation of earnings forecast disclosure made by regulated issuing companies. IPO 1996 regulated companies were given an option to provide either a profit guarantee or share moratorium, IPO 1998 companies were subjected to a compulsory profit guarantee, and IPO 2000 companies were subjected to only a share moratorium. The changes in regulation corresponded to three different economic conditions experienced by

Malaysia, namely a pre-crisis period (1996 to mid-1997), a period of economic crisis (mid-1997 to April 1999) and an economic recovery period (April 1999 onwards). The classification of IPOs into economic periods was based on the period being experienced by them at the date of forecast and the date of first reporting. The time line depicted in Figure 6-2 explains the classification in detail.

Figure 6-2: Economic period time line showing the economic crisis in Malaysia



Pre-crisis period companies are companies whose forecast accuracy is unlikely to be affected significantly by the economic crisis because they made a forecast, and reported their actual earnings, in the pre-crisis period. Crisis period companies are those whose forecast accuracy is likely to have been affected significantly by the unexpected decline into economic crisis, either because they made a forecast and reported their actual results in the crisis period, or because they made a forecast in the pre-crisis but reported their actual earnings in the crisis period⁴⁸. Recovery

⁴⁸ Only three companies fell into this category.

period companies made a forecast and reported their actual results during the period following the economic crisis.

6.2 Sample description

To evaluate the extent of earnings management in the annual reports of IPO companies, discretionary accruals for each set of companies for 1996, 1998 and 2000 are calculated. Descriptive statistics of the companies examined are presented in Table 6-1A, Table 6-1B and Table 6-1C.

Table 6-1A: Descriptive statistics of examined companies - IPO 1996

Company characteristics	Size (total assets in million RM)	Age (years)	Leverage (% of total debt / total assets)	Management ownership (%)	Forecast error in year 0 (%)
Mean	136.92	8.21	13.47	25.43	5.7
Median	65.90	3.00	7.08	19.84	4.96
Std deviation	163.79	8.39	16.37	24.89	28.16
Minimum	12.81	1.00	0.00	0.01	-71.58
Maximum	712.02	31.00	73.34	75.00	111.62

Table 6-1B: Descriptive statistics of examined companies - IPO 1998

Company characteristics	Size (total assets in million RM)	Age (years)	Leverage (% of total debt / total assets)	Management ownership (%)	Forecast error in year 0 (%)
Mean	94.17	5.19	14.77	27.99	-8.52
Median	80.40	2.00	6.60	22.21	-9.84
Std deviation	40.66	7.90	26.03	22.66	22.89
Minimum	45.01	1.00	0.60	0.00	-54.66
Maximum	179.26	30.00	93.60	88.00	38.67

Table 6-1C: Descriptive statistics of examined companies - IPO 2000

Company characteristics	Size (total assets in million RM)	Age (years)	Leverage (% of total debt / total assets)	Management ownership (%)	Forecast error in year 0 (%)
Mean	126.72	5.23	7.20	13.03	-24.89
Median	88.92	3.00	6.00	6.33	-13.31
Std deviation	110.19	5.14	6.68	14.45	55.43
Minimum	34.91	1.00	0.00	0.04	-257.62
Maximum	531.86	19.00	27.67	53.22	47.84

Table 6-1A shows descriptive statistics for the IPO sample companies of 1996. The average age of companies for this year is 8.2 years, which is higher than the average age of companies listed in years 1998 (a mean of 5.2 years) and 2000 (also 5.2 years). The average total debts as a proportion of total assets for the 1996 and 1998 IPO companies are similar, with leverage ratio of 13.5 and 14.8 percent respectively. The result in Table 6-1C shows that mean leverage for IPO 2000 companies is 7.2%, which is half of the leverage percentage for 1998 companies. The results presented also show that the average size for companies in year 1998 (94.17 million) is smaller than the average size for companies listed in years 1996 and 2000.

In terms of size and direction of forecast error, IPO 1996 companies were found to have a positive forecast error of 5.7% in the year of forecast issuance (year 0). Companies listed in year 1998 had a forecast error of -8.52% and IPO 2000 companies were found to have a forecast error of -24.89% in year 0. On average, the results indicate that only IPO 1996 companies achieved the forecast made in the prospectus, while IPO 1998 companies and IPO 2000 companies failed to meet their forecast. The results for management ownership show that management retained a lower percentage of shares in the IPO 2000 companies compared to the percentage retained in the IPO 1996 and 1998 companies. This can perhaps be explained by the changes in regulation on the standard share moratorium which became effective for IPO 2000 companies. The list of companies examined for IPO 1996, 1998 and 2000 are presented in Appendices 6-A, 6-B, and 6-C.

6.3 Control group

The control group is used to estimate a type of behaviour for “normal” companies (the control group), with the “normal” behaviour then used as a benchmark for judging the behaviour of the examined group (IPO companies). This test is intended to provide evidence of the exercise of accounting discretion by issuers of IPO. Companies in the control group must not have an IPO in the past five years. Those companies listed on Bursa Malaysia from year 1974 were extracted from

DataStream. These were then categorised into two groups - regulated or non-regulated industries based on a definition contained in Securities Commission guidance notes 10-19 (see Section 3.6 in Chapter 3).

In dividing the company into regulated or non-regulated industries, the list of companies taken from DataStream was individually matched to the Bursa Malaysia industry listing (www.bursamalaysia.com.my), with each individual company checked to ensure that it was in the correct industry. This is because the industry classification used by DataStream is different from the classification used by Bursa Malaysia. Companies from finance and finance-related industries were excluded from the list.

6.3.1 Estimating coefficient for control group

When applying the Jones model, parameters are estimated for each year of the test period (year 0 to year 3) using the ordinary least square (OLS) cross-sectional current accrual model. All the data required for the control group was downloaded from DataStream. The regression is estimated separately for each regulated and non-regulated industry. The current accrual regression is:

$$\frac{CRACC_{jt}}{TA_{jt-1}} = \alpha + \left(\frac{1}{TA_{jt-1}} \right) + \beta_1 \left(\frac{\Delta SALES_{jt}}{TA_{jt-1}} \right) + \epsilon_{jt} \dots\dots\dots (8)$$

The results at this stage will give an estimate of the two coefficients α and β_1 for the control group.

6.3.2 Robustness of the control group

The composition of companies in the control group has a potential influence on the coefficients of the group. Changing the composition could lead to very different results, depending on whether the selected control group has outlier properties or not.

In order to test if the change in coefficients (α and β_1) will result in significantly different discretionary accruals, discretionary accruals for two different sets of α and β_1 for regulated IPO companies are ranked. If removing outliers gives a different result, it means the control group is not stable but very much influenced by the outliers. In testing this, one outlier was removed from the control group and the regression was run to get a new coefficient for the control group. The discretionary accruals of examined companies were calculated with this new coefficient. Then, the discretionary accruals were ranked, and a comparison made with the rank discretionary accruals before outliers.

Outliers are excluded by trimming companies with either exceptionally high or low current accrual, or change in revenue relative to others in the group. Firstly, current accruals data was sorted in descending order and a line chart drawn. Any company not falling on a stable line was omitted from the control group, as explained in Appendix 6-D and Appendix 6-E. For a stable control group, outliers were taken out stepwise, based on change in revenue and on current accruals.

With a stable control group, the line chart was expected to be a straight line. New model parameters were then estimated based on the data after trimming. The illustration of the line chart drawn for current accruals, and change in revenue for the control group IPO 2000 (year 1), are presented in Appendix 6-D and Appendix 6-E.

6.3.3 Data issues

Financial information data required for the study was collected from DataStream database. Financial information data not available on DataStream had to be collected manually from the company's annual report. Detailed information about the data required for the study is discussed in Section 4.3.2.2 of Chapter 4.

One problem in obtaining data for the study is the availability of the company's annual report. For IPO year 2000 companies, annual reports can be obtained online from the Bursa Malaysia web site (www.bursamalaysia.com.my). However, for IPO

1996 and 1998 companies, the annual report has to be referred from the Bursa Malaysia library, MIDF library and Securities Commission library. Missing data is due to the unavailability of annual reports in those libraries. To the best of my knowledge, there is no other place which has a collection of Malaysian companies' annual reports.

Due to unavailability of data, the number of observations for this analysis varies from the population of regulated companies for each IPO year, particularly IPO 1996 (see Table 4-9 in Chapter 4). For 1996 IPO companies, there are 11 companies with missing data for year 0, 12 companies with missing data for year 1 and 13 companies with missing data for year 2 and year 3. Missing data for year 0 is due to unavailability of comparative figures (i.e. financial information data for the year preceding the IPO) in the company's first year after listing annual report. For years 1, 2 and 3, missing data is due to the unavailability of annual reports for the period concerned.

The research tests earnings management using the working capital accruals model (see Section 4.3.2.1 of Chapter 4). The study derives its measure of earnings management from this model for two reasons. Firstly, Teoh et al. (1998b) suggested the discretionary component of working capital accruals may be a superior proxy to that of total accruals, since managers have more discretion over current accruals than over long term accruals. Young (1999) suggested that depreciation-based manipulation is relatively transparent, thereby limiting the potential of depreciation-related earnings management strategy. Beneish (1998) and Young (1999) point out that depreciation offers limited potential as a tool for systematic earnings management, since consistent changes in depreciation policy would certainly attract the attention of the auditor. The use of the working capital accruals model is consistent with prior studies (Roosenboom et al., 2003; Peasnell et al., 2005). The second reason for not using the total accruals model is due to unavailability of data for plant, property and equipment. Plant, property and equipment data on DataStream for Malaysian companies is recorded inclusive of land values, which are not depreciable assets.

6.4 Formation of Hypothesis

Based on prior literature of earnings management around public issue and equity offerings (Friedlan, 1994; and Teoh et al., 1998; Roosenboom et al., 2003), and mandatory disclosure of earnings forecast, profit guarantee or share moratorium agreement regulation applicable in Malaysia, it is hypothesised that regulated Malaysian IPO companies tend to manage earnings upward. This results in higher positive discretionary accruals in the financial year of forecast issuance, in order to maintain their reputation for meeting their forecasts. McNichols (1989) and Lev and Penman (1990) provide evidence that management forecasts errors are associated with changes in stock price.

The study also expects managers to continue to manage earnings in the two years following the period of forecast issuance. This is because for these two years, managers were expected to meet the forecast of maintainable profits submitted to the securities commission at the time of IPO. This is consistent with Navissi, (1999), who documents evidence of earnings management in the year the regulation of price control applies, and Jones (1991) who found evidence that government regulation provides incentives for earnings management. IPO companies are also expected to manage earnings upwards in the two year period after IPO, in order to support the stock price of the company. An earnings reversal immediately after the offering may result in a fall in price that will adversely affect the value of their share holdings (which they may be intending to sell at the end of the lock up period). This is consistent with DeAngelo et al. (1986) who found companies experiencing a negative abnormal stock return in a year where consistent earnings growth was broken. How and Yeo (2000), in their event study method, found that the market reacts negatively to earnings and dividend forecast error, and that this adverse price reaction is more severe for companies with negative earnings forecast errors than those with positive errors.

Barth et al. (1999) find that all other things being equal, companies reporting continuous growth in annual earnings are priced at a premium to other companies, a premium which is reduced when the string disappears. Skinner and Sloan (2002) document evidence that when growth stocks report even a small earnings disappointments (relative to analyst forecasts) they suffer disproportionately large stock price declines. Shivakumar (2000) suggests that issuing companies possibly avoid reporting reduced earnings immediately after an offering in order to avoid the prospect of litigation. Based on this discussion the hypothesis stated in the null form is as follows:

H₁₃: There is no significant discretionary accrual in the year of regulation relating to the earnings forecasts.

The alternative hypothesis is:

H_{A13}: There is a significant positive discretionary accrual in the year of regulation relating to the earnings forecasts.

Based on the clear evidence of previous studies a positive association between earnings management and regulation is expected.

6.5 The extent of earnings management in annual reports

This section discusses the results and interpretation of the earnings management study for the examined companies.

6.5.1 Results

Table 6-2 presents median discretionary accruals for each separate set of IPOs, scaled by opening total assets for year 0 to year 3. Since the data is not normally distributed, this study reports medians, because these are not influenced by extreme observations. It also reports the percentage of positive cases in each of the three

periods following IPO. The results show that median discretionary accruals for IPO 1996, 1998 and 2000 companies are significantly positive at the 1% level in the year when the forecast is made in the prospectus (year 0). The median discretionary accrual is highest in the year of forecast (year 0) compared to other years. Median discretionary accrual in year 0 for IPO 1996 companies is 0.07, a positive 0.17 for IPO year 1998 and a positive 0.06 for IPO year 2000. The proportion of issuers recording positive discretionary accruals is also higher in the year of forecast (year 0) than in other years, with 68.5% for IPO 1996 companies, 91% for IPO 1998 companies and 75% for IPO 2000 companies.

The Wilcoxon Signed Rank Test on the median indicates that discretionary accruals in the year of forecasting (year 0) are positive and significantly greater than zero at the 1% level for all examined companies. This result is consistent with earlier findings (Teoh et al. 1998b; Kasznik, 1999; Roosenboom et al. 2003) and supports the research hypothesis that IPO companies tend to manage earnings upward, and hence have positive discretionary accruals in the year they make forecast.

The time series pattern of median discretionary accruals shows that for IPO 1996, median discretionary accruals are negative in year 1 and become more negative in year 2. However median discretionary accrual is negative and statistically significantly different from zero in year 2 but is not statistically significantly different from zero in year 1 and year 3.

The results for discretionary accruals in year 1 and year 2 for IPO 1996 companies are, however, opposite to research expectations. IPO 1996 companies recorded negative discretionary accruals in year 1 and significantly negative discretionary accruals in year 2. The negative discretionary accruals indicate that the examined companies had a lower working capital than the control group.

For IPO 1998 and 2000 companies, the time series patterns of discretionary accruals are similar. Results presented in Table 6-2 show that IPO 1998 companies and IPO 2000 companies continued to manage their earnings upwards in year 1 and year 2

after the IPO. The positive median discretionary accruals for both years are significantly greater than zero. These findings support the research hypothesis that management continues to manage earnings during the period of regulation relating to the earnings forecast.

For year 3, 1998 IPO companies continue to report positive discretionary accruals but at a smaller value compared to years 1 and 2. The discretionary accruals in year 3, however, are not significantly different from zero. For IPO 2000 companies, discretionary accruals are negative in year 3 and Wilcoxon p-value shows that these are statistically significant different from zero. It may be interpreted that IPO 2000 earnings declined due to reversals of accounting accruals after the period of regulation relating to earnings forecast.

Table 6-2 shows results of discretionary accruals over time for regulated companies IPO 1996, 1998 and 2000.

Table 6-2: Discretionary accruals over time for regulated companies IPO 1996, 1998, 2000

Discretionary accruals	IPO 1996				IPO 1998				IPO 2000			
	Year 0	Year 1	Year 2	Year 3	Year 0	Year 1	Year 2	Year 3	Year 0	Year 1	Year 2	Year 3
Median	0.068	-0.024	-0.028	0.009	0.167	0.037	0.054	0.022	0.064	0.031	0.032	-0.055
Wilcoxon p-value (1 tailed)	-3.130 0.001**	-1.093 0.137	-1.639 0.051**	-0.301 0.382	-3.912 0.000**	-2.60 0.005**	-2.143 0.016*	-0.882 0.189	-3.234 0.000**	-2.189 0.015*	-2.693 0.004**	-2.599 0.005**
Standard deviation	0.233	0.179	0.168	0.238	0.337	0.113	0.083	0.273	0.169	0.114	0.19	0.146
Maximum	0.79	0.66	0.29	0.66	1.657	0.328	0.238	1.081	0.38	0.17	0.97	0.447
Minimum	-0.89	-0.43	-0.85	-1.060	-0.093	-0.230	-0.107	-0.409	-0.26	-0.51	-0.14	-0.416
No of positive DA	37	32	21	27	20	19	18	15	21	23	24	8
Percent positive	68.5	60.4	40.4	51.92	91	79.2	75.0	65.0	75	69.7	75.0	25.0
N	54	53	52	52	22	24	24	23	28	33	32	32
% Of examined from total regulated companies	54/65 83.1%	53/65 81.5%	52/65 80%	52/65 80%	22/24 91.7	24/24 100%	24/24 100%	23 ^a /24 95.8%	28/33 84.8%	33/33 100%	32 ^b /33 97%	32 ^b /33 97%

Notes; ^a One company dropped from the analysis due to the changes in financial reporting period in 2001.

^b One company excluded from the analysis because it had been delisted in 2002.

* Significant at the 5% level, ** significant at the 1% level.

6.5.2 Interpretation

The interpretation of this finding is that IPO companies tend to manage earnings upward more in the first year as a public company to maintain their reputation for earnings growth and reporting towards meeting their forecasts. Meeting profit forecasts is important for companies, as negative management forecasts errors are associated with negative market price reaction (McNichols, 1989; Lev and Penman, 1990; How and Yeo, 2000)

The results for year 1 and year 2 can be interpreted by saying that IPO 1998 and IPO 2000 companies had incentives to avoid reporting reduced earnings in the two years following IPO for two reasons. Firstly, they had an incentive to maintain a high market price for their shares in order to avoid having to pledge additional securities to maintain the profit guarantee margin. Secondly, the management may have experienced a strong incentive to achieve earnings targets and maintain the appearance of growth in order to maintain a high market price (in case they wanted to sell their holdings in the secondary market). This is consistent with DeAngelo et al. (1986) and Barth et al. (1999), who found companies experiencing negative stock return in a year when their continuous earnings growth was broken. Companies may also avoid reporting reduced earnings after IPO to avoid the prospect of litigation (Shivakumar, 2000). It is however important to recognize that over several years it becomes increasingly more difficult for companies to continue managing their earnings due to the reversal of prior accruals.

The unexpected contrasting results for year 1 and year 2 for IPO 1996, compared to other years (IPO 1998 and IPO 2000), may be explained by the economic situation affecting Malaysia. Further analysis of the ratio of accounts receivable over sales for the period (Table 6-3), shows that for year 1 and year 2, IPO 1996 companies reported a lower average accounts receivable over sales, compared to the control group of non-issuer companies. The lower ratio of accounts receivable to sales resulted in lower working capital and negative current accruals. Table 6-3 shows the result of ratio analysis for IPO 1996 companies.

Table 6-3: Ratio analysis for IPO 1996 companies

	Average accounts receivable/sales ratio				
	1996	1997	1998	1999	2000
Control group companies	67.16	94.49	95.64	77.83	97.80
IPO companies	43.37	35.28	33.97	41.41	62.07

An interpretation of this may be that, as young companies in the early stages of growth, the IPO 1996 companies were more vulnerable to the economic crisis, which started in mid-1997 than those of the more established companies in the control group. It is speculated that some companies have even written off their accounts receivable during the crisis period because investors are normally more tolerant during the bad economic period. Shih and Lin (2002) suggest that investors react less harshly to poor earnings reported during recessions and, therefore, managers have incentives to defer income in such periods to future periods. Writing off accounts receivable during this period was perhaps the main cause of lower working capital. Saleh and Ahmed (2005) offer an interesting suggestion: that management may choose to reduce their reported earnings in order to maximise the government support available during the crisis period (the Malaysian government became involved in restructuring the economy by providing protection, financial support and political patronage to business enterprises with a view to improving corporate performance and avoiding massive unemployment). This may explain unexpected negative discretionary accruals in the two year period after listing for IPO 1996 companies.

6.6 Summary and conclusions

This study provides evidence consistent with the prediction that managers of Malaysian IPO companies manage earnings upward in the year of forecast issuance,

or in the year the company make their first forecasts. The study also provides evidence that managers continue to manage earnings during the period after listing where there is continuing regulatory scrutiny. This finding is consistent with previous studies which found earnings management in a period when regulation applied (Jones, 1991; Navissi, 1999).

The study consists of 54 companies listed in 1996, 22 listed companies in 1998 and 28 listed companies in 2000. Discretionary accruals are estimated using a cross-sectional version of the modified Jones (1991) model, as developed by Dechow et al. (1995). The study considers a working capital accruals model as a proxy for earnings management.

The empirical evidence for IPO 1998 and 2000 companies provides support for the hypothesis that the existence of regulation affects management behaviour. The result for IPO 1996 companies is, however, contrary to research expectations. IPO 1996 companies show negative discretionary accruals in years 1 and 2 following the IPO. Ratio analysis indicates that the negative discretionary accrual for IPO 1996 companies may be explained by writing off accounts receivable during the period of economic crisis.

Negative discretionary accruals observed for IPO 1996 companies during the period of economic crisis (years 1 and 2) may indicate an abnormal pattern of accruals, forced upon management due to economic factors. In a developing country like Malaysia, young, newly listed companies, that have not established a good customer base, reputation and strong cash balances are very vulnerable to economic circumstances. It may be that the economy has forced abnormal accruals down rather than management choosing to manage earnings downward. Kaplan (1985) commented that changes in working capital result not only from the opportunistic behaviour of managers but also from the economic circumstances of the company. Alternatively, companies may have incentives to keep earnings low for political reasons. (Saleh and Ahmed, 2005) suggested companies may choose to manage their

earnings downwards during periods of economic crisis in order to get maximum support from the government.

There is a limitation to the research evidence in that there were insufficient IPOs by companies not subject to the regulation of earnings forecasts. However, the persistence of significant earnings management throughout the regulatory period is regarded as evidence of the effect of regulation.

The findings of this study may indicate that regulation on earnings forecast was apparently effective, because regulated companies used earnings management to get closer to their forecasts. That raises the question of whether the magnitude and direction of error (forecast error) has an influence on the IPO companies' earnings management behaviour. The next chapter reports the results of regression analysis examining the association between earnings management behaviour during the period of regulation and forecast error and other variables identified in Section 4.4 of the thesis.

Appendix 6-A: List of 54 companies included in the study for IPO 1996

Name of company	Date of listing
Ajiya Bhd	20-12-96
Amway (Mal.) Holdings Bhd	30-08-96
Apollo Food Holdings Bhd	25-09-96
Asia File Corporation Bhd	04-03-96
BCB Bhd	03-12-96
Bina Darulaman Bhd	02-02-96
Dialog Group Bhd	06-05-96
Gold Bridge Eng & Cons Bhd	23-07-96
Halim Mazmin Bhd*	28-02-96
Hock Seng Lee Bhd	10-06-96
Inti Universal Holdings Bhd	27-06-96
Jaya Jusco Stores Bhd	02-12-96
Sunrise Bhd	06-02-96
Johor Land Bhd	31-12-96
Johor Port Bhd	25-10-96
Johore Tenggara Oil Palm Bhd	15-08-96
Konsortium Perkapalan Bhd	19-01-96
Kossan Rubber Industries Bhd	15-03-96
Kumpulan Fima Bhd	15-11-96
Penas Corporation Bhd	22-11-96
UMS holdings Bhd	22-04-96
Tomypak Holdings Bhd**	11-06-96
SMPC Metal Ind Bhd	15-02-96
L & M Corporation (M) Bhd	10-05-96
Latex Partners Bhd	31-01-96
Brisdale Holdings Bhd	01-07-96
Bell & Order Bhd	06-06-96
Atlan holdings (M) Bhd	15-01-96
Wonderful Wire & Cable Bhd	28-11-96
Powertek Bhd	29-08-96
Hexagon Holdings Bhd	13-09-96
PDZ Holdings Bhd**	05-07-96
Sunway City Bhd	08-07-96
Eden Enterprise	20-09-96
Hai O Enterprise	06-12-96

Note: * Not included in the calculation of discretionary accruals in year 1

** Not included in the calculation of DA in year 2 and year 3

Appendix 6-A: continued

Name of company	Date of listing
Ganad Corporation Bhd	06-09-96
Sportma Corp Bhd	30-10-96
Artwright Holdings Bhd	21-05-96
Saujana Consolidated Bhd	29-10-96
SHH Resources Bhd	22-08-96
Woventex Corporation Bhd	18-12-96
Ye Chui Metal Smelting Bhd	12-09-96
Isuta Holdings Bhd	01-08-96
Taiping Super Bhd	23-12-96
KP Keningau Bhd	09-01-96
Metrod (M) Bhd	17-01-96
MESB Bhd	08-05-96
Kwantas Corporation Bhd	29-11-96
Suremax Group Bhd	06-03-96
Teck Guan Perdana Bhd	02-09-96
DKLS Industries Bhd	18-10-96
Watta Holdings Bhd	23-04-96
Global Carriers Bhd	26-04-96
Esprit Group Bhd	02-05-96

Appendix 6-B: List of 24 companies included in the study for IPO 1998

Name of company	Date of listing
Astral Asia Bhd	27-03-98
Bintai Kinden Bhd	23-01-98
Comsa Farms Bhd	28-10-98
Habib Corporation Bhd.	25-03-98
Merge Energy Bhd.	17-11-98
Serisar Industries Bhd.	05-02-98
New Hoong Fatt Holdings	08-06-98
PLB Engineering Bhd	06-05-98
Padini Holding Berhad	05-03-98
Wong Engineering Corp Bhd	26-01-98
Auto Air Holdings Bhd	04-02-98
Amtek Holdings Bhd	25-06-98
Yong Tai Berhad	15-09-98
Kumpulan H & L Bhd	10-03-98
Orgavl Chemical Industries ltd.	16-01-98
Metal Reclamation Bhd**	04-06-98
Rhythm Consolidated Bhd	11-02-98
See Hup Consolidated Bhd	13-02-98
Fajar Baru Bhd	02-03-98
FW Industries Bhd	08-07-98
Khind Holdings Bhd	12-08-98
Avangarde Resources Bhd	13-08-98
Waste Water Engineering (M) Bhd*	12-01-98
AKN Technology Bhd*	02-09-98

Note:* Not included in the calculation of DA in year 0.

** Not included in the calculation of DA in year 3.

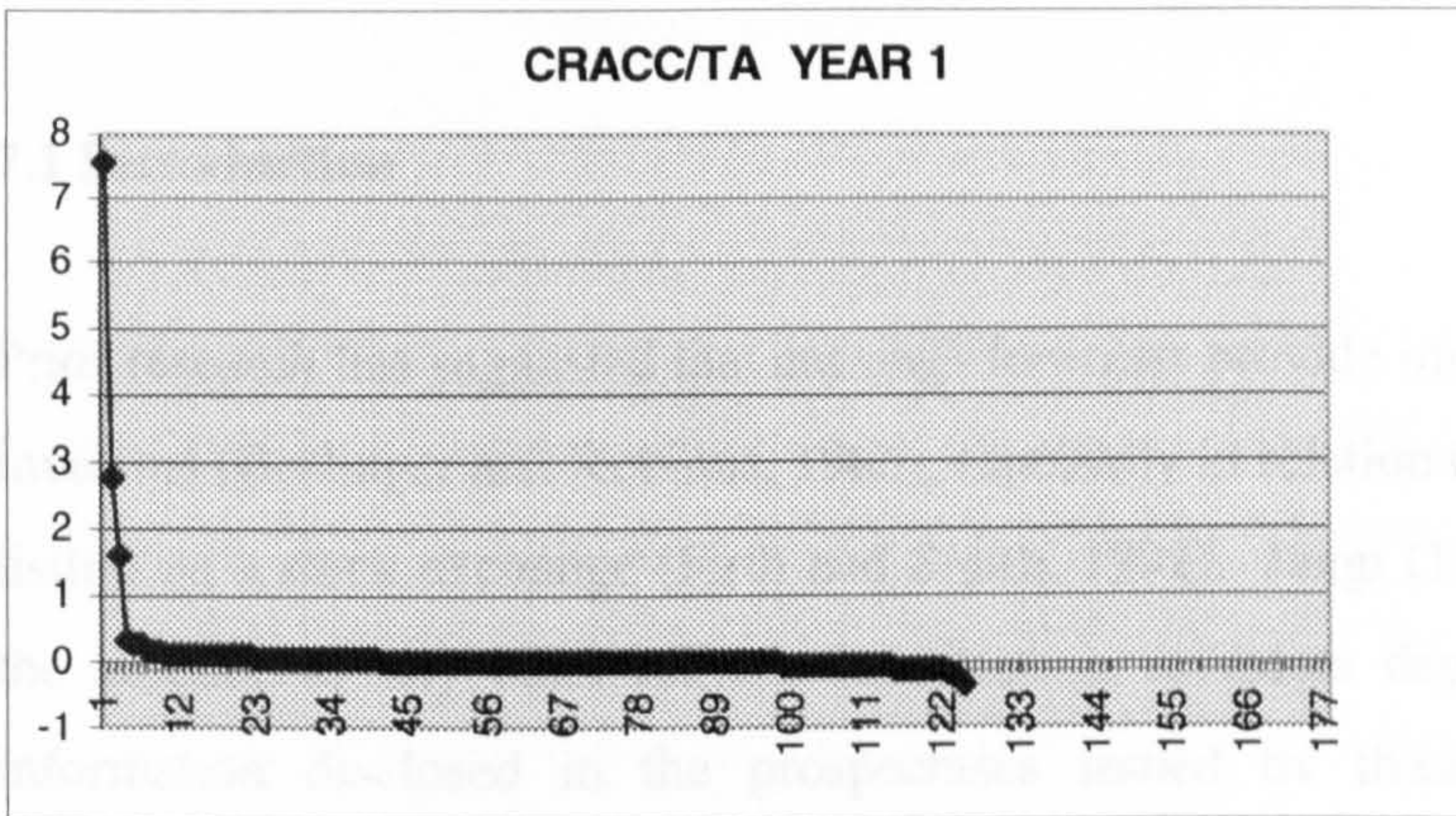
Appendix 6-C: List of 33 companies included in the study for IPO 2000

Name of company	Date of listing
Analabs Resources Bhd.	24-04-2000
Apex Healthcare Bhd.	26-06-2000
Courts Mammoth Bhd.	11-10-2000
Kim Loong Resources Bhd.	27-11-2000
Lii Hen Inds.Bhd.	25-04-2000
Magni-Tech Industries Bhd.	18-04-2000
Megan Media Holdings Bhd.	08-08-2000
NV Multi Corporation Bhd.	23-08-2000
Octagon Cons.Bhd.	08-11-2000
P I E Industrial Bhd.	07-07-2000
Petra Perdana Berhad	16-08-2000
Poh Huat Resources Hdg.	29-03-2000
QL Resources Bhd.	30-03-2000
Supermax Cooperation Bhd.	07-08-2000
Uchi Techs.Bhd.	19-07-2000
Unico-Desa Plantations Bhd.	25-05-2000
MHC Plantations Bhd.	29-11-2000
LTKM Bhd	28-03-2000
Jotech Holdings Bhd.	09-08-2000
Jin Lin Wood Industries Bhd.	27-03-2000
JPK Holdings Bhd.	26-05-2000
Unimech Group Bhd.	27-06-2000
Golsta Synergy Bhd.	21-08-2000
Glomac Bhd.	13-06-2000
Foremost Holdings Bhd.	01-08-2000
Tat Sang Holdings Bhd.**	19-06-2000
Tomisho Holdings Bhd.	08-03-2000
Eurospan Holdings Bhd.	10-07-2000
Hunza Properties Bhd.*	23-03-2000
Oriental food Industries Holdings Bhd.*	10-08-2000
Ta Win Holdings Bhd.*	15-08-2000
GPA Holdings Bhd.*	03-08-2000
Spritzer Bhd.*	01-09-2000

Note: * Not included in the calculation of DA for year 0

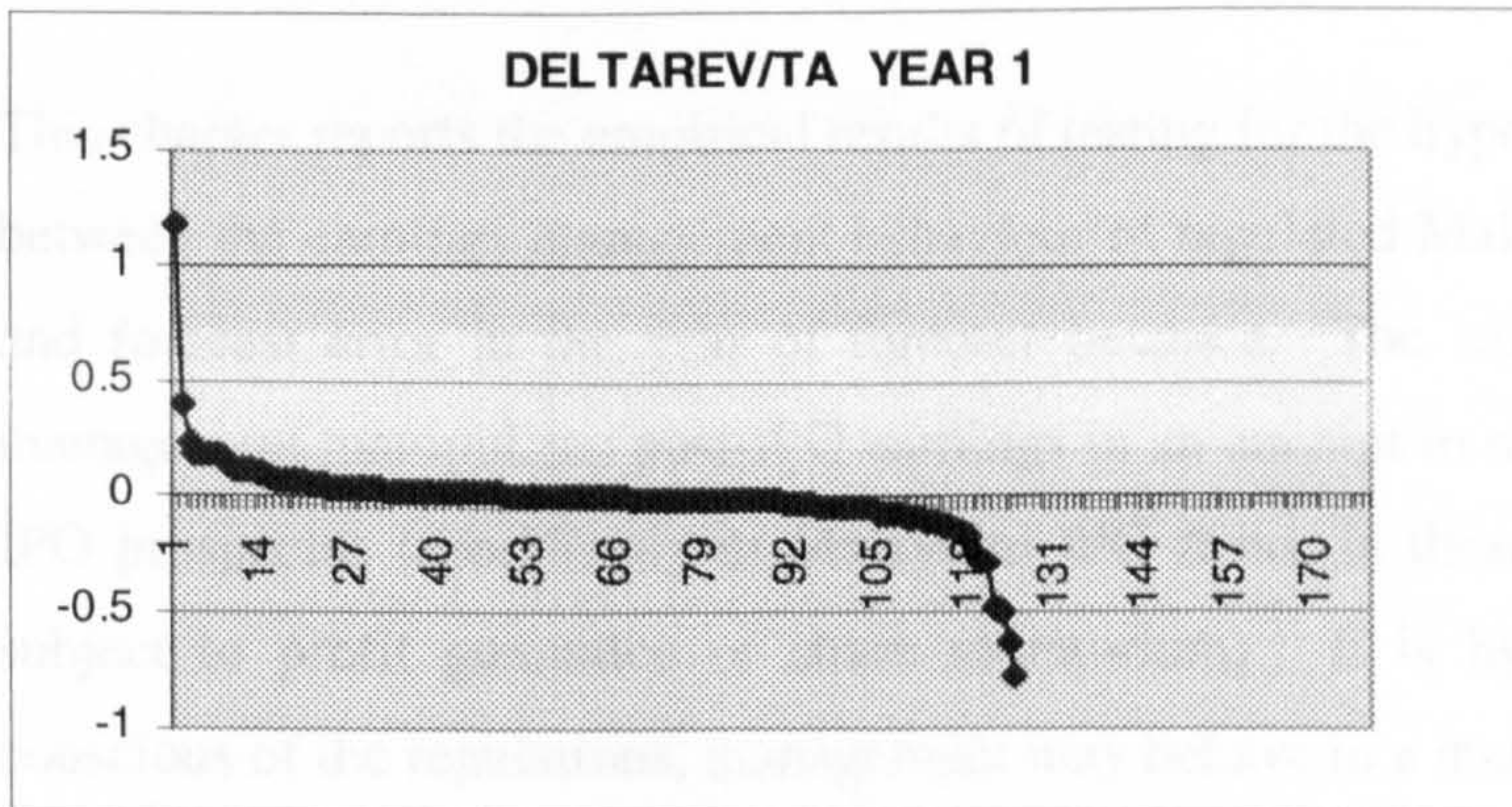
** Not included in the calculation of DA for year 3.

Appendix 6-D: Illustration of line chart for change in revenue for control group IPO 2000 year 1



Note:
The three companies on the extreme left hand side were removed from the control group.

Appendix 6-E: Illustration of line chart for current accrual for control group IPO 2000 year 1



Note:
The 2 companies on the extreme left hand side and three companies on the extreme right hand side were removed from the control group.

CHAPTER 7: EARNINGS MANAGEMENT AND FORECAST ERROR: RESULTS AND ANALYSIS

7.1 Introduction

Prior research has suggested that earnings forecasts provide important information to investors (Berlinger and Robbins, 1986), especially in relation to firms that are newly listing on a stock exchange (Firth and Smith, 1992). Jaggi (1997) suggested that in the absence of any other reliable information, investors depend primarily on the information disclosed in the prospectuses issued by these companies. Since managers have control over certain transactions (Brown, 1988), and management can use their discretion to signal their private information or to opportunistically manipulate earnings, (Yeo et al., 2002), one important issue is whether management manage earnings through the use of discretionary accruals in order to come closer to the forecast.

This chapter reports the empirical results of testing for the hypothesis of relationships between the earnings management behaviour of regulated Malaysian IPO companies and forecast error in the year of forecast issuance. The study examines whether management manipulates post-IPO earnings in an attempt to meet the forecast in the IPO prospectus (specifically in Malaysian IPO firms, in those industries which are subject to profit guarantee or share moratorium). It is hypothesised that, over conscious of the regulations, management may behave in a manner which reflects the expectations of the regulator.

This chapter answers the main objective and research question 1 of the study, which is as follows:

Research question 1: Is there a significant association between discretionary accruals and the magnitude and direction of forecast error, controlling for other factors in the year the company make forecast?

Research question 1 involves the calculation of discretionary accruals for the sample companies for IPO years 1996, 1998 and 2000. The study seeks to identify the association between earnings management and forecast error, controlling for other factors. Discretionary accruals are calculated using the working capital accruals model from Jones (1991), modified by Dechow (1995) and discussed in Section 4.3.2.1 of the thesis. The study analysis involves statistical techniques of correlation and multiple regression analysis. The regression results are presented in Section 7.7 of this chapter.

To provide evidence of association between earnings management behaviour of IPO companies and forecast error, the study only tests earnings management for the year of the IPO or the year of forecast issuance. Although Malaysian regulated companies are required to make a forecast for a three-year period beginning from the year of IPO, they are only required to publish an earnings forecast for the year of the IPO in the prospectus⁴⁹. It is, therefore, speculated that for the year of IPO (year of forecast issuance), companies will manage their earnings upward in order to come closer to the forecast. The three IPO years of 1996, 1998 and 2000 were chosen because they represent three different economic periods and three different periods when the change in regulation was fully effected. (see Section 6.1 of Chapter 6).

Section 7.3 describes the formation of hypotheses and the expectations formed. Section 7.4 discusses the sample selection and data collection. Section 7.5 presents descriptive statistics on all continuous variables included in the study. Section 7.6 presents preliminary analysis of the study. Section 7.7 reports results of the multivariate analysis. Section 7.8 discusses the factors influencing companies'

⁴⁹ The forecasts for the subsequent two years are reported only to the Securities Commission

earnings management. Section 7.9 presents the result of an alternative test of the nature of regulation. A conclusion is provided in Section 7.10.

7.2 Definition of variables

The study uses the direction of a company's discretionary accruals from the modified cross-sectional Jones (1991) model, modified by Dechow (1995), to proxy for the extent of earnings management. Under this model, the level of discretionary accruals for the examined company is calculated as being the difference between the company's current accruals and its non-discretionary accruals (as estimated in equation 4 of Section 4.3.2.1). Unlike previous studies, which use absolute discretionary accruals (Kim et al., 2005; Davidson et al., 2005; Peasnell et al., 2005), this study uses the direction and magnitude of discretionary accruals as a proxy for the extent of earnings management. This is because the objective of this research is to capture the effect of regulation on earnings forecast on income increasing earnings management in the year of forecasts.

7.3 Formation of hypotheses

This study tests for a relationship between earnings management behaviour and forecast error in the year of forecast issuance (year 0). The study also tests for a relationship between earnings management and other independent variables (i.e. economic condition and company specific characteristics).

This section describes the formation of hypotheses and the expectations formed based on the situation specific to Malaysia with respect to regulation of earnings forecast and economic condition. The expectation for an association between earnings management and other company characteristic is formed based on prior research. The hypotheses are expressed in both null and alternative form. Table 7-1

lists variables chosen to represent forecast error, economic condition, and the company specific characteristics included as control variables.

Table 7-1: Independent variables tested

	Variables	Hypothesis	Section
1	Forecast error	H ₁₄	7.3.1
2	Economic condition		7.3.2
3	• Crisis period	H ₁₅	
3	• Recovery period	H ₁₆	
4	Management ownership	H ₁₇	7.3.3
5	Auditor reputation	H ₁₈	7.3.4
6	Company's age	H ₁₉	7.3.5
7	Company's size	H ₂₀	7.3.6
8	Company's leverage	H ₂₁	7.3.7

7.3.1 Forecast error

Prior evidence suggests that the incidence of earnings management is particularly pronounced when earnings fall below certain thresholds (Burgstahler and Dichev, 1997). Three thresholds that have been considered in the literature are: avoiding reporting a loss; reporting a growth in profits; and meeting the analysts' consensus forecast. Peasnell et al. (2005) suggested that a successful earnings management strategy would result in reported earnings exceeding the threshold when otherwise it would fall short.

This study focuses on regulated IPO companies avoiding reporting actual earnings of less than 90% of forecast made in the prospectus. Companies that are not meeting this regulation are subject to a financial penalty (i.e. losing their deposited bond) or they may suffer reputational loss from failure to meet the forecast. It is therefore expected that IPO companies will be under most pressure, and will tend to manage their earnings upward to come closer to the forecast. This is consistent with prior studies which document evidence of earnings management in the year the regulation applies (Jones, 1991; Navissi, 1999). Table 7-2 shows previous empirical evidence on the association between meeting earnings threshold and earnings management.

Table 7-2: Earnings management and meeting earnings threshold - empirical evidence

Significant positive (+) association
Jones (1991)
Navissi (1999)
Busgstahler and Dichev (1997)
Peasnell et al. (2005)

To provide empirical evidence on the above issue, the hypothesis tested in the null form is as follows:

H₀₁₄ : There is no significant association between earnings management and forecast error.

The alternative hypothesis is:

H_{A14} : There is a significant positive association between earnings management and forecast error.

Based on the mandatory earnings forecast disclosure requirement and specific regulations on minimum forecast error for Malaysian IPO companies, a positive association between earnings management and forecast error is expected.

7.3.2 Economic condition

The economic crisis, which started in July 1997, had a significant impact on the Malaysian economy (see Section 3.7 of Chapter 3), and there was an unexpected change in economic condition during this period. Although the economy is considered to have begun recovering in the second quarter of 1999, volatility in the economy continued because of the global electronic downturn and the economic slowdown of the United States.

The unexpected change in economic condition is measured by two dummy variables. The first variable (CRISIS), takes the value of 1 either if the companies made forecast and reported their actual results in the crisis period or if they made a forecast

in the pre-crisis but reported their actual earnings in the crisis period. Otherwise it takes the value of zero. The second variable (RECOVERY) takes the value of 1 if the companies made forecasts and reported their actual earnings in the period of economic recovery and in all other cases takes the value of zero. The definition of economic period is explained in Section 6.1 of the thesis.

Kim and Yi (2005) found that Korean public companies have a significant positive association with earnings management compared to private companies in the post-crisis period. Public companies are subjected to close scrutiny by outside investors and are under pressure to meet earnings expectation. Their findings suggested that Korean public companies, who experienced a significant drop in their profits, engaged in earnings management more intensely during the post-crisis period than they did during the pre-crisis period. This is consistent with Baek et al. (2004) who suggested that such a significant drop in profits during the post-crisis period may have motivated them to manage earnings more aggressively.

During the crisis and recovery period, Malaysian companies experienced volatility in the economy which made it more difficult for them to achieve their forecast earnings. This resulted in greater negative forecast error compared to companies in the pre-crisis period (see Table 5-12 in Chapter 5). Given that accounting earnings convey information about company value to investors (DuCharme et al., 2004), it is to be expected that during periods of high uncertainty and earnings decline, publicly traded companies in Malaysia will be faced with more pressure from the regulator and the stock market to meet investors' earnings expectation, compared to companies in the pre-crisis period. Thus, the stock market pressure may create incentives for IPO companies to engage in earnings management. Previous research shows that public companies may engage in earnings management in equity offerings in stock market (e.g. Teoh et al., 1998a, 1998b, Rooseboom et al., 2003) and to meet the earnings expectation of financial analysts (e.g. DeGeorge et al. 1999).

The government regulation, stock market pressure and volatility in the economy (making it more difficult for companies to achieve their earnings forecast) may have

motivated IPO companies to engage in upwards earnings management more aggressively during the crisis and recovery period. The hypotheses, stated in the null form, for the economic crisis and recovery periods are stated as follows:

H₀₁₅: There is no significant association between earnings management and crisis period.

H₀₁₆: There is no significant association between earnings management and recovery period.

The alternative hypothesis is:

H_{A15}: There is a significant positive association between earnings management and economic crisis.

H_{A16}: There is a significant positive association between earnings management and economic recovery.

Based on prior evidence, and discussion of the economic conditions, a positive association between discretionary accruals and the crisis and recovery periods is expected.

7.3.3 Management ownership

Prior research considers ownership control to be a major source of agency problems in an emerging capital market (Claessens et al. 2000; Haw et al., 2004). Agency costs increase as the equity share of the manager-owner declines. Because the manager gains 100 percent of each dollar spent on perks, the manager who owns less than 100 percent of the company has an incentive to consume perks rather than to maximize the value of the company to all shareholders (Jensen and Meckling, 1976). Peasnell et al. (2005) found that the number of shares owned by inside directors had a negative association with upwards earnings management, indicating that the more closely aligned managerial and shareholder interests are, the less earnings management there will be

On the other hand, high management ownership in the company means the owner managers have significant amounts invested in the company, particularly in stock.

Since prior studies provide evidence that stock prices respond strongly to adverse earnings news (e.g. Lev and Penman, 1990; How and Yeo, 2000; Skinner and Sloan, 2002), managers are therefore expected to exercise their accounting discretion to avoid reporting adverse earnings news. Another argument is that IPO managers may adopt higher earnings management if they keep a small number of shares to maximize proceeds for themselves which suggests a negative association between management ownership and earnings management. This argument of negative association to reduce wealth loss (Nagata and Hachiya, 2006) applies in analysing the behaviour of management the time of IPO. In contrast, the research reported in this thesis focuses on earnings management in the year following the IPO.

As agent to themselves, the directors are serving their interests both as a manager and as the owner of the company. It is therefore expected that they have an incentive to manage earnings upwards in order to increase the share prices, because if earnings management can increase short-term share prices, managers can benefit by increasing the value of the shares they are going to sell. Beasley (1996) suggested that the extent of company ownership held by management could motivate management to inflate stock values artificially by fraudulent reporting. Fan and Wong (2005) suggested that in emerging markets, agency conflicts between controlling owners and minority shareholders are difficult to mitigate through conventional corporate control mechanisms such as boards of directors and takeovers. Based on the above discussion, the hypothesis tested in the null form is as follows:

H₀₁₇: There is no significant association between earnings management and management ownership.

The alternative hypothesis is:

H_{A17}: There is a significant positive association between earnings management and management ownership

Since this study investigates the association between earnings management and management ownership after the IPO, a positive association is expected.

7.3.4 Auditor reputation

Prior research provides evidence that Big 6 auditors are more effective in constraining opportunistic earnings management than non-Big 6 auditors (Becker et al., 1998; Francis et al., 1999). Becker et al. (1998) report that the level of discretionary accruals is significantly lower for companies audited by Big 6⁵⁰ auditors than for non-Big 6 clients after controlling for several company-specific characteristics. They interpreted this as indicating that lower quality audit is associated with greater accruals flexibility. Kim et al. (2003), investigate differences in audit effectiveness in two distinct situations with two different reporting incentives. They found that Big 6 auditors are better able to limit managers' ability to choose income-increasing accruals than non-Big 6 auditors in situations where managers prefer income-increasing accrual choices, but not when managers prefer income-decreasing accrual choices. Krishnan (2003) argues that large audit firms not only have more resources and expertise to detect earnings management, but that they also have a greater incentive to protect their reputation because of their larger client base. This is consistent with Becker et al., (1998) who found that clients of Big 6 auditors report a lower level of earnings management. Table 7-3 shows previous empirical findings on the association between auditor reputation and earnings management.

Table 7-3: Empirical evidence on the association between auditor reputation and earnings management

Non-significant association	Significant negative (-) association
Ferguson et al., (2004)(UK)	Becker et al., (1998)(US)
Davidson et al., (2005)(Australia)	Francis et al., (1999)(US)
Peasnell et al., (2005)(UK)	Kim et al., (2003)(US)
Jeong and Rho (2004) (Korea)	Chen et al., (2005)(Taiwan)

⁵⁰ Big 6 at the time of their study.

To control for the effect of this audit reputation differentiation on the research results, companies audited by major international accounting firms are given a dummy value of 1. Other companies are coded zero. Based on the above discussion, the research hypothesis tested in the null form is as follows:

H₀₁₈: There is no significant association between earnings management and auditor reputation.

The alternative hypothesis is:

H_{A18}: There is a significant negative association between earnings management and auditor reputation.

Since large audit firms not only have more resources and expertise to detect earnings management but also have greater incentive to protect their reputation, a negative association between earnings management and auditor reputation is expected.

7.3.5 Company age

The age of a company may have an association with discretionary accruals. A company that has been in existence for a longer period is expected to have a better appreciation of market environment and have a better control over its operations (Firth and Smith, 1992; Jaggi, 1997). This expectation may put pressure on the management to meet earnings expectations. The management are therefore expected to have a greater incentive to manage their reported earnings to maintain their reputation in business. To provide empirical evidence on the effect of age on earnings management for Malaysian IPO companies, the hypothesis in the null form is:

H₁₉: There is no significant association between earnings management and company's age.

The alternative hypothesis is:

H_{A19}: There is a significant association between earnings management and company's age.

Since there is no prior evidence on the association between company's age and earnings management, no expectation is stated for this variable.

7.3.6 Size of company

Dechow and Dichev (2002) show that larger companies tend to have more stable and predictable operations and therefore report smaller amounts of discretionary accruals. To control for this size effect, the size of company measured in terms of total assets is included in the regression. To provide empirical evidence on the effect of company size on earnings management for Malaysian IPO companies, the following hypothesis in the null form is:

H₂₀: There is no significant association between earnings management and company size.

The alternative hypothesis is:

H₂₀: There is a significant negative association between earnings management and company size.

Since large companies have more control over their market setting, enjoy comparative economies of scale and are more diversified, they tend to have less volatile earnings and therefore are expected to have smaller amounts of discretionary accruals.

7.3.7 Leverage

Leverage is another variable which may have a potential effect on the regression result. Companies with high leverage may have incentives to manage reported earnings due to their concerns over debt covenant (DeFond and Jiambalvo, 1994).

To control for the potential effect of financial leverage, a leverage variable measured by the ratio of total liabilities to total assets is included. Kim and Yi (2005) report a significant positive association between leverage and discretionary accruals suggesting that companies with high leverage tend to engage in earnings management more aggressively than those with low leverage. To provide empirical evidence on the effect of leverage on earnings management for Malaysian IPO companies, the following hypothesis in the null form is:

H₂₁: There is no significant association between earnings management and company leverage.

The alternative hypothesis is:

H_{A21}: There is a significant positive association between earnings management and company leverage.

Due to fluctuations in interest rates, companies with a comparatively high leverage encounter more difficulty in achieving their earnings targets. They are also likely to be scrutinised more by their creditors. Therefore, high leverage companies are expected to manage their earnings more than low leverage companies.

7.4 Research design

The study examines those companies subjected to earnings forecast regulation which became effective on 1 January 1996. The following sections discuss the sample selection and data collection of the study.

7.4.1 Sample selection

The study only tests the association between earnings management behaviour of regulated IPO companies and forecast error in the year of forecast issuance (year 0). To arrive at the final list of examined companies, exclusions were made on the basis of availability of data for both discretionary accruals and forecast error in the year of forecast issuance (year 0). Consistent with prior research, companies in the financial

and financial related sector were excluded (Davidson et al., 2005; Peasnell et al., 2005). After these exclusions were made, the number of companies examined is limited to 95 regulated companies. Table 7-4 presents a breakdown of the examined companies according to IPO year.

Table 7-4: Number of IPO companies examined

IPO year	1996	1998	2000
Number of regulated companies	65	24	33
Companies with missing forecast error data	12	1	3
Companies with missing earnings management data for year 0	4	3	4
No of examined companies*	49	20	26
Proportion of examined over regulated IPO companies (%)	49/65 75.4%	20/24 83.3%	26/33 78.8%

* See appendices 7-A, 7-B and 7-C for lists.

7.5 Descriptive statistics

Table 7-5 presents descriptive statistics on all continuous variables included in the regression.

Table 7-5: Descriptive statistics of continuous variables

	Mean	Median	Standard deviation	Minimum	Maximum
Discretionary accruals	.134	.103	.266	-.89	1.66
Forecast error (%)	-6.39	-.15	40.94	-257.62	111.62
Management ownership (%)	23.27	19.84	22.96	.00	88.00
Size (assets in million ringgit)	128.30	79.22	137.53	12.81	712.02
Leverage (%)	11.51	6.71	16.97	.00	93.60
Age (years)	6.67	3.00	7.66	1.00	31.00

The descriptive statistics of the continuous variables in Table 7-5 show that the average discretionary accruals is 13.4 % of beginning total assets, while companies mean forecast error is -6.4%. The average management ownership is 23.3%. The average ratio of total debts to total assets (LEVERAGE) is 11.5%, average size of companies in terms of total assets is 128 million ringgit, while the average age of companies is 6.7 years.

Table 7-6 shows the descriptive statistics of the hypothesised independent categorical variables. The results show that more than 55 % of the investigated companies are audited by major international accounting firms and 66.3% of these examined companies are subjected to share moratorium regulation. Only 33.7% of companies examined give a profit guarantee for the forecast earnings made in their prospectus. The results for economic condition show that about half (46.3%) of the examined companies are listed in the pre-crisis period, 26.3% of the companies are listed in the crisis period with the remaining 27.4% of companies being listed in the period of economic recovery.

Table 7-6: Descriptive statistics of independent categorical variables

Variable	Variable labels	Companies for regression analysis (n=95)	
		n	Percentage (%)
Auditor reputation <ul style="list-style-type: none"> • Major international accounting firm • Non-major international accounting firm 	AUD	55	57.9%
		40	42.1%
Regulation <ul style="list-style-type: none"> • Profit guarantee • Share moratorium 	REGULATION	32	33.7%
		63	66.3%
Economic condition <ul style="list-style-type: none"> • Pre-crisis period • Economic crisis period • Recovery period 	CRISIS RECOVERY	44	46.3%
		25	26.3%
		26	27.4%

7.6 Preliminary analysis

7.6.1 Univariate analysis-relationship between variables

In exploring the relationship between the dependent variable of earnings management and the continuous independent variables of forecast error, management ownership, company size, leverage and company age, Pearson's Product-moment correlation (r) was computed. Table 7-7 shows the correlation between continuous independent variables and earnings management.

Table 7-7: Correlation between continuous independent variables and earnings management

Independent variables	Pearson correlation Earnings management – normalised discretionary accruals	Significance (2-tailed)
Forecast error	.181	.080*
Management ownership	.183	.076*
Company's size	-.028	.789
Leverage	.100	.335
Company's age	.118	.256

*Significant at the 10% level

The results in Table 7-7 show that forecast error and management ownership have a marginally significant correlation with earnings management (i.e. at the 10% level). The other variables of company size, leverage and age have no significant correlation with earnings management. This suggests that these variables do not relatively influence the earnings management behaviour of examined companies.

In determining whether categorical variables included in the study have an impact on the earnings management behaviour of examined companies, two statistical tests were performed – the independent-sample t-test and the non-parametric Mann-Whitney U test. The results of the independent-sample t-test and Mann-Whitney U test are shown in Table 7-8.

Table 7-8: T-test and Mann-Whitney U test for categorical independent variable

Categorical independent variable	N	Mean Discretionary accruals	Standard deviation	t-value (sig. 2-tailed)	Mann-Whitney (Z value)
Auditor reputation					
Major international firm	55	.08	.92	-.917 (.362)	-.897 (.370)
Non-major international firm	40	-.11	1.02		
Regulation					
Profit guarantee		.15	.36	-.361 (.719)	-1.339 (.181)
Share moratorium		.13	.20		

A parametric t-test shows that there is no significant difference between the earnings management behaviour of IPO companies audited by major international accounting firms and that of companies audited by other accounting firms. A non-parametric Mann Whitney-U test also shows that there is no significant difference in the earnings management behaviour of companies audited by major international accounting firms compared to those audited by other accounting firms.

When comparing the different natures of regulation on earnings forecast; both the parametric t-test and non-parametric Mann Whitney-U test show that there is no significant difference between the earnings management behaviour of IPO companies giving profit guarantee and those accepting on share moratorium.

In order to examine the impact of different economic conditions on earnings management, analysis of variance (ANOVA) was used. Analysis of variance was used because there are three different economic conditions involved. Table 7-9A and 7-9B show the result.

Table 7-9A: One-way ANOVA for economic condition variable

Economic condition					
	Pre-crisis	Crisis	Recovery	F	Sig.
N	44	25	26	2.774	0.068*
Mean DA	.09	.22	.12		
Standard deviation	.28	.32	.17		

Table 7-9B: Tukey HSD test

Dependent variables: Earnings management (normalized discretionary accruals)

Economic category (I) (Mean DA, S.D)	Economic category (J)	Mean difference	Sig.
Pre-crisis (.09, .28)	Crisis	-.557	.054**
	Recovery	-.235	.577
Crisis (.22, .32)	Pre-crisis	.557	.054**
	Recovery	.322	.447
Recovery (.12, .17)	Pre-crisis	.235	.577
	Crisis	-.322	.447

Key: DA = discretionary accruals

S.D = standard deviation

* The mean difference is significant at the 10% levels.

** Significant level at the 5% level

The one-way between-group analysis of variance results in Table 7-9A shows that there is a marginally significant difference in mean between different economic

periods ($F = 2.774$, $p = 0.068$). In identifying where the difference among the group of economic condition occurs, further post-hoc tests are conducted (Pallant, 2001). The Tukey HSD test in Table 7-9B indicated that the mean discretionary accruals for the pre-crisis period (mean = .09, SD = .28 in Table 7-9A) are statistically different from that of the crisis period (mean = .22, SD = .32) at the 5% level (sig. = 0.054). Earnings management of examined IPO companies in the pre-crisis is, however, not statistically different from the recovery period (sig. = .577). Companies in the crisis period also have no significant difference in their earnings management from companies in the recovery period (sig. = .447).

The examined companies were then partitioned into two groups; (1) companies meeting the minimum regulated negative forecast error of not more than 10% and (2) companies not meeting the minimum regulation of forecast error. Descriptive results in Table 7-10 shows that 69.5% of the regulated sample companies (66 out of 95 companies) meet the minimum regulation requirement on forecast error, while another 30.5% do not meet this. The mean and median discretionary accruals for companies meeting the minimum error condition (mean = .15, median = .11) are higher than the mean and median discretionary accruals for companies not meeting the regulation on forecast error (mean = .10, median = .08). Table 7-10 presents descriptive statistics for the sample companies.

Table 7-10: Mean and median discretionary accruals partitioned into companies meeting and not meeting regulation on forecast error

	Total companies	DA for companies meeting the regulation on forecast	DA for companies not meeting the regulation on forecast error
N	95	66 (69.5%)	29 (30.5%)
Mean	.13	.15	.10
Median	.10	.11	.08
Standard deviation	.27	.31	.11
Minimum	-.89	-.89	-.10
Maximum	1.66	1.66	.33

To test for differences between discretionary accruals for companies that achieved the minimum regulated forecast error, and discretionary accruals for companies that did not, the Mann-Whitney U test on the median and the independent sample t-test were conducted. Results presented in Table 7-11 show that the Mann-Whitney U test and independent samples t-test on the difference of discretionary accruals is not significant (Z value = -.618, Sig. = .536; t = -.729, p = .468). This may be explained by the fact that the managers in both groups have the same income-increasing incentives, because all of the companies tested are subject to the same regulation on earnings forecasts. The results of the independent-sample t-test and Mann-Whitney U test are shown in Table 7-11.

Table 7-11: T-test and Mann-Whitney U test results

Categorical independent variable	N	Mean DA	Median DA	S.D	t-value(sig. 2-tailed)	Mann-Whitney Z-value (2-tailed)
Companies meet minimum regulation	66	.15	.11	.31	-.729 (.468)	-.618 (.536)
Companies do not meet regulation	29	.10	.08	.11		

7.7 Multivariate analysis

Multiple regression analysis was used to explore the relationship between the continuous dependent variable of earnings management, represented by discretionary accruals, and a number of independent variables.

7.7.1 Regression models

The following regression equation is adopted to test the hypotheses in examining the association between the dependent variable of earnings management and the independent variables of forecast error, economic condition and other company specific characteristics as control variables.

$$NDA_{it} = \alpha + \beta_1 FE_{it} + \beta_2 CRISIS_{it} + \beta_3 RECOVERY_{it} + \beta_4 AUDITOR_{it} + \beta_5 MGTOWN_{it} + \beta_6 AGE_{it} + \beta_7 SIZE_{it} + \beta_8 LEV_{it} + \varepsilon_{it} \dots \dots \dots (9)$$

Where:

- FE*** (forecast error) = the difference between forecast earnings and actual earnings divided by forecast earnings.
- CRISIS*** = a dummy variable with a value of 1 if companies make forecasts and report their actual results in the crisis period, and 0 otherwise.
- RECOVERY*** = a dummy variable with a value of 1 if companies make forecasts and report their actual results in the recovery period, and 0 otherwise.
- AUDITOR*** = a dummy variable with a value of 1 if the company auditor is from a major international accounting firm, and 0 otherwise.
- MGTOWN*** = management ownership represented by percentage of shares owned by the executive director.
- AGE*** = the number of years companies in operation measured from

the date of incorporation.

SIZE = size of company represented by total assets of company before listing

LEVERAGE = leverage ratio represented by total liabilities divided by total assets.

α = the intercept

β_i = the coefficients of independent variables

ϵ_i = error term

7.7.2 Multicollinearity

The correlations between independent variables are provided in Table 7-12. Inspection of the correlation matrix shows that none of the independent variables has a bivariate correlation of 0.7 or more. This indicates that there is no problem of multicollinearity (Tabachnik and Fidell, 1996: p.86). Table 7-12 shows the correlation matrix for the continuous independent variables.

Table 7-12: Correlation matrix for independent variables

		Forecast error	Age	Size (Total assets)	Leverage	Management ownership
Forecast error	Pearson corr Sig. (2 tailed)	1 .	.002 .986	.040 .697	.002 .987	-.041 .695
Company's age	Pearson corr Sig. (2 tailed)		1 .	.293** .002	-.024 .814	-.084 .417
Size (assets)	Pearson corr Sig. (2 tailed)			1 .	.152 .143	-.232* .024
Leverage ratio	Pearson corr Sig. (2 tailed)				1 .	-.013 .898
Management ownership	Pearson corr Sig. (2 tailed)					1 .

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Considering that multicollinearity may exist even when simple correlations are comparatively low, other multicollinearity tests were examined (presented in Table 7-13). The results show that for all variables included in the model, the condition index is less than 10, which suggests that there is no threat of multicollinearity (Gujarati, 1995). The variance inflation factor (VIF) of all variables is less than 2 and none of the variables has a condition index or eigenvalues close to zero. These results further support the absence of multicollinearity in the regression model. Table 7-13 shows the results for multicollinearity tests.

Table 7-13: Collinearity test - Tolerance, VIF, Eigenvalue and Condition Index

	Tolerance	VIF	Eigenvalue.	Condition Index
Forecast error	.793	1.260	1.199	1.891
Management ownership	.869	1.151	1.012	2.058
Crisis period	.790	1.266	.660	2.548
Recovery period	.629	1.590	.638	2.592
Auditor	.872	1.147	.494	2.946
Company's age	.836	1.196	.337	3.567
Size (total assets)	.825	1.213	.276	3.941
Leverage	.905	1.105	.099	6.571

7.7.3 Multiple regression results

Multiple regression analysis was used to explore the relationship between management discretionary accruals and a number of independent variables. The standard multiple regression result is shown in Table 7-14.

Table 7-14: Standard multiple regression results for 95 companies

	Variable labels	Expected sign	Sign observed	Beta	t-stats (sig.)	p-value
Intercept			-		-3.466	.001***
Forecast error	FE	+	+	.333	3.134	.002***
Management ownership	MGTOWN	+	+	.235	2.311	.023**
Crisis period	CRISIS	+	+	.342	3.210	.002***
Recovery period	RECOVERY	+	+	.366	3.070	.003***
Auditor reputation	AUDITOR	-	+	.014	.139	.890
Firm's age	AGE	+/-	+	.241	2.327	.022**
Size	SIZE	-	+	-.052	-.494	.623
Leverage	LEV	+	+	.157	1.573	.119
R ² (%)	22.9					
Adjusted R ²	0.158					
N	95					
F -value	3.197					
Sig.(2-tailed)	.003***					

Notes: *** 1% significant level; ** 5% significant level, * 10 % significant level

FE= the difference between forecast earnings and actual earnings divided by forecast profit. MGTOWN (Management ownership) = percentage of shares owned by the executive director. CRISIS (crisis period) = a dummy variable with a value of 1 if companies make forecasts and reported their actual results in the crisis period, and 0 otherwise. RECOVERY (recovery period) = a dummy variable with a value of 1 if companies make forecasts and reported their actual results in the recovery period, and 0 otherwise. AUDITOR (auditor reputation) = a dummy variable with a value of 1 if the company auditor is from a major international accounting firm, and 0 otherwise. AGE (company's age) = the number of years companies in operation from the date of incorporation. SIZE (company size) = total assets of companies before listing. LEV (financial leverage) = total liabilities divided by total asset.

Table 7-14 reports the results of the regression model. The model is significant with an adjusted R^2 of 0.158. This means that 15.8% of the variation in the earnings management level of Malaysian IPO companies in year 0 can be explained by the variables specified in the model.

The coefficient for forecast error (FE) is positive and significant at 1% level ($p = 0.002$). This indicates that the more positive the forecast error, the greater is the discretionary accruals. This provides support for the alternative hypothesis (H_{14}) that earnings management is positively associated with forecast error.

The economic condition period represented by the crisis and recovery variables both have a positive and significant association with the earnings management of companies. The positive sign for the crisis and recovery period variables indicate that IPO companies in these two periods are managing their earnings upward more than IPO companies in the pre-crisis period. The results thus indicate that the alternative hypothesis (H_{A15} in Section 7.3.2) of significant positive association between earnings management and economic crisis can be accepted at the 1% level and the hypothesis of no significant association between the earnings management and recovery period (H_{016} in Section 7.3.2) can be rejected at the 1% level.

Hypothesis 17 relates to management ownership and its role in preventing earnings management. The result shows that management ownership represented by percentage of shares owned by inside directors has a positive and significant association with earnings management at the 5% level. This result provides support for hypothesis 17, that earnings management is positively associated with inside director ownership. The positive sign indicates that, the greater the percentage of shares owned by the inside directors, the more positive is the discretionary accruals of the company.

The significant positive coefficient for company age indicates that companies which have been in operation for a longer period have significantly larger discretionary

accruals than companies which are newly established. The null hypothesis (H_{019} in Section 7.3.5) is therefore rejected at the 5% level

The Beta in Table 7-14 indicates the contribution of each independent variable to the prediction of dependent variable of earnings management. Results from Table 7-14 show that the recovery period variable makes the strongest contribution to the prediction of examined IPO companies earnings management behaviour (Beta = .366) when the variance explained by all other variables in the model is controlled for, followed by crisis variable (Beta = .342), forecast error (Beta = .333), company age (Beta = .241) and management ownership (Beta = .235).

7.8 Discussions of factors influencing companies earnings management

This section discusses the independent variables influencing companies' earnings management made in the year of forecast issuance.

7.8.1 Forecast error

The significant positive association between discretionary accruals and forecast error for regulated companies may be explained by the effect of regulation on earnings forecast. Companies are managing their earnings upward to come closer to the forecasts issued in the prospectus and to avoid payment of a penalty. This is consistent with Kasznik (1999) who found that companies are managing their reported earnings upward when earnings would otherwise fall below management earnings forecasts.

Managers may also manage their earnings upwards to maintain the reputation of the companies. Inaccurate forecasts convey the impression that the company is unstable, leading to the perception of high risk, and therefore a lower share price. McNichols (1989) and Lev and Penman (1990) show that management forecast errors are

associated with changes in stock prices. How and Yeo (2000), using an event study methodology of 158 Australian industrial IPOs listed from 1991 to 1997, found that the market reacts negatively to earnings and dividend forecast error. The adverse price reaction is more severe for companies with negative forecast errors than those with positive errors.

A recent study by Jaggi et al. (2006) examining Taiwanese IPO companies subjected to disclosure of earnings forecast in the IPOs, provides evidence that regulation has resulted in IPO companies providing optimistic forecasts in order to send a positive signal to the market. The study also documented evidence that reported earnings were managed using discretionary accruals, thus reducing the forecast error of optimistic forecasts. Gramlich and Sorensen (2004) also documented evidence of the use of discretionary accruals to mitigate earnings forecast errors in both directions. They attributed the managers' behaviour to their view of earnings forecast in terms of an implicit contract with shareholders. This indicates that management is managing their earnings to come closer to the forecasts.

7.8.2 Economic condition

Economic crisis and recovery period variables are positive and significantly related to earnings management at the 1% level. A positive coefficient for these two variables indicates IPO companies in the crisis and recovery period managing their earnings more than IPO companies in the pre-crisis period. The results provide support for the expectation that volatility in the economy has a significant impact on the extent to which companies manage their earnings. When there have been unexpected changes in economic conditions after the forecast was made, it was more difficult for them to achieve their forecast. Companies are, therefore, managing their earnings upward during this period to get closer to the forecast made. The result is consistent with Kim and Yi (2005), who found that Korean public companies had engaged in earnings management more intensely during the post-crisis period, due to increased pressure to meet earnings expectation.

7.8.3 Management ownership

The result of significant positive association between the percentage of management ownership and earnings management is consistent with expectation. This confirms the research prediction that, with a large amount of wealth invested in the company, managers are expected to exercise income increasing discretionary accruals to avoid an adverse stock price response when reporting declines in earnings. Leland and Pyle (1977) suggested that the higher percentages of equity retained by the entrepreneur imply that the personal portfolio of the entrepreneur is less well diversified and that they would only be willing to take such risk if anticipating higher returns. It is speculated that managers are managing earnings to increase short-term share prices for their benefit (in case they want to sell their shares in the future). Rangan (1998), in his study on earnings management of US seasoned equity offerings, concludes that the stock market does not correctly value the implications of discretionary accruals and, therefore, issuing firms can manipulate stock price by managing earnings.

This research finding (i.e. significant positive coefficient on management ownership) is, however, opposite to the result documented by Warfield et al. (1995) for a US study and Peasnell et al. (2005) for a UK study. This opposing result is likely attributable to the different institutional settings which exist in the US, UK and Malaysia. Gabrielsen et al. (2002) in their study of Danish companies suggest the opposing results may also be due to company size differences.

7.8.4 Auditor reputation

The coefficient for auditor reputation is positive, but not significantly related to the earnings management of Malaysian IPO companies. This finding is consistent with recent findings in the United Kingdom by Peasnell et al. (2005) and Ferguson et al. (2004), and also for Davidson et al. (2005) for Australia companies, who found no significant association between audit firm size and earnings management. The result

is, however, inconsistent with Becker et al. (1998) for US companies who found that firms with non-Big Six auditors have significantly larger discretionary accruals than firms with Big Six auditors.

The non-consistent result for auditor reputation between this study and studies in the US may possibly be explained by differences in the audit litigation costs in the two countries. Audit litigation costs are significantly higher in the United States (Ball et al., 2000) compared to Malaysia. Therefore, in Malaysia, audit firms of international repute may have less incentive to object to questionable accounting practices, or to qualify the audit report. This is consistent with Jeong and Rho (2004) for a Korean study, who found that there is no statistically significant difference between the discretionary accruals of firms with Big Six and Non-Big Six auditors. They suggested that there may be different incentives for auditors to provide high or low-quality audits because of the different economic and institutional environments of the country.

7.8.5 Company age

The positive coefficient for the company age variable implies that the older the company, the greater is the earnings management. With respect to Malaysian companies, it is speculated that older companies are managing their accounts more than younger companies in order to maintain their reputation for continuous earnings growth. Companies which have been in business for a longer time will also have better control of their operation and are expected to have more capacity to use accounting accruals in managing their earnings.

7.8.6 Company size

Size of company was not found to be statistically significantly associated with earnings management behaviour of Malaysian IPO companies. This lack of

significance may be explained by the fact that all IPO companies are relatively similar in size.

7.8.7 Leverage

The coefficient for leverage is positive, but was not found to be significantly associated with earnings management for Malaysian IPO companies. This implies that leverage level does not affect a company's earnings management behaviour and this is consistent with Peasnell et al. (2005) in a study of UK companies.

The coefficient for leverage is positive, contrary to Saleh and Ahmed's (2005) study of Malaysian distressed firms during debts renegotiation. The difference in the coefficient can possibly be explained by differences in companies' motivation when managing their earnings. Malaysian distressed companies during debt renegotiation may choose to reduce their reported earnings in order to maximise government support (Saleh and Ahmed, 2005), while regulated IPO companies may choose to manage their earnings upwards to meet the regulation requirement and to maintain their reputation for earnings growth.

7.9 Test on the nature of penalty for earnings forecast regulation

An alternative test on the impact of differences in regulation was carried out using a dummy variable to distinguish between regulated companies giving profit guarantee, and those subjected to share moratorium. An additional variable, that of the nature of the penalty, was added to the standard multiple regressions tested in 7.7.1. A dummy variable with a value of 1 is given if companies are subjected to profit guarantee.

It is expected that companies giving a profit guarantee will manage their earnings more than companies subject to a share moratorium. This is because the profit

guarantee penalty involves a cash payment to be made by the guarantors (the major shareholders or promoters of the companies), whereas the share moratorium penalty involves no cash payment. Based on the different natures of these penalties, the hypothesis stated in the null form is as follows:

H₀₂₂: There is no significant association between earnings management and profit guarantee.

The alternative hypothesis is:

H_{A22}: There is a significant positive association between earnings management and profit guarantee.

Results in Table 7-15 shows that the coefficient for the profit guarantee (PG) variable is positive, but not significant. This regression result shows that companies who give profit guarantee agreements manage their earnings upwards more than companies subjected to a share moratorium, though the result is not significant. The regression results indicate that a profit guarantee or share moratorium penalty has no significant impact on the earnings management behaviour of regulated companies. The other variables, of forecast error, management ownership, crisis, recovery period and company age have a positive and significant association with earnings management.

Table 7-15 shows the results for standard multiple regression with the additional variable of profit guarantee.

Table 7-15: Standard multiple regression results for 95 companies with additional variable of profit guarantee

	Variable labels	Expected sign	Sign Observed	Beta	t-stats (sig.)	p-value
Intercept			-		-3.286	.001***
Forecast error	FE	+	+	.332	3.110	.003***
Management ownership	MGTOWN	+	+	.241	2.279	.025**
Crisis period	CRISIS	+	+	.324	2.451	.016**
Recovery period	RECOVERY	+	+	.375	2.981	.004***
Auditor reputation	AUDITOR	-	+	.015	.150	.881
Company's age	AGE	+/-	+	.243	2.325	.022**
Size	SIZE	-	+	-.054	-.511	.611
Leverage	LEV	+	+	.156	1.555	.124
Profit guarantee	PG	+	+	.031	.226	.822
R ² (%)	23.0					
Adjusted R ²	0.148					
N	95					
F-value	2.816					
Sig.(2-tailed)	.006***					

Notes: ** 1% significant level; * 5% significant level, * 10 % significant level

FE = the difference between forecast earnings and actual earnings divided by forecast profit. MGTOWN (Management ownership) = percentage of shares owned by the executive director. CRISIS (crisis period) = a dummy variable with a value of 1 if companies make forecasts and reported their actual results in the crisis period, and 0 otherwise. RECOVERY (recovery period) = a dummy variable with a value of 1 if companies make forecasts and reported their actual results in the recovery period, and 0 otherwise. AUDITOR (auditor reputation) = a dummy variable with a value of 1 if the company auditor is from a major international accounting firm, and 0 otherwise. AGE (company's age) = the number of years companies in operation. SIZE (company size) = total assets of companies before listing. LEV (financial leverage) = total liabilities divided by total assets, PG (profit guarantee) = a dummy variable with a value of 1 if the company is subjected to profit guarantee agreement and 0 for share moratorium.

7.10 Summary and conclusions

This chapter demonstrates that there is a significant association between earnings management and the relative size and the direction of forecast error after controlling for other expected associations. The multivariate analysis undertaken in this chapter investigated the association between the extent of upward earnings management and a number of control variables, namely forecast error, economic condition (crisis and recovery), ownership structure, and company characteristics. The regression analysis reveals that, in descending order of significance, earnings management of Malaysian IPO companies is associated with changes in economic condition, represented by a recovery and crisis period, forecast error, company age and management ownership.

This study provides evidence consistent with the prediction that managers of Malaysian IPO companies manage earnings upwards in the year of forecast issuance in order to come closer to the forecast made in the prospectus. The results also show that companies are managing their earnings upwards during the economic crisis and economic recovery periods when there are unexpected changes in the economic condition. This is because companies may find it more difficult to achieve the forecast made during these periods.

Additional tests on the association between earnings management practices, and the nature of the penalty for not meeting regulation, show that neither a profit guarantee penalty nor a share moratorium has a significant impact on earnings management. This confirms the research findings of no significant association between type of regulation and forecast accuracy (see Section 5.8.1 of Chapter 5). The result implies that management are managing earnings upward to get closer to the forecast but not specifically to meet a regulation requirement.

The results also suggest that a company's age and the degree of management ownership have a similar positive effect on earnings management. The positive association

between management ownership and earnings management reveals that companies with a higher proportion of managerial ownership used discretionary accruals to manipulate earnings. It is speculated that with a greater proportion of shares owned in the company, managers have more discretion to use accounting accruals when reporting their income, in an attempt to influence short-term stock price performance which may benefit them in the future. This is because in this situation managers (as agents to themselves) will act for their own benefit.

The result for age may indicate that the longer the company has been in business, the greater is the incentive to manage earnings, in order to maintain their good reputation. It is also speculated that older companies have more scope to manage earnings.

The reputation of the auditor and size of the company have no significant association with income-increasing earnings management. The non-significant association between auditor reputation and earnings management is consistent with studies in the UK (Peasnell et al., 2005, Ferguson et al., 2004) and a study in Australia (Davidson et al., 2005). The result of non-significant association is, however, contrary to prior research in the US market.

In the context of Malaysia, the auditor faces a relatively low risk of litigation. So far, there is no case reported where auditors have been sued. Saudagaran and Diga (2000) report that there have been no cases of judicial actions against auditors in Malaysia and Thailand. Legal action is difficult and expensive, and could take many years to conclude. Therefore, although it was expected that major international accounting firms would have an inverse relationship with earnings management, the litigation environment where they work perhaps explains the non-significant association with earnings management.

The results of the adjusted R^2 indicate the need to consider additional variables in order to explain the earnings management practices of IPO companies in the year they make

their first forecast. Interviews involving market participants and preparers of annual reports, regarding the importance of meeting earnings forecast, may provide further insights into other factors influencing earnings management behaviour of Malaysian IPO companies. The next chapter reports the findings from interviews held with company directors, regulators and financial analysts.

Appendix 7-A: List of 49 examined companies for IPO 1996

COMPANY NAME
AJIYA
AMWAY (MAL.) HOLDINGS
ARTWRIGHT HOLDINGS
ASIA FILE
ATLAN HOLDINGS
BCB BERHAD
BELL & ORDER BERHAD
BINA DARULAMAN
BOXPAK (MALAYSIA)
BRISDALE HOLDINGS
DELLOYD VENTURES
DIALOG GROUP
DKLS INDUSTRIES
ESPRIT GROUP
GANAD CORP
GLOBAL CARRIERS
GOLD BRIDGE ENGINEERING& CONSTRUCTION
HAI-O ENTERPRISE
HEXAGON HOLDINGS
HOCK SENG LEE
HUA JOO SENG ENTERPRISE
INDL.CONCRETE PRODUCTS
INTI UNIVERSAL HOLDINGS
ISUTA HOLDINGS
JOHOR LAND
JOHOR PORT
JOHORE TENGGARA OIL PALM
K.P.KENINGAU BHD
KHEE SAN
KIA LIM
KONSORTIUM LOGISTIK BHD
KOSSAN RUBBER
KUMPULAN FIMA
LATEXX PARTNERS BHD
MESB BHD
PENAS CORP
RAMATEX
SAUJANA CONSOLIDATED
SHH RESOURCES
SMPC METAL IND. BHD
SPORTMA CORP.
SUNWAY CITY
SUREMAX GROUP
TAIPING SUPER BHD
TECK GUAN PERDANA
TOMYPAK HOLDINGS
UMS HOLDINGS
WATTA HOLDINGS
WONDERFUL WIRE& CABLE BHD

Appendix 7-B: List of 20 examined companies for IPO 1998

COMPANY NAME
AMTEK HOLDINGS BHD
ASTRAL ASIA
AUTOAIR HOLDINGS BHD
AVANGARDE RESOURCES BHD
BINTAI KINDEN CORPORATION BHD
COMSA FARMS BERHAD
FAJAR BARU CAPITAL BHD
FW INDUSTRIES BHD
HABIB CORPORATION BHD
KHIND HOLDINGS BHD
KUMPULAN H & L HIGH-TECH BHD
MERGE ENERGY BERHAD
METAL RECLAMATION BHD
NEW HOONG FATT HOLDINGS
PADINI HOLDINGS BHD
PLB ENGINEERING BHD
RHYTHM CONSOLIDATED BHD
SEE HUP CONSOLIDATED BHD
WONG ENGINEERING CORP BHD
YONG TAI BERHAD

Appendix 7-C: List of 26 examined companies for IPO 2000

COMPANY NAME
ANALABS RESOURCES BHD.
APEX HEALTHCARE
COURTS MAMMOTH BHD.
EUROSPAN
FOREMOST HLD
GLOMAC BHD.
GOLSTA SYNERGY
JIN LIN WOOD
JOTECH HLD
JPK HLD
KIM LOONG
LII HEN INDS.BHD.
LTKM BHD
MEGAN MEDIA HOLDINGS
NV MULTI
OCTAGON CONS.BHD.
P I E INDUSTRIAL
PETRA PERDANA BERHAD
POH HUAT
QL RESOURCES BHD.
SUPERMAX
TAT SANG HLD
UCHI TECHS.BHD.
UNICO-DESA
UNIMECH GROUP
MAGNITECH

CHAPTER 8: INTERVIEW ANALYSIS

8.1 Introduction

This chapter answers research question 4 - to gather further insights into the issues related to disclosure behaviour by examining the perceptions of influential market participants with regard to accuracy and earnings management. The main purpose of the interviews is to find evidence to support or challenge the quantitative research findings when set against the practice and opinions of market participants. This will contribute towards extending ideas on those factors influencing forecast accuracy and earnings management behaviour which may not be captured in the statistical model. It also looks for other interesting or unexpected findings which may help in the design of future research. Interview analysis results may also help to explain and interpret the findings and relate this to theory, in filling gaps and providing evidence that cannot be captured from quantitative evidence. Table 8-1 lists the issues discussed in the interviews.

Table 8-1: Issues discussed in the interviews

Interviewees	Issues discussed	Section
<ol style="list-style-type: none"> 1. Chief financial officer 2. Company executive director 3. Financial analyst 4. Regulator (SC) 	Role and effect of regulation	8.2
<ol style="list-style-type: none"> 1. Chief financial officer 2. Company executive director 3. Financial analyst 	Importance of meeting forecast	8.3
<ol style="list-style-type: none"> 1. Chief financial officer 2. Company executive director 3. Financial analyst 4. Regulator (SC) 	Possibilities of managing earnings	8.4
<ol style="list-style-type: none"> 1. Chief financial officer 2. Company executive director 3. Financial analyst 4. Regulator (SC) 	Factors influencing forecast accuracy	8.5

8.1.1 Interview method

Interviews were conducted using a semi-structured approach (see Section 4.8.1 of Chapter 4). In this approach, the interview questions (see appendix 8-A, 8-B, and 8-C), planned some time before the interview, are sent to each interviewee in advance. The questions were structured and cross-referenced to the research hypotheses and research questions being tested. This ensured that the research issues addressed by the hypotheses were discussed. Each interview lasted one to one and a half hours. With the consent of the interviewee, the interviews were recorded in both note form and on tape.

8.1.2 The interviewees

In order to understand the factors associated with forecast accuracy, and to validate the quantitative findings against the practice and opinions of those involved in making the earnings forecast, seven participants in the forecast disclosure decision were

interviewed, namely one chief financial officer, four company directors, one financial analyst and a regulator from the Securities Commission (SC). General information about the interviewees is provided in Table 8-2.

Table 8-2: Background of interviewees

Interviewees	Industry	Position held
CFO	Trading and services	Chief Financial Officer who has shares and was involved in the company's IPO
D1	Property	Executive Director appointed to manage the company and who was involved in the IPO
D2	Plantation	Executive Director appointed to manage the company and who was involved in the IPO
D3	Trading and services	Executive Director who is also the owner of the company and was involved in the IPO.
D4	Trading and services	Executive Director who is also the owner of the company and was involved in the IPO.
FA		Senior Financial Analyst
R		Regulator (SC)

Interviews were conducted in Johor Bahru and Kuala Lumpur and the interviewees selected via the researcher's contacts. The interviewees could be categorised into three different groups: (a) company directors or chief financial officers (representing those preparing the forecasts), (b) financial analysts (representing those using the forecast information), and (c) the regulator. The four company directors and the chief financial officer selected for the interviews were involved in the preparation of the earnings forecast at the time of the IPO, and they have remained in their current position within these companies since then.

Each interview quotation is numbered for ease of reference to later sections. Each quotation made by the respondent is also labelled. For example (CFO-1) refers to the

first quotation made by chief financial officer, while (D2-3) refers to the third quotation made by the director of company number two.

8.2 Role and effect of regulation

The following are responses from interviewees on issues related to the role and effect of regulation.

8.2.1 Responses from market participants on regulation

The chief financial officer, company directors and financial analyst gave their views on regulation of the earnings forecast. All of the interviewees agreed that regulation would help to protect investors. The chief financial officer believes that, although regulations imposed may help to protect investors, having too many regulations may affect businesses and is not good for foreign investors. He said:

“By having regulation this will help to protect investors but over-regulation is not good for foreign investors. Regulations slow things down; the economy is so slow because there are too many regulations” (CFO-1).

“Regulation is a real pain. The requirement is too stringent, unique regulation but not up to world standard.” (CFO-2).

The managers of companies expressed different opinions on how regulation of the earnings forecast affects the company. One company director said that regulation of the earnings forecast may help them improve their assumptions and come out with a more realistic earnings forecast. Being scrutinised by the regulatory body, as well as the risk of a penalty for failing to achieve the forecast, means they will be more conservative in their forecast to ensure that the forecast made is achievable. Another company director

is of the opinion that, without the regulation, the company will make a more optimistic forecast in order to entice investors during the IPO.

Opinion was also sought from the users of financial information. The financial analyst's comments on this were:

“The regulation is in place but whether it is enforceable or not, I'm not sure. I don't know whether SC review or queried the earnings number (forecast made by company). Sometimes when you look at it, it seems that it doesn't make sense.” (FA-1)

This comment indicates that earnings forecasts made by the IPO applicant companies are questionable and likely to have gone unchallenged by the regulator. The concern that an un-reasonable earnings forecast may be being made by the applicant company was acknowledged by the regulator, who said that the evidence wasn't clear at the time they review the forecast.

8.2.2 Responses from the regulator

The regulator was asked about his role in the capital market. He was also asked about the reason for the imposition of a compulsory profit guarantee on second board companies effective from 1 July 1997 to 30 April 1999. He said:

“The most important role of the Securities Commission is investor protection. Investors depend upon the information that goes into the prospectus to determine if they will invest in the company. It is thus important that investors are given information that is accurate and complete in order that they can make and evaluate the risks and merits of their investment decisions. (R-1)

The response implies that regulating the earnings forecasts being made by IPO applicant companies, helps investors with their investment decisions, thereby protecting their interests.

Commenting on the reason why the SC imposed a compulsory profit guarantee on all second board applicant companies (effective from July 1998 to 30 April 1999), the regulator said the following:

“The main board requirement for listing is stricter than the second board requirement. Main board companies are bigger in size and they must have a stricter profit track record. When we imposed the profit guarantee [we improved] there is regulatory intervention for second board companies. The liability became personal.”(R-2)

“We want to ensure that only people who genuinely require capital with the genuine business come in and offer securities for the people for its capital.”(R-3)

The responses indicate that profit guarantee regulations were imposed on the second board companies because of the different requirement regarding earnings track record and company size. By allowing them to take their business public, directors and promoters are made personally responsible for their forecasts. According to the regulator, this is to ensure that only genuine businessmen, who are able to deliver the idea that they are likely to make money, come into the market. This confirms the regulator’s message, i.e. that investor protection is what matters.

The regulator was then asked about the rationale for lifting the profit guarantee regulation on 30 April 1999, which was replaced by a share moratorium on all regulated companies. He said:

“When you build up the company, we want to see you around for the next 2 to 3 years at least, to provide some level of continuity. That is the whole intent. As a regulator this is the only thing we can do ... they should stay at least for a reasonable period before they can actually cash out.”(R-4)

The response to this question implies that the reason for lifting the profit guarantee regulation was to ensure that the owners showed more commitment to the business and were not taking the business public just for the purpose of cashing out. What the regulator tells us is that they have begun to change their view that the market's primary concern is the idea of a penalty if things go wrong. He felt that making managers stay with the company is more important than the profit guarantee because, if things go wrong, the guarantee doesn't help much. What the regulator wants is for the company to do well and this is likely to happen if the people who brought it to the market stay with it.

8.2.3 Comments

The interview with the regulator has helped to clarify the role of the regulator and the reason for the profit guarantee regulation being made mandatory on the second board applicant companies during the period 1 July 1998 to 30 April 1999. The regulator suggested that, because second board companies are relatively smaller in size and have a less strict earnings track record, having a profit guarantee (where the liability is personal on the guarantors) would make second board companies more responsible in their forecasts. The change in regulation away from the profit guarantee made by the SC was in the best interests of the public and reveals a strong commitment by the regulator to protect the public interest.

8.3 Importance of meeting forecast

The following are responses from the market participants on issues related to the importance of meeting forecast.

8.3.1 Responses from the market participants

Market participants were asked how important they felt it was for them to meet the forecast made in the prospectus. All the company directors interviewed, the chief financial officer and the financial analysts responding to this question were of the opinion that meeting earnings forecast is very important. They would be concerned, for a variety of reasons, if the company did not meet the forecast disclosed in the prospectus. Table 8-3 summarises these concerns.

Table 8-3: Concerns for not meeting forecasts

	CFO	Professional managers		Owner-manager		FA	Number of interviewees (total)
		D1	D2	D3	D4		
Share prices	√			√	√	√	4
Board Query		√	√				2
Company reputation	√	√	√			√	4
Following rules/SC queries		√					1
Analyst comment and coverage					√	√	2

Of six respondents interviewed, four suggested that their most significant concern for the company would be the effect on share prices and the company's reputation. The chief financial officer said:

“Accountants always want to live up to their expectations. The greatest fear for not meeting the forecast is the effect on share prices. Share price is the only driver for the listed company. Market consideration and perception of investors of the company is very important” (CFO-3).

This response implies that a change in the share price would be their main concern, since share prices provide motivation for companies. Another company director expressed the same concern regarding not meeting earnings forecast. He said:

“Meeting the earnings forecast has an influence on share prices. It has a direct impact on share prices. At that time we want to make sure our share prices are going up.” (D3-1)

The financial analyst interviewed shared the view that meeting earnings forecast is very important, as it reflects the integrity of the company. This will eventually, have an effect on the share price and analysts following the company.

“It is very important for the company to meet the forecast. It is the integrity of the company and this will affect the price performance of the company stock. Analysts may not want to follow the company if they do not meet their forecast.” (FA-2).

This analyst’s concern was shared by another company director. He said:

“If we do not meet our forecast, analysts will not follow our shares. We are concerned about comments on the management team made by the analysts. This will have an effect on the share prices.” (D4-1).

The comments made by the chief financial officer, financial analyst and two company directors imply that meeting the earnings forecast is very important because they are afraid that not meeting the forecast will have a negative impact on the company’s share

prices. This view, however, is in contrast to the response made by another two company directors (the professional managers of the company). Their main concern (should the earnings forecast not be met) was queries from members of the board of directors. Because these directors are also that of major shareholders, they feel that they are responsible to both the shareholders and the board of directors. Failure to achieve the forecast may affect the planning of the company and this will eventually affect the return on investors' investment.

“It is very important to meet the forecast. When we see that we are about to achieve the forecast, then we feel relief. If we see that our actual is far below forecast, we are worried because we have to face the board.” (D2-1)

“Firstly, we are responsible to the board of directors. If the variance is too big, this will also affect company's planning. Another important concern for not meeting forecast is the effect on the ability of the company to pay dividend because one of the main reason for investors to invest is dividend ”. (D2-2)

The response given by the above director implies that his main concern is for the shareholders who have invested in the company. As a director, he feels that his responsibility is to increase the value of the company and increase the wealth of the shareholders.

This is also the concern of one of the other professional managers, though he also expressed his concern for the Securities Commission queries if his company does not meet its forecast. He said:

“It is very important. As a management we are responsible to the board of directors and queries from the securities commission. We don't want to be penalised by the SC, in particular for this company, we are not the owner of the company but just a manager. Our main concern is following rules. There is no point in breaking the rules as you are

paid to do the job. If you are the owner of the company, you may be willing to take extra risk for your own personal glory or wealth.” (D1-1).

8.3.1 Comments

All the company directors interviewed suggested that meeting the earnings forecast is very important to them for a number of reasons. Perhaps this explains why the examined IPO companies managed their earnings significantly either in the first year after the IPO or in the year they make forecast (see Table 6-2 in Chapter 6).

The main concern of the owner-manager directors is share price, while the professional managers are mainly concerned about queries from directors or shareholders. This response can be linked to the statistical result of the earnings management study and the factors associated with earnings management.

With regard to the factors associated with earnings management, the interview findings have helped to provide further insight into the motivation for companies to come closer to the forecast. The findings also confirm some of the factors tested. Ranking their concerns for not meeting the earnings forecast, four of the six respondents cited their main concern as being share prices. Unlike the two owner-managers, both of the professional managers interviewed had no concerns regarding the share prices being affected by not meeting the earnings forecast. However, the concerns of the owner-manager company directors are consistent with the statistical results, i.e. that management ownership has a positive and significant association with earnings management (see Table 7-14, and Section 7.8.3 in Chapter 7). This indicates that the greater the percentage of managers' shareholdings, the more concern they have for the changes in share prices, as they will suffer more from any decline in share prices. For professional managers interviewed, they have no concern in the changes in share prices because by having little or no interest in the company their wealth is less affected by its

IPO share market performance. This result indicates that the differences in attitude of managers are due to differences in ownership in the company.

8.4 Possibilities of managing earnings

The following section discusses responses from the market participants and regulator on issues related to the possibilities of companies managing their reported earnings.

8.4.1 Market participants

Company directors and the chief financial officer were asked about the options open to them whenever there is a possibility that their company performance might fall below the forecast earnings. The chief financial officer said:

“We have 1001 choices but it is confidential. In a political way we may say by improving the operation. This will be discussed every two weeks and the management team will decide.” (CFO-4)

The response given by the chief financial officer implies that the company has accounting choices and incentives for presenting financial performance. Another company director said:

“Last time we had a profit guarantee of 3 years. If you don't meet it, you take out your own money. If I am in that situation, do you think I am going to make a forecast which is not obtainable? What speaks in the book is figure. If I can convince you on paper, I have one year to make it happen. As long as you don't get caught, then it is okay.” (D3-2)

“To make the public have a certain interest in your shares when you do your IPO, you must show that.. But that is all creative accounting. This is just to entice people. You have done over 200 companies, you tell me how many companies who actually performed to what they promised.”(D3-3)

It appears from the above response that company directors are aware of the consequences for not meeting guaranteed earnings forecast but they are not willing to accept that personal liability. The response also implies that they are using creative accounting to manage their results to come closer to the forecast. They are aware that they can use operating and discretionary accounting methods to adjust earnings to a desired outcome.

The same question was asked of the financial analyst:

“Companies are managing earnings within the regulation - maybe. The tendency is to write off whatever they can write off especially during the bad years. In that case everybody is not doing well.”(FA-3)

“Certain owners, even after the lock-up period, use their shares as collateral. They might manage their earnings to maintain the share prices in order to get higher values.”(FA-4)

The response given by the financial analyst confirms the quantitative result that companies continue to manage their earnings upward in the period after the IPO to maintain the share prices (see Table 6-2 in Chapter 6). The speculation made by the analyst, on the tendency for companies to write off items during a bad economic period, helps to explain the significant negative discretionary accruals documented by IPO 1996 companies in the year after the IPO (see Section 6.5.2).

Another company director said:

“We are very clear about that. We didn’t see how we can change this other than cost saving. Certain projects can be deferred to conserve cash flow especially in 1998 [the economic crisis period].” (D1-2)

“We don’t have this problem. We are lucky that we manage to meet our forecast. However, I know that in certain industries (e.g. Timber base) management may purposely make a wrong assumption just to make it attractive. There are also companies who manipulate by creating another company in another country to record higher sales in order to achieve the target for higher forecast. ” (D2-3)

8.4.2 The regulator

The regulator said:

“We depend a lot on the integrity of the information provided to us on the basis of the strength of the legal provision which regulate such transaction. Any information submitted to us attracts a heavy penalty on any form of misleading information. On that basis, we do rely quite a lot on what is submitted to us.” (R-5)

“As a regulator, there is nothing we can do about this because the accountant has audited the numbers. Although we can go and look at it again, we can’t do that on everybody.” (R-6)

“We don’t have the data but I personally think they manage their account.” (R-7)

8.4.3 Comments

The interviews appear to suggest that company managers /directors are aware of the accounting choices which they may have when reporting their income to achieve the target. The financial analyst interviewed also believes that companies manage their

earnings (especially during an economic crisis period), suggesting that they do this to maintain their share prices, and thereby obtain a higher value for shares being used as collateral. Responses from the interviews indicate quite clearly that earnings management takes place in managing reported income closer to the target after the IPO. The regulator on the other hand, believes that by imposing a heavy penalty on misleading information, there is a certain integrity in the information provided by the company.

8.5 Factors influencing forecast accuracy.

The interviewees were asked about factors they considered to be most influential in meeting the forecast. Four company directors, the chief financial officer, one financial analyst and the regulator responded to this question. Table 8-4 shows the factors considered influencing earnings forecast accuracy by the interviewees.

Table 8-4: Factors influencing earnings forecast accuracy – views from interview respondents

	CFO	D1	D2	D3	D4	FA	SC	(7)
Market demand and supply (Market forces)	√	√	√	√	√	√		6
Economic condition	√	√	√	√	√	√	√	7
Change in govt policy			√					1
Prices of raw material and finished products	√						√	2
The character of the promoter							√	1
Management share ownership				√				1

8.5.1 Market participants

As shown in Table 8-4, the most frequently cited factor influencing earnings forecast accuracy is economic condition. All interviewees, except the regulator, said that market demand and supply (dictated by the economic condition) is the most influential factor in meeting the forecast. The response suggests that economic condition determined market forces beyond their control. One company director said:

“There are two things; one is demand and the other one is supply (in our case it depends on the company capability on launching project as we are in the property industry which is heavily regulated). Although difficult, this can be controlled or not really affect our forecast. The one that we cannot control is demand. There are many factors such as economic condition and change in consumer taste that affect demand.” (D1-3)

“The most influential factor in achieving the forecast is prices of raw material and finished goods. The difference between the two prices would depend on or be dictated by the demand of the product and this is determined by the economic condition. A lot of other factors are internally managed factors that we can control.” (CFO-5)

“They should know the business, where the economy is going, demand and supply, what’s driving the revenue and cost, and company’s operating condition. Secondly there are external factors of economic condition.” (FA-5)

Another company director gives the same opinion:

“We are in the industry which is so market driven. We are not the one who is going to decide, it’s all market forces.” (D4-2)

Another company director said that there are internal and external factors involved, both of which may influence company performance. Internal factors are something that the

company can manage, but an external factor (such as economic condition) has a greater influence on company performance and is beyond their control.

8.5.2 Regulator

The interview with the regulator (SC) gave a different ranking on the factor most influential in meeting earnings forecast. In contrast with responses given by the company directors and the chief financial officer (who said that economic condition is the most influential factor in meeting the forecast), the regulator said:

“First of all, the promoter is very important, secondly the operating environment. If they are genuine businessmen that want to ensure the company grows, then half of the battle is won. If they themselves are not sincere, given the best operating environment you still never get a right number...” (R-8)

“If the intent is to make sure the company grows, then the forecast will be quite conservative. Management make optimistic forecast with the views towards hopefully harnessing a better share price rather than being optimistic sincerely.”(R-9)

“The moment the company is listed, they don’t run the business anymore. They are busy managing the share prices.” (R-10)

“There is a case that within one year of listing the company went down. When you looked at the historical numbers it shows that all historical numbers are all managed. When the intent to deceive comes in, it is not something that we can regulate.” (R-11)

The above comments support the study’s quantitative findings and our speculation of management behaviour and the motivation for earnings management practices during the period of study (see Section 6.5.2 of Chapter 6). This indicates that changes in regulation will change management behaviour, and that this is something which cannot

be regulated. The response from the regulator implies that, other than looking at the company's earnings track record and business plan of expansion, investors should also focus on the qualitative factors. This means that they should look at the strength and quality of the promoters and management. Despite the fact that other things might seem to be favourable, the character and integrity of the promoter is very important in ensuring the businesses do well.

8.5.3 Comments

Results from the interviews show that all interviewees, except the regulator, believe that economic condition was the major factor in determining whether companies met or failed to meet their earnings forecast. Table 8-5 shows the factors influencing forecast accuracy which were mentioned by the interviewees.

Table 8-5: Factors influencing forecast accuracy-interview findings and statistical results

Interview findings		Statistical results	
Factors	No of interviewees suggesting	Significant?	Reference
Economic condition (demand and supply, prices of raw material and finished goods)	7	Yes	Table 5-18 in Chapter 5
Character or integrity of the promoter	1	Not tested	
Share ownership of the manager	1	No	Table 5-18 in Chapter 5
Change in government policy	1	Not tested	

Total number of interviewees was 7

The findings would appear to suggest that the main influence on earnings forecast accuracy is economic condition. During periods of volatile, (crisis and recovery period), uncontrollable aspects of the business environment in which the company operates (such

as changes in exchange rate, and interest rate) influence the company's cost structure and demand for its products. As a result, this will affect the company's reported earnings and cause earnings forecasts to be inaccurate. This confirms the study's quantitative results, which document how companies in the economic crisis and recovery period have greater forecast error than companies in the pre-crisis period (see Table 5-18 of Chapter 5). Other factors relating to the change in government policy (for certain industries), and the character of the promoter, were not tested statistically in this study. The regulator on the other hand suggested that the character of the person behind the company and their reasons for taking the company public are the most important factors in determining the accuracy of earnings forecast. He suggested that, if the promoter's intention is to see the company grow, then their forecast will be more conservative.

8.6 Summary and conclusions

This chapter has reported the findings from interviews held with 6 market participants (four company directors, one chief financial officer, one financial analyst) and the regulator, on issues related to forecast accuracy and earnings management in the annual report of IPO companies.

The interview findings showed that meeting the earnings forecast is very important, and indeed the interviewees were unanimous on this point. They suggested that this is important for a number of reasons (see Table 8-3). This supports the statistical findings, which showed that the sampled IPO companies managed their earnings upwards significantly in the first year after the IPO or in the year they made forecast (see Table 6-2 in Chapter 6). The owner-manager's main concern for share prices and company reputation can be linked to the statistical results of significant positive association between earnings management and management ownership, indicating that high ownership managers manage earnings upwards more significantly than low ownership

managers (see Table 7-14 and Section 7.8.2 of Chapter 7). The professional managers interviewed, were unconcerned about changes in the share prices, because by having little or no interest in the company, their wealth is less affected by its IPO share market performance. This result indicates that the behavioural differences of managers are due to differences in ownership in the company.

The findings from the regulator's interview reveal that the reason for having a profit guarantee is to make companies more responsible in their forecasts. This indicates a strong commitment by the regulator to protect the public interest. The result of quantitative analysis in relation to forecast accuracy however, does not support the expectation of the regulator. There is no significant association between forecast accuracy and regulation. Although there is regulation of earnings forecast, more than 60% of the examined companies have a negative forecast error, which indicates that, as well as not meeting their forecasts, companies are positively biased in their forecasting (see Table 5-4 and Section 5.3 of Chapter 5). Quantitative results show that, even where economic conditions are clearly deteriorating and the trend in reported profits is downward, managers continue to make optimistic forecasts, resulting in greater negative forecast error. This indicates that regulations affecting the industries who became regulated in 1996, did not have the reforming effect intended by the regulator. One possible explanation for a lack of observable action from the regulator (in Malaysia's case), is the provision in the regulation that enables the company to apply for a variation to the profit guarantee agreement (see Section 5.9 of Chapter 5).

On the factors determining whether companies can meet their earnings forecast, the chief financial officer and all the company directors confirmed that economic condition is the most influential factor. This reinforces the statistical results reported in Chapter 5 (see Table 5-18 and Section 5.8.2). However, although the interviewees mentioned this is to be the most important factor influencing forecast accuracy, their response could have been instigated by the other research question, which was - how does economic condition affect their company?. This is because, the interview questions were sent to

the interviewee beforehand, (see question 8, Section B in Appendix 8-A). On the other hand, although the interview question did ask about the effect of regulation, it is surprising that none of the interviewees mentioned this in relation to forecast accuracy. Perhaps companies do not see regulation as having an impact on whether or not they meet their earnings forecast, or there may be other reasons for them not mentioning regulation.

In contrast to the company director and chief financial officer, the regulator suggested that the integrity of the promoter is the most important factor in determining whether companies meet their earnings forecast. He said that the intention of the promoter will determine the forecast figure and that this intention is not something which they can regulate. This factor is, however, not tested in this study though it may provide an interesting variable to be tested in future research on earnings management.

On the possibilities open to companies managing their earnings, the interview findings indicate that company managers are aware of the choices open to them when reporting their income. Some of the choices are quite clearly those made on a prudent basis. Two examples of this are: deferring the project and writing off items during a bad economic period. It is clear from the analysis that some choices are within the rules (see CFO-4 and D1-2 in Section 8.4.1) and some are outwith the rules, such as transactions with related parties for the sole purpose of meeting a sales and earnings target, which may be legitimate but subject to manipulation (see D2-3 in Section 8.4.1). From the interview responses it is apparent that both kinds of choices exist, but the researcher cannot tell the difference between the manager who makes choices within the rules and the manager who makes choices outwith the rules. This will have an important implication for users of financial information because the earnings report made by IPO companies may not indicate the actual performance of the company. This will present a challenge to future researchers to develop a more powerful earnings management model, one able to differentiate between fraudulent choices and those that comprise aggressive but acceptable methods of accounting discretion.

The next chapter concludes the thesis, summarising the main results and suggesting areas for further research.

Appendix 8-A: Interview outline – Company director

Research objective	Research question	Issue for discussion – company director
		Section A – general information on the process of preparing the forecast 1. Were you involved in the IPO where a forecast was disclosed?
		2. What was the main role of prospectus your company produced at the time of listing? Do you think it met the information needs of investors? 3. What were the main steps you undertook to prepare the prospectuses? 3b. Did the company have sophisticated forecasting system?
Sub-objective 3		4. What was the most influential factor in making the forecast for the prospectus?
Sub-objective 3		5. Are there any other media through which you disclosed your earnings forecast? What motivated you to do so?
		Section B – factors influencing forecast accuracy
Sub-objective 3	Research question 2b and 4	6. What was the most influential factor in meeting the forecast?
Sub-objective 3	Research question 2b(1) and 2b(2)	7. How did regulation affect your company? 8. How did economic condition affect your company
		Section C – importance of meeting forecasts
Sub-objective 3	Research question 4	9. How important did you feel it was for the company to achieve the forecast? 10a. If yes, did you have any worries about not getting the forecast match? 10b. Did you monitor the forecast? As you work through the year, you found out it looks like your company might come in below the forecasted earnings. Did you go back to see the forecast? What choices might your company have? Did you discuss it with anyone? 11. In the IPO, do you think meeting the forecast had a material influence on your company's share prices? 12. Are you concerned about management's loss of reputation for accuracy?

Appendix 8-B: Interview outline – Regulator

Research objective	Research question	Issue for discussion- Regulator
Sub-objective 3		1. Were you involved in the IPO ? 2. What was the main role of the prospectus produced by the company at the time of listing? Do you think it met the information needs of investors?
Sub-objective 3		3. Is there any other way of obtaining information about IPO earnings forecast?
Sub-objective 3	Research question 2	4. What is the credibility of the accounting information disclosed?
Sub-objective 3	Research question 4	5. How important did you feel it was for the company to achieve the forecast?
Sub-objective 3	Research question 4	6. How influential was the fear of getting the forecast wrong?
Sub-objective 3	Research question 4	7. What did you most fear if the forecast had been wrong?
Sub-objective 3	Research question 4	8. What are the factors most influencing the accuracy of forecast made?
Sub-objective 3	Research question 4	9. In the IPO, do you think meeting the forecast had a material influence on the company's share prices?
Sub-objective 3	Research question 2(b) and 4	10a. How did regulation affect the forecast made by the company? 10b. How did economic condition affect the forecast made by the company?
Sub-objective 3	Research question 4	11. What was the reason for the imposition of a compulsory profit guarantee on second board companies, effective from 1 July 97 to 30 April 1999?
Sub-objective 3	Research question 4	12. Why was the profit guarantee regulation replaced by the share moratorium in May 1999?
Sub-objective 3	Research question 4	13. Do you believe that company's make choices in the year of forecast issuance to match the forecast?

Appendix 8-C: Interview outline – Investor (Financial analyst)

Research objective	Research question	Issues for discussion – investor
		Section A – general information on uses of earnings forecast
Sub-objective 3		<ol style="list-style-type: none"> 1. Did you invest in the IPO? 2. What was the main role of the prospectus produced by the company at the time of listing? Do you think it met the information needs of investors? 3. Is there any other way of obtaining information about IPO earnings forecast? If yes, what motivated you to do so?
Sub-objective 3	Research question 2 and 4	<ol style="list-style-type: none"> 4. What is the credibility of the accounting information disclosed?
		Section B – importance of meeting the forecast
Sub-objective 3	Research question 4	<ol style="list-style-type: none"> 1. How important did you feel it was for the company to achieve the forecast?
Sub-objective 3	Research question 4	<ol style="list-style-type: none"> 2. How influential was the fear of getting the forecast wrong? 3. What did you most fear if the forecast had been wrong?
		Section C. – role of regulation
Sub-objective 3	Research question 2(b) and 4	<ol style="list-style-type: none"> 1. How did regulation affect the forecast made by the company? 2. How did economic condition affect the forecast made by the company? 3. Do you think the company manage their earnings to match their profit? Eg. By managing working capital, overstating inventory or debtors by recognising premature sales.

CHAPTER 9: CONCLUSIONS AND SUGGESTIONS FOR FURTHER RESEARCH

9.1 Introduction

This chapter summarises the main results and conclusions of the thesis. Section 9.2 outlines the research objectives, questions and methods used to answer the research questions. Section 9.3 reports the results of the statistical findings and the results of hypotheses testing. Section 9.4 highlights the contributions of the study. Section 9.5 highlights implications of the study. Suggestions for further research are provided in Section 9.6.

9.2 Summary of research objectives, questions and methods

This study has sought to examine the link between the forecast error of management earning forecasts disclosed in IPO company prospectuses and the earnings management behaviour of company managers, following the establishment of additional regulation on earnings forecast which became effective on 1 January 1996. The research objectives, questions, and methods are summarised below.

9.2.1 Research objectives

The objectives of the study are as follows:

Main objective: To make a contribution to knowledge in exploring the link between earnings management and forecast error, controlling for economic condition and other company characteristics.

- Sub-objective 1:** To evaluate the extent of forecast accuracy of mandatory earnings forecasts disclosure (particularly during the period of revised regulation and the period of financial crisis in mid-1997) to determine if there is a significant association between forecast accuracy and regulation, and the economic conditions, controlling for other corporate characteristics.
- Sub-objective 2:** To determine if there is evidence of earnings management in the financial statements of IPO issuers in the year of IPO and the subsequent regulated years. In particular, to examine the impact of regulation, economic condition and other corporate characteristics on forecast accuracy following the revised regulation in 1996 and economic crisis of 1997.
- Sub-objective 3:** To use interview responses to complement results from quantitative analysis.

9.2.2 Research questions

The thesis aims to answer the following research questions:

- RQ1:** Is there a significant association between discretionary accruals and the magnitude and direction of forecast error, controlling for other factors in the year which the company made their forecast?
- RQ 2(a):** What is the extent of forecast accuracy?
- RQ 2(b)** Is there a significant association between:
- i) Forecast accuracy and regulation?
 - ii) Forecast accuracy and economic condition?
 - iii) Forecast accuracy and corporate characteristics?
- RQ3:** Is there evidence of positive discretionary accruals in the financial statements of IPO issuers in the year of issues?

RQ4: What are the perceptions of the regulator and the market participants on issues related to accuracy and earnings management?

9.2.3 Research methods

In answering the above research questions, this study uses quantitative univariate tests and multiple regression analysis. A qualitative interview-based technique is used to give further insights and to help in the interpretation of quantitative results. The methods used to answer each research question are summarised as follows.

Research question 1 has been answered by running multiple regression models for earnings management with the dependent variable of discretionary accruals, and the independent variables of forecast error, economic conditions, and company characteristics. Discretionary accruals are computed based on the current accruals Modified Jones (1995) model defined in Section 4.3.2.1, and the calculation of forecast error was computed as defined in Section 4.2.2 of Chapter 4. A number of tests were performed to assess whether dependent variable data in the study met the assumption of normality (see Section 4.6 of Chapter 4). Because tests on data indicated significant deviation from normality, discretionary accruals (the dependent variable) were transformed into normal scores (see Section 4.7.2.2 of Chapter 4). Multicollinearity among the independent variables was checked using Pearson correlation (see Section 7.7.2 of Chapter 7). Other multicollinearity tests of tolerance, variance inflation factor, eigenvalue and condition index were also performed (see Section 7.7.2 of Chapter 7). The regression model was run based on a normalised dependent variable. Independent variables reported as significantly influencing discretionary accruals were decided based on statistical significance at either the 1% or 5% level.

Research question 2 has been answered by calculating the forecast accuracy of the examined companies. This calculation is based on the relative size and the direction of the difference (forecast error) and the relative size of the difference or the magnitude of

the error (absolute forecast error), as defined in Section 4.2.2 of Chapter 4. The extent of forecast accuracy was tested using a parametric t-test and the non-parametric Sign and Wilcoxon test (see Section 5.3 of Chapter 5).

Research question 3 has been answered by computing the discretionary accruals of examined companies in the year the IPO regulation applies. Discretionary accruals are computed based on the current accruals Modified Jones (1995) model defined in Section 4.3.2.1 of Chapter 4. Since the data is not normally distributed, the study reports medians. The extent of earnings management for each investigated year was tested using the Wilcoxon Signed Rank test on the median (see Section 6.5.1 of Chapter 6).

Research question 2(b) has been answered by running a multiple regression model for forecast accuracy with absolute forecast error as the dependent variable, and economic condition, regulation and company-specific characteristics as independent variables. Forecast accuracy is measured by absolute forecast error as defined in Section 4.2.2 of Chapter 4. Preliminary analysis was carried out on the data before conducting specific statistical techniques to ensure that the data was not violating any of the assumptions made by the individual statistical test (Pallant, 2001). Because dependent variable data is not normally distributed, absolute forecast error was transformed into normal scores (see Section 5.7 of Chapter 5). Univariate analysis was conducted to explore the direction and the strength of the relationship between the dependent variable and the independent variables (see Section 5.5 of Chapter 5). Multicollinearity among the independent variables was checked using Pearson correlation. Considering that multicollinearity may exist even when simple correlations are comparatively low (Gujarati et al., 1995, p.336), other multicollinearity tests of condition indices, variance inflation factor (VIF), tolerance and eigenvalues were examined (see Section 5.7.1 of Chapter 5). Multiple regression results provide information about the model as a whole (adjusted R^2) and the relative contribution of each of the variables that make up the model (see Section 5.7.2 of Chapter 5). A variable showing statistical significance at either the 1% or 5% level is reported as significantly influencing the forecast accuracy.

Research question 4 has been answered by conducting personal interviews with four company directors, one chief financial controller, one financial analyst and a regulator from the Securities Commission (SC). The interviews followed a semi-structured approach to ensure that the same general areas of information were collected from each interviewee while still allowing a degree of freedom in getting the information from the interviewees (see Section 4.8.1 of Chapter 4). All interviews were tape recorded and transcribed based on the recordings and notes taken during the interviews (see Section 4.8.3 of Chapter 4). Interview findings were used to complement results from the quantitative analysis.

9.3 Statistical results and hypotheses testing

9.3.1 Forecast accuracy study

The examination of 242 IPO companies' prospectuses and annual reports for 1996 and 2002 revealed that only 87 (35.9%) of the examined companies had a positive forecast error. This finding indicates that, for the period of study, a large percentage of Malaysian IPO companies were not meeting their forecasts. The results of frequency distribution of forecast error also revealed that the largest number of companies (57 companies or 23.6%) had a negative forecast error within the 10% SC tolerated level (see Table 5-4 in Chapter 5).

Examining the factors influencing the accuracy of forecasts made in the company prospectuses, multiple regressions analysis results show that four variables, namely crisis, recovery, earnings reduction and auditor reputation, were significantly associated with the accuracy of forecasts at either the 1% level or 5% level. Company age was marginally significant at the 10% level in influencing forecast accuracy. Of particular interest is the result for regulation which was expected to have a significant association

with accuracy. The regression result shows that regulation of specific companies has no significant impact on the accuracy of earnings forecasts (see Section 5.7.2 of Chapter 5). In an alternative test of regulation using a dummy variable to distinguish among the companies giving a profit guarantee (i.e. between those choosing a moratorium and those not regulated), a profit guarantee had a positive coefficient which could indicate that companies providing this had a greater forecast error in both directions than those of the other companies. The coefficient, however, was not significant (see Section 5.8.1 of Chapter 5).

An alternative test was carried out examining the factors influencing the relative size and the direction of the difference (forecast error). The multiple regression result shows that the four variables, i.e. crisis, recovery, earnings reduction and forecast horizon, have a significant negative association with forecast error (see Table 5-19 of Chapter 5). This indicates that volatility in the economy during the crisis and recovery period, manager's optimism and a longer forecast period (meaning companies have more difficulty in achieving their forecast), resulted in negative forecast error. Table 9-1 summarises the results of multiple regression analysis for absolute forecast error and forecast error.

Table 9-1: Factors influencing the magnitude of the error and the relative size and the direction of the difference

Independent Variables	Dependent variables					
	The magnitude of the error (Absolute forecast error)			The magnitude and the direction of the error (Forecast error)		
	Expected sign	Sign observed	Statistically significant	Expected sign	Sign observed	Statistically significant
CRISIS	+	+	√***	-	-	√***
RECOVERY	+	+	√***	-	-	√***
REGULATION	-	+	×	+	+	×
ERED	+	+	√***	-	-	√***
MGTOWN	-	+	×	+	+	×
FZON	+	+	×	-	-	√***
AGE	-	-	√*	+	-	×
LEV	+/-	-	×	+/-	+	×
AUD	+/-	+	√**	+/-	+	×
BOARD	+/-	+	×	+/-	+	×
SIZE	+/-	+	×	+/-	+	×

Key:

- √*** statistically significant at the 1% level
- √** statistically significant at the 5% level
- √* statistically significant at the 10% level
- × not statistically significant
- + positive association
- negative association

The statistical results noted above were used as a basis for rejecting the null hypotheses or for accepting the alternative hypotheses developed in Section 4.2.3 of Chapter 4.

Consistent with expectations, companies in the period of economic crisis and the period of economic recovery have a significant positive association with the magnitude of error, and a significant negative association with the magnitude and direction of forecast error.

These results indicate that companies in the crisis and recovery period are significantly less accurate in their forecast in both directions compared to companies in the pre-crisis period. Results from the association between changes in economic condition and forecast error show that companies in both economic periods have a greater negative error compared to companies in the pre-crisis period. This confirms the research hypothesis that, during a period of greater volatility in the economy, it is more difficult for companies to meet their profit forecasts.

The significant positive association between absolute forecast error and earnings reduction implies that a reduction in actual earnings after the IPO is associated with greater error. This indicates that the more optimistic the promoters or managers are in forecasting, the less accurate is the forecast. On the other hand, a significant negative association between earnings reduction and forecast error indicates that a reduction in actual earnings after the IPO, is associated with more negative error.

Auditor reputation has a significant positive association with absolute forecast error, suggesting that a high reputation auditor would result in a less accurate forecast. However, there is infact no significant association between auditor reputation and the forecast error implying that auditor reputation has no significant influence on whether companies are having a more positive or more negative error. The significant negative association between forecast error and forecast horizon indicates that a longer forecast horizon is associated with a more negative forecast error. The forecast horizon, however, has no significant association with the accuracy of forecast (absolute forecast error). The 11 variables included in the model were able to explain 13.2% of the variation in forecast accuracy level examined in this study (see Table 5-18 of Chapter 5). Of the four variables which significantly influenced forecast accuracy, the crisis period variable made the strongest contribution to the prediction of IPO forecast error (see Table 5-18 in Section 5.7.2 of Chapter 5), followed by earnings reduction, economic recovery variable and auditor reputation.

9.3.2 Relating earnings management and forecast error

The test of earnings management for the year of IPO and for the first three years after listing for regulated IPO companies' years 1996, 1998 and 2000, reveals that median discretionary accruals for sampled companies are positive and are highest in the year of forecast compared to other years. The result (positive and significantly greater than zero discretionary accruals in the year of forecasting) is consistent with the research hypothesis that IPO companies tend to manage earnings upward in the year they make forecast (see Section 6.5.1 of Chapter 6). The multiple regression results show that forecast error has a significant positive association with the magnitude and the direction of earnings management. This implies that, the more positive the forecast error, the greater the positive discretionary accruals (see Section 7.8.1 of Chapter 7). This provides support for the alternative hypothesis that earnings management is positively associated with forecast error (see Section 7.3.1 of Chapter 7).

The results also show that the variable related to changes in economic condition, which was found to have a significant association with accuracy, also had a significant positive association with the magnitude and the direction of earnings management (see Section 7.8.3 of Chapter 7). This indicates that regulated IPO companies in the crisis and recovery period are managing their earnings upwards more than companies in the pre-crisis period, because during these two periods it is more difficult for them to achieve their forecast. The result also shows the significance of management ownership in influencing upwards earnings management, with greater ownership resulting in greater upwards earnings management (see Section 7.8.2 of Chapter 7). The age of a company has a significant positive association with earnings management, indicating that older companies are managing their account more than younger companies (see Section 7.8.5 of Chapter 7). The statistical results in respect of earnings management were used as a basis for rejecting the null hypotheses or accepting the alternative hypotheses developed in Section 7.3 of Chapter 7. Table 9-2 summarises the results of multiple regressions analysis and hypotheses testing.

Table 9-2: Factors influencing earnings management in Malaysian IPO regulated companies

Independent variable	Dependent variable		
	Expected sign	Sign observed	Statistically significant
FE	+	+	√***
MGTOWN	+	+	√**
CRISIS	+	+	√***
RECOVERY	+	+	√***
AUDITOR	-	+	×
AGE	+/-	+	√**
SIZE	-	+	×
LEV	+	+	×

Key:

√*** statistically significant at the 1% level

√** statistically significant at the 5% level

× not statistically significant

+ positive association

- negative association

The standard multiple regression model on earnings management showed that the 8 variables included in the model were able to explain 15.8% of the variation in the magnitude, and direction of earnings management, in the annual reports of the examined companies (see Table 7-14 of Chapter 7). The unexplained variation may be in part due to factors not tested in the statistical models, such as analyst forecast error. Managers may have incentives to manage earnings upwards to either meet or confirm the forecast made by the analyst. Interviews with 6 market participants and the regulator were held to shed light on the other factors influencing accuracy and earnings management, and to enhance the interpretation of the quantitative results. Interviewees, for example, suggested that their most significant concern regarding the company not meeting the forecast, was the effect on share price and the company reputation. The factors

suggested by the interviewees provide avenues for further research in forecast accuracy and earnings management.

9.4 Contribution to knowledge

The contributions of this study are summarised as follow:

9.4.1 Understanding the nature of earnings management at the time of IPO and in particular to explore the link between earnings management and forecast error.

A contribution is provided in terms of empirical evidence on the link between the extent of earning management and the magnitude and direction of forecast error. The result, of significant positive association between earnings management and forecast error and economic conditions, provides an understanding of the nature of earnings management at the time of the IPO. The analysis has shown that managers appear to manage earnings upwards during period of economic crisis and recovery in order to match, or come closer to the forecast made in the prospectus. A more rigorous analysis than Jaggi et al. (2006) using OLS regression, incorporating other variables such as changes in economic condition and company specific characteristics, allows a more sophisticated exploration of the interrelationship among a set of variables. The analysis, therefore, provides information about the model as a whole, and the relative contribution of each of the variables that make up the model. This will provide a better insight into the factors associated with earnings management. The findings present an extension which fills a gap in the literature of forecast accuracy and earnings management.

9.4.2 Changes in economic condition have a significant impact on accuracy and managers' behaviour in reporting their actual earnings.

The multivariate analysis has shown that a change in economic condition, represented by the crisis and recovery periods, is the most significant factor determining the accuracy of forecasts made in prospectuses. The findings indicate that an unexpected change in economic condition between the date of forecast and the actual reported result is an important factor in determining the ability of companies to achieve forecast (see Section 5.8.2 of Chapter 5). Contrary to expectations, there is evidence of a non-significant association between regulation and accuracy. The change, from a positive forecast error in the pre-crisis period to a negative forecast error in the crisis and recovery period, is due in a significant measure to economic condition.

The study also found that income-increasing earnings management is more pervasive during the period of economic crisis and recovery. This finding is consistent with the results of the forecast accuracy study, which found that during these two economic periods companies had more difficulty meeting their earnings forecast, resulting in higher forecast error. The companies appear to have resorted to managing their earnings in order to come closer to their forecasts (see Section 7.8.3 of Chapter 7). These findings contribute to current knowledge by providing evidence on the association of earnings management and changes in economic condition which have not been tested before. This contributes to the existing literature in terms of research design showing how a researcher planning an investigation of management skills in forecast accuracy should take account of the economic conditions arising between the date of the forecast and the date of reporting the first actual results. The importance of taking economic conditions into account, particularly in longitudinal studies, is shown.

9.4.3 Theories which are relevant in explaining earnings management behaviour.

The positive association between earnings management and management ownership contradicts evidence provided for developed countries (Peasnell et al., 2005). Consistent with agency theory, Peasnell et al. (2005) found that in a country with diffuse ownership such as the (UK), there is less earnings management the more closely aligned the

managerial and shareholder interests are. In the Malaysian situation, with a high concentration of ownership, there is almost perfect alignment of interest between the owner and manager. However, when ownership is concentrated at a level where an owner obtains effective control of the company, the agency problem shifts away from manager-shareholder conflicts to conflicts between the controlling owner and minority shareholders, which may motivate the owners to manage reported earnings for their own benefits (Yeo et al., 2002).

The finding of this study, that greater managerial ownership resulted in higher earnings management, does not support the assumption of agency theory. This may imply that in a country with highly concentrated ownership (such as Malaysia), coupled with specific regulation on forecast disclosure, the assumption of agency theory may appear to be less relevant. In a country with highly concentrated ownership, the managers and owners are likely to be the same people. Thus, as agents to themselves, managers are manipulating their reported earnings for their own short-term benefit. Because the managers' wealth is sensitive to their company's stock prices, managers tend to focus on short-term stock prices, leading to incentives for earnings management to influence the selling or purchase price. A higher stock price benefits the managerial-owner in terms of more cash received on sale of stocks. Additionally, higher stock price leads to a reduced dilution of ownership as the new investors have to pay more for a proportionate shareholding. Therefore, the actions of managers will benefit themselves and the existing shareholders, but not future investors.

The actions of IPO managers which are contrary to the assumption of agency theory can perhaps be explained by legitimacy theory, whereby managers of IPO companies are assumed to be managing their earnings upwards more in the first year as a public company and reporting towards meeting their forecasts in order to manage their legitimacy. Hearit (1995) suggests the first phase of establishing legitimacy represents the early stages of a company's development and tends to revolve around issues of competence, particularly financial. Therefore, in establishing a reputation for

credibility of information disclosed, and to avoid negative coverage by the media for missing their forecasts figure, managers may manage their earnings upwards to legitimise their managerial position. The power of the media has been noted by Patten (2002), in his study of the disclosure of environmental information. Patten (2002) suggested that increased media attention can certainly lead to increased pressure from any of the stakeholders [dissatisfaction of the public; new or proposed political action; increased regulatory oversight].

The speculations that managers are managing earnings upwards in order to influence the stock price and to establish their company's good reputation is supported by the interview findings. Interview analysis indicates the owner-managers main concern to be the effect share price and company reputation may have on their not meeting earnings forecasts (see Table 8-3 and Section 8.3.1 of Chapter 8). Although the power of an owner-manager to take advantage of minority shareholders may be moderated through the existence of independent boards, these are not easily established in highly concentrated ownership IPO companies. The findings indicate that, in a highly concentrated ownership company, (such as those found specifically in Malaysia), other factors may influence managers' behaviour, which makes the assumption of agency theory less relevant.

The analysis has also shown that the acts of managers may be explained by more than one theory (i.e. agency theory). In a regime of mandatory earnings forecasts disclosure, IPO companies are more likely to issue increasing optimistic forecasts in order to send a positive signal to the market. Some support for signalling theory is evident in the studies by Lev and Penman (1990) and Clarkson et al. (1994). In maintaining management's reputation for accuracy, managers may use discretionary accruals to manage reported earnings upwards. The support for reputation cost theory is evident in studies by Kasznik (1999) who documents how managers manage their earnings upwards when their actual earnings would otherwise fall below management's forecasts. The need for giving a positive signal and establishing a positive reputation for accuracy

and reliability may be more important for IPO companies, because as newly listed companies, they are under close market scrutiny and are under great pressure to meet the projections made to investors.

9.4.4 Regulation has no significant impact on IPO management forecast accuracy

The study has found that, contrary to expectations, revised regulation of earnings forecast disclosure made by companies in certain industries has no significant impact on the accuracy of forecasts made in their company prospectus (see Section 5.8.1 of Chapter 5). The absence of a significant difference in the accuracy of forecasts between regulated and non-regulated companies could be interpreted in two ways. On the one hand it could be argued that the regulation was not effective. On the other hand it could be argued that the regulation did have some impact but that it also influenced the behaviour of non-regulated companies. In terms of the regulation objective in achieving a 10% target, it did not achieve this target and regulation does not appear to be a significant factor in distinguishing the targets for regulated and non-regulated companies.

9.4.5 Interview analysis complement quantitative results

Findings from the interviews with market participants and the regulator have provided a more comprehensive understanding of the relationship between forecast accuracy and companies' earnings management behaviour in a developing regulated capital market. The suggestion of the interviewees, that economic condition is the main factor in determining the accuracy of forecast made in prospectus, supports the statistical results. The findings also show that interviewees are unanimous on the importance of meeting the earnings forecast, which supports and explains the statistical results of the positive association between forecast error and earnings management. The interviewees' main concern for share prices also provides support for a positive association between earnings management and management ownership, and indicates the motivation for

managing earnings upwards. Interview results contribute by giving further insights in relation to relevant issues such as credibility of forecast, implication of regulation, factors contributing to meeting the forecast and perception of preparers on the importance of meeting the forecast made. These will contribute towards extending ideas on factors influencing forecast accuracy and earnings management behaviour which may not be captured in the statistical model. Interview analysis results also help to explain and interpret what has happened and relate this with theory, filling gaps and providing evidence that cannot be captured from quantitative evidence.

The interview findings indicate that the managers of companies are aware of the many accounting techniques which may be used in order to allow alternatives and that they can use their professional judgement when reporting their income. However, by examining large samples of companies in order to make general statements about earnings management, the research cannot tell the difference between those who make choices within the rules and those who make choices outwith the rules. Giroux (2005) claimed that it is difficult to determine when earnings manipulation can be considered fraud except well after the actual act, when the companies and /or their executives have actually been charged with fraud. This will provide a challenge for future researchers when developing a more powerful earnings management model, one that may differentiate between choices that are fraudulent and those that comprise aggressive but acceptable methods of accounting

9.4.6 Research method – the importance of a stable control group

In terms of research method, the study contributes to knowledge in showing the importance of having a stable control group. A robustness test of the control group indicates that the composition of companies in the control group has an influence on the coefficient of the group. Changing the composition of the control group may lead to a very different result, depending on whether the selected control group has outlier properties or not. The finding of the study indicates that in developing earnings

management model parameters, it is important for the researcher to check for outliers in the control group which may affect the results and interpretation of the study.

9.5 Implications of findings

For researchers, the study provides evidence that economic condition, management optimism and auditor reputation are significantly associated with forecast accuracy in IPOs in Malaysia, but that regulation of forecast accuracy has no significant effect. The study finds that volatility in the economy has a significant impact on the extent to which companies meet their forecasts. The study therefore concludes, that researchers planning an investigation of management skills in forecast accuracy should take account of the economic conditions arising between the date of the forecast and the date of reporting the first actual results.

For the regulator, the finding of a non-significant association between forecast accuracy and regulation suggests that the penalty imposed on mandatory earnings forecasts did not result in the issuing of more realistic forecasts. Instead, it resulted in apparent management of reported earnings, which could be seen to have reduced the quality and usefulness of reported earnings. The result of this study demonstrates that the regulator's attempt to use regulations to improve forecast accuracy is not an effective strategy when there are strongly adverse economic conditions, and if promoters or managers are optimistic in their forecasting. The findings also provide useful input to a review of relevant regulations, as well as insights for regulators attempting to improve the reliability of financial information. As suggested by the financial analyst in her interview, to enhance the quality and reliability of financial information, and to fulfil their duty to protect investors, the regulator should review the reasonableness of earnings forecasts submitted by applicant companies and pay more attention to accruals items of companies with reported earnings within regulatory limit.

For users of financial information, the finding of a positive association between earnings management and forecast error for the year of an IPO adds new evidence to the earnings management literature by showing that positive forecast errors reported by the IPO companies may not indicate actual company performance in certain IPO regulations and economic periods. This has, potentially, implications for financial statement users, because it suggests that interpretation of accounting information may need to take into account the regulation governing profit forecast disclosure. Users need to be aware of regulation-related incentives for earnings management when analysing the financial report of listed Malaysian companies.

Although the interview findings indicate that the management of companies are aware of the choices that they may have in reporting their income, the findings however, cannot differentiate between the positive discretionary accruals that are made by choice and positive discretionary accruals that may be forced upon them by external factors. An abnormal pattern of accruals during a period of economic crisis does not necessarily indicate that earnings management is under the control of management, or has arisen from the opportunistic behaviour of managers. For example, an external force like economic condition may result in companies being unable to collect their accounts receivable during a poor economic period. A greater accounts receivable over sales ratio during the crisis period resulted in higher working capital and positive current accruals. The result of greater forecast error and a greater positive discretionary accruals during this economic volatile period presents an extension which fills a gap in the understanding of what drives managers to manage earnings.

9.6 Limitations of the study

The findings of this research study are limited by the very specific context of the research, namely initial public offerings, and are not directly applicable in other contexts. In addition, this research, like all research, is limited by the period and sample

studied. The examined companies are subject to the availability of company prospectuses and annual reports. In the regression model examining factors affecting forecast accuracy, companies which do not have data for all the variables used in the estimation are excluded.

The results of the study and discussion of the factors influencing forecast accuracy are based on the assumption that companies of comparable risk profile make IPOs, irrespective of economic condition. It is possible that a crisis situation would cause some sponsors to be more risk averse in making an IPO and that these companies would, therefore, wait for improved conditions. Brailsford et al. (2004), in their analysis of the time series behaviour of the initial public offering, report that a bullish stock market led to an increase in the number of new issues. This indicates issuers responding to favourable economic conditions.

The study of earnings management does not differentiate between regulated and non-regulated IPO companies. Therefore, the comparison of earnings management practices between these two categories of IPO companies cannot be made. This is because only a small number of IPO for the years 1998 and 2000 are non-regulated companies (see Table 4-9 in Chapter 4). The sampled companies only consist of regulated companies.

The approach of using companies from many industries (companies classified as regulated industries) together in one regulated control group may lead to a bias in the estimated non-discretionary accruals (and hence discretionary accruals) for an individual company.

The study investigates the association between earnings management and forecast error after discretionary accruals. This endogeneity issue may cause a problem in interpretation. It is therefore suggested that future research investigates the link between earnings management and forecast error before discretionary accruals.

Malaysian IPO companies are also different in terms of their management ownership. Malaysian companies are found to have more concentrated ownership than companies operating in a more developed market, such as the US and the UK. Therefore, the conclusion of a positive association between management ownership and earnings management based on Malaysian IPO companies cannot be extended to companies in more developed markets.

Corporate governance variables are found to have a significant impact on the earnings management of IPO companies in prior studies. However, a study of the effect of corporate governance variable (specifically, board structure) cannot be made because the company did not disclose the category of members of the board. The corporate governance disclosure regulation became effective on Malaysian companies only from the year 2001. The study of the effect of corporate governance variables are left for future research.

9.7 Suggestion for further research

In terms of research method, future research in the areas of earnings forecast accuracy and earnings management could consider using a similar method applying this to other countries, especially when there has been a change in the economic conditions.

A study of earnings management could also be extended by investigating the impact of analysts' forecasts on the earnings management behaviour of IPO companies. This may provide further explanation on whether management are managing their earnings to meet or confirm analyst forecasts. By including analyst forecast variable in the earnings management model, a statistical model with a higher explanatory power may be obtained.

A further extension of this study might be to examine market reaction to company earnings forecast accuracy. Using an event study method to compute unexpected return around the first actual earnings after listing announcement, further research may be carried out to establish whether the market reacts negatively to companies which fall short of their forecast earnings. Jog and McConomy (2003), for example, document evidence that companies including optimistic forecasts in their prospectuses are penalised significantly in the marketplace relative to other forecasters and non-forecasters. The results will indicate whether the market itself is able to impose economic penalties for inaccurate forecasters. This will provides an extension to Ahmad-Zaluki et al. (2006) who investigates the long run share price performance of Malaysian IPOs during the period 1990 to 2000. Separating the companies based on regulation will provide results on whether regulation has a significant impact on market reaction.

In relation to factors determining earnings management, this study is unable to test the effect of corporate governance on earnings management due to non-disclosure of the type of director information for companies listed prior 2002. Therefore, it is suggested that future research should include corporate governance structure variables, such as board structure and audit committee, in order to test whether a company's internal governance structure has an impact in constraining earnings management.

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